COOPERATION & DEVELOPMENT CENTER – CODEV

Ecole Polytechnique Fédérale de Lausanne – EPFL

UNESCO Chair in Technologies for Development

UNESCO Chair in Technologies for Development
2016 INTERNATIONAL CONFERENCE

FROM INNOVATION TO SOCIAL IMPACT

2–4 MAY 2016
EPFL, LAUSANNE, SWITZERLAND

http://cooperation.epfl.ch/2016Tech4Dev

CALL FOR ABSTRACTS
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Core Thematic Areas and Breakout Sessions

Extended Abstracts should be aligned with the focus and objectives under one of the Breakout Sessions listed below.

1. **Technologies for Humanitarian Action** [HUMTECH]

   [SE01-HUM] From Face-to Face to Messaging Apps: Communicating with Communities in Complex Emergencies
   [SE02-HUM] UAVs: Opportunities and Challenges for International Aid and Global Development
   [SE03-HUM] Travelling Models of Innovation and Open Spaces: Beneficiary Engagement and Cross-Case Comparison across Context
   [SE04-HUM] Curveballs, Surprises, and the Unexpected Solutions that can Result

2. **Medical Technologies** [MEDTECH]

   [SE05-MED] Bright Spots: Innovations for Quality, Reliability, or Safety of Medical Technologies
   [SE06-MED] The New Roles and Challenges of Technology in the Fight against Malaria
   [SE07-MED] Medical Technology and Innovation for Sustainable Impact in Health

3. **Science and Technology for Disaster Risk Reduction** [DRR]

   [SE08-DRR] Early Warning Systems: Design and Implementation
   [SE09-DRR] Open Geodata and Imagery for Humanitarian Mapping

4. **Technologies for Sustainable Access to Energy** [ENERGY]

   [SE10-ENE] Public Sector Involvement in Sustainable Energy Access in the Global South
   [SE11-ENE] Social Innovations for Energy Access: Organizing "Sustainable Energy for All"
   [SE12-ENE] Catalyzing Innovation and Development through Targeted Capacity Building in Renewable Energies and Sustainable Food

5. **Information and Communication Technologies for Development** [ICT4D]

   [SE13-ICT] Migrants, Diasporas and ICTs Adoption in the South
   [SE14-ICT] IoT4D: Potential and Open Issues in the IoT for Development

6. **Technologies for Sustainable Development of Habitat and Cities** [HABITAT]

   [SE15-HAB] The Contemporary City in the North-South Debate: Innovation Trajectories in Research and Practice
   [SE16-HAB] Global Engineering and Sustainable Development

   ⇨ **Additional Cross-Cutting Sessions (applicable to the Six Core Thematic Areas)** [CROSS-CUTTING]

   [SE17-CCI] Measuring Development Outcomes: A New Frontier in Development Engineering
   [SE18-CCI] Incubating Tech4Dev and Accelerating Impact
   [SE19-CCI] From Developing to Scaling Up Innovative Social Businesses at the Base of the Pyramid
   [SE20-CCI] Paths Towards Impact: How to Evaluate Technology for Development Interventions

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For further information on the conference, registration, abstract submission guidelines and application for financial support please visit the conference website at

http://cooperation.epfl.ch/2016Tech4Dev

[SE01-HUM]

From Face-to-Face to Messaging Apps: Communicating with Communities in Complex Emergencies

Name:
Affiliation:

Jacobo Quintanilla
International Committee of the Red Cross (ICRC)
Community Engagement Advisor

Brief Bio
Session Leader(s)

Jacobo Quintanilla is ICRC's Community Engagement Advisor. He has been working at the intersection of media, communications and technology in the humanitarian sector for the last 10 years in more than 20 countries with a passion for communication as form of aid in its own right. He is 2012 PopTech Social Innovation Fellow and also serves as Technical Reviewer for the Humanitarian Innovation Fund (HIF) and in the judging panel on Best Use of Mobile in Humanitarian Situations for the GSMA Global Mobile Awards.

Abstract
Short description, including alignment with conference themes and objectives

The communications landscape in developing countries is undergoing profound changes. In Yemen or Myanmar for example, those changes are having deep implications not just on how local communities self-organize and coordinate among themselves, but also for humanitarian responders. Aid organizations are progressively understanding the impact of these changes in their operational models, highlighting the urgency to better understand local information ecosystems, invest in new partnerships and more meaningfully engage with the very same communities they endeavor to protect and assist.

Over the last five years, progress has been made setting up two-way communications with communities affected by natural disasters, both using traditional and tech tools. From face-to-face interactions, to collaborating with digital volunteers or by using messaging apps, humanitarian organizations are trying to more systematically listen to communities' and to provide them with life-saving, useful and actionable information about vital services available.

However, conflict situations add to the complexity and present particular challenges such as insecurity and limited physical access, disrupted energy and telecommunications infrastructure, communities' limited access and skills to use technologies, data protection and misinformation and propaganda.

How is technology enabling humanitarian organizations to better engage with communities caught up in conflict situations? What does the aid sector need to learn from the public and private sectors, from tech groups and from the media? And looking ahead, how are the communications landscape going to change over the next 5 years and where does that leave the aid world?

Description
Proposed discussion focus

Talking about communicating with communities in conflict environments is a very tough reality check. There is an important element of uncertainty that makes the planning for any kind of communication much more complex. In a natural disaster we know that things will improve, in conflict situations, we really don't know.

[SE01-HUM]   From Face-to-Face to Messaging Apps: Communicating with Communities in Complex Emergencies

Description (Cont.)

However, disaster affected communities today do not expect only humanitarian services and response. In fact, they expect to be listened to and demand greater interaction with and accountability from governments, humanitarian agencies and the media. In the years to come, communities will increasingly judge aid agencies regarding the quality of the engagement and their ability to listen and to change the way they operate.

Based on the area of expertise of the panelists, during this session we would like to debate around the following topics:

1. Shifting power dynamics, information ecosystems and the role of technology
2. Energy and connectivity
3. Partnerships with tech groups and the private sector
4. Community mobilization and expectations management
5. The role of digital volunteers
6. Data protection
7. The future of communications

Target Audience

Technologists, private sector, humanitarian organizations and donors

[SE02-HUM]

UAVs: Opportunities and Challenges for International Aid and Global Development

Name:
Patrick Meier

Affiliation:
Humanitarian UAV Network (UAViators), Founder

Brief Bio
Session Leader(s)

Dr. Meier is an internationally recognized thought leader on humanitarian innovation. His new book, "Digital Humanitarians" has been endorsed by the UN, Red Cross, World Bank, USAID and others. Over the past 12 years, Patrick has worked in dozen countries on a wide range of humanitarian projects. He is currently Director of Social Innovation at QCRI where he works with experts in advanced computing to develop Next Generation Humanitarian Technologies. He is also the founder of the Humanitarian UAV Network.

Abstract
Short description, including alignment with conference themes and objectives

Unmanned Aerial Vehicles (UAVs) stand to play an increasingly important role in humanitarian aid and development. As a new and emerging humanitarian technology, the evidence-base for the added value of this new technology is still necessarily thin. That being said, dozens of UAV projects in recent years highlight the potential impact that this new technology may have in the very near future. The purpose of this breakout session is to provide an overview of use-cases, case studies, lessons learned, best practices and ethical guidelines in the use of UAVs across humanitarian and development projects.

Description
Proposed discussion focus

This breakout session will focus on recent real-world uses of UAVs to demonstrate impact and challenges. Note that the session leader has direct operational experience in humanitarian UAV missions. The session will provide a wide range of use-cases and will solicit feedback from participants on the Humanitarian UAV Guidelines and the Code of Conduct.

Objectives
Justification and expected impact during and after the conference

Increased awareness on the potential and perils of UAV-use in humanitarian and development settings. Solid understanding of lessons learned and best practices. Awareness of ethical guidelines and code of conduct. Ideally this session will help catalyze collaboration on pilot projects using UAVs.

Target Audience

Humanitarian and development professionals who are relatively new to the UAV space as well as those who are highlight experience (so that the latter can also share their experience).

Travelling Models of Innovation and Open Spaces: Beneficiary Engagement and Cross-Case Comparisons across Contexts

Name:	Michelle Reddy and Lana Awad
Affiliation:	Stanford University and Refugee Open Ware

Brief Bio
Session Leader(s)

A PhD candidate at Stanford University, **Michelle Reddy's** research interests center on innovation in peacebuilding, development and humanitarian aid, as well as organizations, entrepreneurship, and civil society networks. Prior to Stanford, she co-launched the Paris School of International Affairs at Sciences Po Paris, and served as assistant dean. Michelle has worked on research, communications and program design and management for universities, NGOs, and the United Nations for 7 years in Paris, Dakar, and New York.

Lana Awad is a Jordanian architect, researcher and maker interested in digital fabrication and the application of new technologies in interdisciplinary environments. For the past year, Awad has been working with an organization named Refugee Open Ware, whose mission is to employ disruptive technology to improve human rights fulfillment for both refugees and host communities within conflict zones.

Abstract
Short description, including alignment with conference themes and objectives

How can we best conceptualize, and co-create, the physical and virtual innovation spaces that provide the best environment for refugee innovation to flourish? This panel aims to examine how organizations use and solicit feedback in the design and implementation of innovation spaces across contexts, observing travelling models of innovation spaces.

While some innovation spaces are virtual, and others physical – each model is unique according to context. Yet, refugees are increasingly mobile, connected, and changing context, moving from one country to the next. How do organizations construct new models of innovation spaces for various migrating constituencies, and in different emergency contexts and degrees of emergency? By ensuring beneficiary engagement, we can improve upon, and facilitate, travelling models of innovation spaces, particularly for mobile refugee populations. What are some existing models of innovation spaces that can bring self-reliance within this fluid environment, not only between the users and the traveling space, but also by accommodating for the many inherent logistical challenges? We hope to solicit a cross-case comparison of the use of innovation spaces and innovation labs by various organizations, as well as a discussion on how to best facilitate the co-creation and use of these spaces by beneficiaries.

Description
Proposed discussion focus

Organizations are increasingly adopting innovation spaces and innovation labs as a means to operationalize innovation in humanitarian situations, utilizing techniques of design thinking whether through entrepreneurship, product design, peacebuilding, and more. Yet, how do they determine "what works" for diverse, mobile, refugee populations?

[SE03-HUM]

Travelling Models of Innovation and Open Spaces: Beneficiary Engagement and Cross-Case Comparisons across Contexts

Description (Cont.)

This panel focuses on beneficiary engagement, innovation spaces, and knowledge exchange in a hyper-connected world, particularly as refugees are diverse, and their movements (at times) are fluid as they move from camps, into host communities, and hopefully, experience repatriation. Refugees originate and move through a variety of experiences and contexts, and have various degrees of mobility and engagement with other communities as well as a diversity of skills and talents facilitated by the innovation spaces. Yet, organizations implementing innovation spaces and hubs oftentimes have limited time and resources to adopt flexible models for different beneficiary constituencies, to solicit stakeholder feedback in design and implementation, or to look comparatively at models across organizations and contexts. Oftentimes host communities are ill-equipped and under-resourced to welcome them, therefore a travelling model of innovation spaces, adaptable to local contexts and diverse populations, is warranted, whether for refugees in protracted living situations in camps or those who are resettled or repatriated.

Objectives

Justification and expected impact during and after the conference

Overall, we wish to investigate the types of innovation spaces currently in use across organizations, and best practices in engaging beneficiaries. How do organizations conceptualize and use innovation labs differently, what are some existing models, and are these models mobile? How can we solicit feedback from refugees about the impact of these interventions, and how can refugees assist in the design of innovation spaces? The notion of an innovation space should not be limited to the bounds of a refugee camp; indeed, open-source approaches and innovation spaces should accompany refugees on their journey. Contexts vary widely and refugees themselves are diverse. How might organizations working on innovation spaces, and refugees themselves, exchange and co-create knowledge on the design and use of these spaces? This panel aims at developing tools for beneficiary engagement across a variety of contexts, and is particularly relevant, given the refugee crisis in the Middle East and Europe, as well as other more longstanding crises. It will examine existing ways organizations and stakeholders solicit feedback from refugees in the design and use of innovation labs and open source technologies, and propose ways forward to better incorporate and empower refugees.

Target Audience

Practitioners, NGOs, Academics, Refugees. The panel, a collaboration between an NGO working directly in refugee camps, and a political sociologist based at Stanford University, aims to investigate how various organizations conceptualize and use innovation spaces and labs, how models of innovation spaces and labs "travel" and are adapted across organizations, and how they can be adapted by better methods of soliciting stakeholder feedback from refugees themselves, across contexts.

[SE04-HUM]

Curveballs, Surprises and the Unexpected Solutions that Can Result

Name:
Affiliation:

Abi Weaver
American Red Cross, Director International Services

Brief Bio
Session Leader(s)

Abi Weaver, a director within the international division of the American Red Cross, is currently researching and testing emerging technology solutions with the vision that they can help strengthen disaster resilience in urban communities. Abi comes from a family of early adopters. Her grandmother was the first among them to purchase a personal computer. Her father has been e-banking since the 80s. And while she was in primary school, her parents adopted a household robot. And with this background, it's no surprise that Abi's career eventually steered toward 3D printers, augmented reality and smart cars. But for Abi, the lure is not the technology. The draw is what these tools enable humans to accomplish. In addition to her 11-year career with the Red Cross, Abi has held strategic communications and government relations positions at PATH, an international nonprofit organization that accelerates global health technologies, as well as the National Parent Teacher Association, America's premiere child advocacy organization. She has earned degrees in journalism and public relations, and lives in the Washington, DC metro area.

Abstract
Short description, including alignment with conference themes and objectives

Traditional humanitarian action is built on restoring order. Under pressure to deliver support urgently, humanitarians often favor legacy interventions based on familiarity and past performance. When humanitarians make universal assumptions about problems and needs or act exclusively on their bias toward specific technology (or non-technology) solutions, they can experience rejection, delays and loss of trust; they can waste resources; they can deny access to desired alternatives and stymie development; and most dangerously, they can create additional vulnerability and risk. Then again, when humanitarians approach a problem with an open mind and when they look to the affected communities to inform and make critical decisions, they can avoid these types of mismatches, mitigate the related risks, find creative and locally relevant solutions, and expand their toolbox for future crises. Furthermore, humanitarians who leverage curiosity, empathy, humility and flexibility are even more likely to discover novel and breakthrough solutions that otherwise might never have surfaced. Panelists will share examples where expected or traditional solutions failed and how they discovered superior alternatives that defied conventional wisdom and practice, managed the resulting disruption, and transformed setbacks into successful ventures and social impact.

Description
Proposed discussion focus

1. Promotion of soft skills (like curiosity, empathy, humility, flexibility and resilience) and a growth mindset in humanitarian innovation.
2. Case studies of learning with people affected by humanitarian issues and overcoming failed hypotheses, under resourcing and political barriers.
3. Discussion on how humanitarian bias toward frugal innovation, assumptions about low/high/no technology solutions and the misidentification of problems affects social impact. Which risks offer potential for a solution driven by scientists?

[SE04-HUM]

Curveballs, Surprises and the Unexpected Solutions that Can Result

Objectives
Justification and expected impact during and after the conference

Unintentionally, humanitarians often approach problems with assumptions and bias which can result in additional challenges, costly mistakes and dangerous consequences. Learning how to identify those barriers, manage the uncertainty and ambiguity that come with more inclusive and experimental approaches, and see curveballs and surprises as acceptable solutions will result in wiser investments, more appropriate applications and more sustainable impact.

Target Audience

Program designers, directors, managers; officers; funders; response/recovery assessment teams; monitoring and evaluation advisors; technologists; innovation leaders; and other decision makers/strategists.

[SE05-MED]   Bright Spots: Innovations for Quality, Reliability or Safety of Medical Technologies

Name:
Affiliation:

Kate Michi Ettinger
Mural Institute, Director

Brief Bio
Session Leader(s)

Kate Michi Ettinger, Senior Fellow, Center for Health Professions, UCSF, is a social innovation consultant, product designer and health care ethicist with over fifteen years of health-related experience in private, government, academic, non-profit sectors. At the catalyst at OpenQRS, Kate currently focuses on how to harness new technologies, such as sensors, wireless, mobile – to make it easy, effective and affordable to monitor data on quality, reliability and safety for medical devices deployed anywhere in the world.

Abstract
Short description, including alignment with conference themes and objectives

Medical technologies deployed in low and middle income countries (LMIC) often encounter a lack of clear guidelines for how to address quality, reliability and/or safety (QRS). In this regulatory absence, innovators have stepped up to develop creative QRS solutions for medical technologies.

Strategies to solve these thorny problems may include:

a) technical solutions, such as quality assurance tests for field diagnostics,
b) hybrid technology and capacity building approaches, such as sms feedback loops with health care workers,
c) systemic solutions, such as allocating funds for adverse outcomes,
d) trust building solutions, such as transparent communications about outcomes, or
e) design solutions that reimagine existing technology to make it appropriate to the LMIC context while concurrently addressing the QRS of this appropriate technology

This session invites papers that share the impact of approaches to address the QRS of a medical technology. Papers will present the QRS problem identified, the solution developed to address the QRS issue, the impact of the solution and insights from the intervention. The session encourages papers to include barriers encountered, unexpected findings and failures.

Description
Proposed discussion focus

This panel will introduce a simple format for practitioners, academics, funders or policy advisors to report medical technology QRS innovations. Papers in this panel will briefly present the underlying medical technology, then focus on the QRS problem they identified, the method they developed to address the QRS issue, and the impact of their solution. The papers and discussion will emphasize unexpected findings, failures and insights from the intervention.

Drawing on a range of actors—entrepreneurs to funders- and varied strategies for solutions – technical to systemic, the panel will highlight the diverse ways that med tech product makers demonstrate innovation to improve quality and safety. This discussion aims to be practical driven by tangible solutions and focused on realistic issues. In 2014 Tech4Dev surfaced a theme that the regulatory scheme for the Global South is not working, this panel will foster meaningful discussion around concrete solutions that "model" a way forward from the impasse.

Bright Spots: Innovations for Quality, Reliability or Safety of Medical Technologies

Objectives

Justification and expected impact during and after the conference

By highlighting different methods from capacity building approaches to technical inventions and featuring efforts from the Global South as well as funders, this panel will promote a discussion that identifies "role models" for developing med tech with integrity.

The objective is three fold:

1) To catalyze a peer to peer learning community that can serve to accelerate the adoption of QRS measures into new products for LMIC
2) To feature innovative efforts that can serve as "role model" practices and to seed examples that may prove to be leapfrogging approach to QRS issues.
3) To map QRS solutions submitted for this panel in order to inspire people to build integrity into the design of their ech4dev products.

Target Audience

This panel is intended for policy advisors, practitioners, funders and academics, with an interest in quality and safety of medical technologies.

[SE06-MED]   The New Roles and Challenges of Technology in the Fight Against Malaria

Name:
Affiliation:

Walter Karlen
ETH Zurich, Assistant Professor

Brief Bio
Session Leader(s)

Walter Karlen is an Assistant Professor in the Department for Health Sciences and Technology heading the Mobile Health Systems Laboratory at ETH Zurich since October 2014. He received an MSc degree in micro-engineering and a PhD in Computer, Communication and Information Sciences from the Ecole Polytechnique Fédérale de Lausanne (EPFL), Switzerland.

He has worked extensively on mobile phone implementations of biomedical sensors for global health applications and developed novel algorithms for the automated analysis of biomedical signals and diagnosis of infectious diseases.

Abstract
Short description, including alignment with conference themes and objectives

More than 500'000 deaths are caused by malaria annually. Current in-field diagnostic devices have limited sensitivity and inconsistent performance. Preventive technology (e.g., mosquito nets) has been shown to have limited effectiveness. New developments are sought to fight malaria. Pre-symptom diagnostic tests that allow for early screening of infections must address apart from improved sensitivity also other challenges such as distinguishing the species of Plasmodium parasites. Furthermore, to have impact and allow scalable implementation in low resource settings, novel interventions have to satisfy the ASSURED (Affordable, Sensitive, Specific, User-friendly, Rapid and robust, Equipment free and Delivered) criteria set out by the World Health Organisation (WHO) for rapid diagnostic tests.

While research focuses largely in satisfying sensitivity and specificity, other aspects of ASSURED such as low cost, usability, robustness and implementation strategies are often neglected during the initial development stages. The goal of this session is to bring together researchers and implementers from various fields to discuss common strategies to address challenges that new technologies must meet in the new goal of malaria eradication.

Description
Proposed discussion focus

The WHO has defined three pillars to eliminate and eventually eradicate malaria in the next 15 years: 1) universal access to prevention, diagnosis, and treatment; 2) acceleration towards elimination; and 3) malaria surveillance. We will discuss the following questions:

1. Where and how can emerging technologies assist the elimination and eventual eradication of malaria?
2. What are specifications and requirements for ideal screening tools and procedures?
3. How can implementation strategies be brought to scale?
4. How do we combine different strategies (e.g. early screening, vaccines, prevention and surveillance)
5. What are the current limitations and challenges of technologies that are developed in "first class" research environments, but targeting limited resource settings?
6. What are the business models for these technologies?
7. How can we foster engagement of the local communities and empower users?

[SE06-MED]

The New Roles and Challenges of Technology in the Fight Against Malaria

Objectives
Justification and expected impact during and after the conference

We expect a cross-disciplinary discussion regarding new diagnostic technologies, specifically input from technology developers, health workers and implementers. This type of interaction and dialog is often underestimated due to the lack of appropriate communication at the early stage of development.

We would like to provide a discussion panel focusing on developing for locally-driven needs, in contrast to the common technology-driven approach.

We will establish a forum to connect participants at all levels, particularly young researchers and foster international and cross-disciplinary collaborations.

Target Audience

The session targets researchers from all fields (biology, epidemiology, engineering, policy, health care, …) as well as representatives from industries and organizations who are interested in developing new strategies for malaria eradication.

[SE07-MED]   Medical Technology and Innovation for Sustainable Impact in Global Health

Name:
Affiliation:

Klaus Schönenberger
Ecole Polytechnique Fédérale de Lausanne

Brief Bio
Session Leader(s)

Klaus Schönenberger obtained a PhD (1996) from EPFL on medical technology. After a post-doc at Lawrence Livermore National Laboratory, he spent 10 years working in the medical devices industry in leading positions such as Global Vice-President of Research and Technology in a company with a turnover of $1bn. In 2010 he started-up EssentialMed, an innovative non-profit venture, which he is now leading as CEO. In 2011 he joined EPFL to launch EssentialTech, a program directed at developing technologies and business models to fight poverty.

Abstract
Short description, including alignment with conference themes and objectives

Many important medical devices, such as X-ray diagnostic imaging systems and neonatal incubators, which are essential to primary healthcare are still not available in much of the developing world; even when they are available, they are often dysfunctional and not properly exploited, thereby diminishing and/or eliminating their intended benefit and impact. The context of healthcare delivery in developing countries has very specific and universally recognized characteristics. These unique features warrant a complete or significant rethink/redesign of technology solutions and business models, so as to better fit the local needs and are a necessary condition for successful large scale and sustainable deployment. However, a complete redesign/rethinking of technology and business models typically requires high financial investments, a factor that discourages companies and investors as they still perceive these "markets" as financially unattractive and too risky.

The session will reflect on how the development and deployment strategy can be adapted to reduce or mitigate risks early on in the process, in an effort to attempt to tackle the problem of perceived lack of attractiveness for investors or companies. In this regard, medtech innovations that were (or are in process of being) successfully transferred, deployed and scaled-up are of particular interest.

Description
Proposed discussion focus

Presentations will be selected which illustrate good (and bad) practices in creating, deploying and scaling-up innovative technologies targeting global health issues.

- Some authors affirm that the technology must be radically rethought to be successful in these contexts. What does this mean in practice and how much redesigning is optimal? What is the involvement of local stakeholders?
- Which successful business models can be proposed to assure a sustainable impact? How can global and local market forces contribute, and how can those forces be unleashed?
- What financial solutions exist for financing the development and deployment of such technologies, including alternative/creative investments from impact/venture philanthropy, crowd funding etc.?
- What are the main risks of failure for an entrepreneur and how can these risks be mitigated?

[SE07-MED] Medical Technology and Innovation for Sustainable Impact in Global Health

Objectives

Justification and expected impact during and after the conference

Risk is inherent to entrepreneurship, but this risk is perceived as even higher in developing markets because there are few prior established benchmarks. This session will hear from players operating in these markets how the different risks were/are mitigated, using examples of innovations that are in the process of development, deployment and/or scale-up phase. It is expected that the participants will extract lessons about good strategies and best practice for maximizing the chances of successfully translating a new technology to the private sector and sustainably scaling it up, thereby maximizing positive impact on global health.

Target Audience

- Academics interested in proposing and developing innovations for the Global South.
- Entrepreneurs wishing to take their innovation to market.
- Private companies interested in expanding their markets in the Global South.
- Investors, private equity investors, impact investors/venture philanthropists.

[SE08-DRR]   Early Warning Systems: Design and Implementation

Name:
Affiliation:

Holger Frey and Christian Huggel
Department of Geography, University of Zurich

Brief Bio
Session Leader(s)

Holger Frey: Research associate University of Zurich, PhD in glacier and glacier lake mapping and analyses with GIS and remote sensing. Working experience in research and cooperation projects on climate impact in Peru and India; expertise in glacier hazards and risks.

Christian Huggel: Senior researcher and group leader at University of Zurich; long-standing track record of research and projects in climate change impacts, risks and adaptation with a focus on mountains in several regions worldwide. Lead-author of IPCC AR5 WGII.

Abstract
Short description, including alignment with conference themes and objectives

Early Warning Systems (EWS) have become more and more important for disaster risk reduction and climate change adaptation in recent years, and this trend is expected to continue in the future. EWS aim at predicting or detecting hazardous processes by collecting and analyzing data and providing information for decision making to responsible authorities.

A successful implementation requires not only detailed process understanding and adequate sensor and communication infrastructure, but also close collaboration and communication with authorities and the population. This requires geoscientific expertise and modeling skills, knowledge of juristic and institutional rules and regulations, and awareness of the local knowledge and risk perception. EWS are thus highly complex systems that involve scientific, technical, institutional, and social aspects.

Description
Proposed discussion focus

In this session we address presentations on examples of and experiences with designing and implementing Early Warning Systems, focusing on but not limiting to mountain areas. Contributions on practical applications are welcome as well as inputs on specific aspects of early warning. Besides technical descriptions, abstracts on collaborations and capacity building with local communities in the context of early warning and risk prevention are explicitly encouraged.

Objectives
Justification and expected impact during and after the conference

We expect to get a panorama on different EWS types regarding hazardous processes looked at, types of systems, and complexities of both the sensor infrastructure and the warning, alerting and alarming procedures. We want to summarize the lessons learnt from different applications and implementations in various World regions, and finally outline good practices for future EWS implementations.

Target Audience

Scientists, practitioners, engineers, governmental and non-governmental organizations.

[SE09-DRR] Open Geodata and Imagery for Humanitarian Mapping

Name:	Cristiano Giovando
Affiliation:	Humanitarian OpenStreetMap Team

Brief Bio
Session Leader(s)

Cristiano Giovando is a geographer and advocate of open data and open source geospatial software. At the Humanitarian OpenStreetMap Team, he coordinates technical project and imagery acquisition during disaster response activations. In 2015 Cristiano lead the creation of OpenAerialMap, a platform for sharing and finding openly licensed imagery. He was previously a scientific officer at the European Commission, developing an open source system for wildfire information and mapping called EFFIS.

Abstract
Short description, including alignment with conference themes and objectives

Projects such as OpenStreetMap have demonstrated how free and open geographic data is vital to many aspects of disaster response and preparedness efforts. Governments and communities are realizing the importance of open data not only in support of risk modelling and humanitarian response, but also to foster economic development. The increasing availability of very high-resolution satellite, aircraft and drone open imagery, is enabling the creation of even more comprehensive, up-to-date and detailed maps. This session explores how such open data policies and technologies are being applied to different aspects of the humanitarian response cycle including:

- preparedness mapping
- support of disaster response teams
- damage assessment
- training of local communities
- risk modelling

Description
Proposed discussion focus

In this session, participants will learn how open geographic data and open source software are used in humanitarian projects. Presenters will share lessons learned and discuss how crowd-source mapping initiatives such as OpenStreetMap have been integrated into preparedness and humanitarian response projects. The session will focus specifically on:

- What aspects of the humanitarian response cycle benefit directly from data openness
- How open source software provides more sustainable tools to humanitarian mapping
- Data models, standards and interoperable services in support of open geodata exchange
- Innovative technology and best practices for sharing open geographic data
- examples of crowdsource mapping projects for preparedness and in response to disasters
- How small UAVs/drones are democratizing remote sensing
- Issues of privacy and security with open geographic data

[SE09-DRR]   Open Geodata and Imagery for Humanitarian Mapping

Objectives
Justification and expected impact during and after the conference

The objective of this session is to discuss and explore the current and emerging technology in humanitarian response mapping. Many humanitarian initiatives have been relying on open geographic data such as OpenStreetMap to create maps and models that are used during response and preparedness operations. Much of the process to make that data available and efficiently shared is still not well defined or formalized.

Proceedings of this session will serve as a reference on best practices surrounding the use of open geodata and present real world examples of the use of open geographic data in humanitarian response. The software and data mentioned during each presentation will also be openly available for anyone to use and adapt, potentially fostering further collaboration within research groups and humanitarian professionals.

Target Audience

Professionals in any phase of the disaster response cycle, decision makers, emergency response coordinators, software developers, and volunteers.

[SE10-ENE] Public Sector Involvement in Sustainable Energy Access in the Global South

Name:
Affiliation:

Bipasha Baruah and Mini Govindan
Western University (Canada), and
The Energy Resources Institute – TERI (India)

Brief Bio
Session Leader(s)

Bipasha Baruah holds the Canada Research Chair in Global Women's Issues at Western University, Canada. Mini Govindan is a Fellow in the Social Transformation Division of The Energy and Resources Institute (TERI), New Delhi, India. Dr. Baruah and Dr. Govindan specialize in gender, development and technology; women and work; and social, political and economic inequality. Their current research explores the opportunities and constraints that women face in securing employment and entrepreneurial opportunities in renewable energy and resource efficiency in different world regional contexts.

Abstract
Short description, including alignment with conference themes and objectives

Priorities for technology and infrastructure development and dissemination should ideally be determined by the greatest benefit for the common good. Much recent research indicates that this can only be achieved through strong public-sector intervention. Private sector organizations have long indicated that they require additional forms of support, including assistance with business plans, reducing commercial risks, supporting joint ventures, and piloting and testing innovative business models. Therefore, in order to ensure that the technologies and infrastructures that can make the biggest differences in the lives of the underprivileged are developed and disseminated, there is a clear need for governments to either be involved directly, or at the very least, to put incentives in place that direct private investment to areas that would otherwise not be prioritized.

We are interested in examples and case studies of sustainable on- or off-grid energy technologies that are developed and/or disseminated solely by the public sector, or through collaborations between public, quasi-public and non-state actors. This may include public-public, public-private and/or multiple-stakeholder partnerships between government ministries or agencies, utilities, technology providers, financial institutions, NGOs and other civil society organizations, faith-based organizations, citizen's groups, labor unions and professional associations that perform roles in line with their comparative advantages. We are particularly interested in partnerships or collaborations for sustainable energy with explicit goals for reducing gender and other social inequalities.

Description
Proposed discussion focus

There is much evidence to suggest that market-based strategies cannot by themselves deliver effective and affordable energy services, particularly in the Global South. Researchers working in many emerging economies and developing countries - India, Colombia, Bolivia, Tanzania, South Africa, Kenya and Uganda, for example - have written specifically and explicitly about the need for NGOs, universities and other civil society engagement in the energy sector by providing adequate means of participation and oversight to create checks and balances between financial and development goals.

[SE10-ENE]   Public Sector Involvement in Sustainable Energy Access in the Global South

Description (Cont.)

Instead of simply focusing on the shortcomings of privatization and commercialization, as many researchers have done in the past, our focus in this breakout session is to showcase existing public service and hybrid public-private alternatives for on and off-grid sustainable energy provision. We are particularly interested in models with explicit goals to address social inequalities based on gender, class, race, ethnicity and disability. The case studies and examples presented in this breakout session will help in identifying both best practices and missed opportunities. Hence, it will enable researchers, practitioners, policymakers and advocates to better understand contemporary and future alternatives to commercialized/ privatized energy service delivery, investigating models such as public-public and public-private partnerships, cooperatives, community-owned systems, progressive financing schemes and rights-based approaches as well as conditions required for their sustainability and reproducibility.

Objectives

Justification and expected impact during and after the conference

The commercialization or outright privatization of basic services like water, electricity, health and sanitation was justified in many developing countries and emerging economies by the unsatisfactory performance of state-regulated and controlled power regimes. The rationale behind such reforms was that efficiency, pricing, and greater involvement by the private sector will reduce pressure on national and local government budgets and create a profitable sector, which in turn will finance necessary investments for improvements in service and access. In many countries, India and South Africa, for example, this market vision of basic service provision represents a dramatic shift in policies that had guided the sector previously, serving to unravel post-independence and post-apartheid public-service models of state-led development, in which electricity and water, among other services, were part of broader goals of nation building and explicit policy mechanisms for redistribution. There is growing evidence around the world that such neoliberal reform has been designed more to address macroeconomic concerns and to satisfy donor conditionalities, and with less consideration for social justice and equity issues. We are consequently witnessing a trend towards re-municipalization of basic services in some countries. Hybrid public-private and multiple-stakeholder models in basic service provision are also emerging in many parts of the world. By focusing on public sector engagement in both on- and off-grid sustainable access to energy services, this session will document grounded alternatives to market-based solutions and analyze feasibility for replication elsewhere in the world.

Target Audience

This session should be of use to anyone interested in energy development and dissemination strategies that generate more equitable and sustainable outcomes, including, academic and non-academic researchers, public and private enterprises in on and off-grid energy technology development and dissemination, donor agencies, development banks, labor unions, NGOs and other civil society organizations.

[SE11-ENE]   Social Innovations for Energy Access: Organizing "Sustainable Energy for All"

Name:
Affiliation:

Lena J. Kruckenberg and Nicholas Loubere
University of Leeds & Australian National University

Brief Bio
Session Leader(s)

Lena Kruckenberg investigates renewable energy technology adoption and market development through interorganizational networks in Central America. She has recently published an article on renewable energy partnerships in development cooperation in *Energy Policy*.

Nicholas Loubere is about to embark on a postdoctoral research fellowship at the Australian National University. He is an expert on rural infrastructure development, rural co-operative organizations and microfinance in China, and is currently investigating the co-operative acquisition and management of renewable energy technologies in Chinese villages.

Abstract
Short description, including alignment with conference themes and objectives

Several sessions at the 2014 conference pointed to the importance of social innovation for the adoption of technologies in marginalized contexts. It was concluded that the sustainable adoption of low-carbon technologies is conditioned not only by the technologies themselves, and on how they are provided, but also depends on how processes of technology development, financing, transfer and adoption connect with the institutional infrastructures at the local level. Multi-stakeholder collaboration and participatory engagement are now seen as best practice – but also as difficult and costly. As we witness a shift from technology-driven to stakeholder-oriented initiatives, questions arise as to how a more sustainable uptake of low-carbon technologies can be *organized*.

This session invites participants to discuss the roles of various forms of social organization in enhancing energy access in marginalized contexts, aiming to identify organizational processes and social innovations that open up new avenues for achieving the United Nations' goal of *Sustainable Energy for All*. Such innovations may relate to different forms of social organization, including multi-stakeholder partnerships, networks, and value chains; innovations in organizational form (e.g. renewable energy enterprises, energy co-operatives) and operational models; as well as policy-making and policy implementation.

Description
Proposed discussion focus

The provision of sustainable energy services to those who live at the margins of world society requires the development of innovative organizational and collaborative capabilities supporting the adoption of decentralized low-carbon energy services. Innovative institutional arrangements are currently being explored, as the transfer of institutional technology has yielded mixed results. A large number of papers presented at the last conference testified to the various organizational challenges faced by policy makers, technology providers, intermediaries and users in this field.

[SE11-ENE]

Social Innovations for Energy Access: Organizing "Sustainable Energy for All"

Description (Cont.)

Against this background, the proposed session aims to initiate an interdisciplinary debate on what kind of social innovations may facilitate sustainable energy access. The relatively wide scope of 'social innovation' (as opposed to just 'partnerships' or 'business models') is intentional. Recent research suggests that novel forms of organization, innovations in business and partnerships models, and in network formation and policies, are interdependent. Currently, these issues are addressed in distinct literatures, often on the basis of individual case studies.

This session aims to transcend these limitations in an attempt to identify best practice and potential synergies that open up new ways of addressing some of the challenges associated with the provision of sustainable energy services to marginalized populations.

Objectives
Justification and expected impact during and after the conference

Current debates around energy poverty and the 'productive use' of energy in marginalized contexts point to the importance of establishing the right organizational infrastructure. A dedicated session on this topic is timely and attractive for academics as well as practitioners from both the social sciences and engineering. By bringing together participants who have identified distinct kinds of social innovations, this session seeks to initiate a debate that transcends disciplinary divisions between business/market-oriented, policy-focused, and technology-driven practice and research. We are confident that our expertise in renewable energy partnerships, multi-stakeholder networks, microfinance, co-operative organizations and sustainable development will allow us to chair an interdisciplinary debate leading to the identification of social innovations and organizational processes that have significant potential for advancing the provision of sustainable access to energy.

Target Audience

The session would target a diverse audience of both practitioners and academics who work in the field of/conduct research on sustainable access to energy for marginalized populations (both rural and urban). We hope to facilitate further exchange and collaboration throughout the conference and beyond.

[SE12-ENE]

Catalyzing Innovation and Development through Targeted Capacity Building in Renewable Energies and Sustainable Food

Name:
Affiliation:

Federico Rosei and Louis Vervoort
Institut National de la Recherche Scientifique (INRS)

Brief Bio
Session Leader(s)

Dr. Rosei is a Professor at INRS and holds the UNESCO Chair in Materials and Technologies for Energy Conversion, Saving and Storage, since 2014. He is a physicist with wide-ranging interests that bridge from fundamental studies of surfaces and interfaces to materials for third generation solar cells. He has published over 200 papers in refereed journals and delivered more than 210 invited talks at international conferences. Since 2011, he has been the Director of the Centre for Energy, Materials and Telecommunications of INRS.

Louis Vervoort: Originally a polytechnical engineer from the University of Ghent in Belgium, I did a PhD in physics at the University of Marseille, France, and a post-doc at the École Normale Supérieure in Paris. My original field of research is condensed matter physics (in particular semiconductor nanostructures). My PhD was devoted to the question: How can we make silicon optically active, i.e. photo luminescent ? During my post-doc at the ENS I worked on the theory of new quantum properties of multi-quantum-wells; experiences which I put to use in my present-day research. After having worked a few years as a project manager and consultant in innovation, mainly in the semiconductor industry, I was appointed Coordinator of the UNESCO Chair MATECSS (Materials and Technologies for Energy Conversion, Saving and Storage), hosted at INRS, Montreal, Canada, in spring 2015. My main motivations to join this unique adventure are twofold. First, it allows me to be at the heart of what disruptive innovation in renewable energies and new materials may be in the near future. Second, it allows me to actively contribute to an endeavor that has a real sense. I believe that the global climate change is maybe the essential challenge of our time; and research in materials and technologies for green energy will significantly contribute to tackling this challenge.

Abstract
Short description, including alignment with conference themes and objectives

Sustainable energy and sustainable food technologies rely heavily on the use of advanced materials and modern engineering approaches. These promising new technologies cannot be deployed in a developing country without ensuring that there is a sufficient "capacity," i.e. enough engineers and scientists to ensure that technical know-how can be effectively implemented.

A promising approach to build capacity is through targeted programs that promote North-South and South-South exchanges and knowledge sharing at the University level. These programs can produce a small number (per unit time) of highly educated individuals (undergraduate and graduate students, professors) with advanced skills in science and engineering. Even few individuals with high-level training can catalyze change in their entourage by teaching, transferring their knowledge and implementing seed technologies that can be used to start local companies.

[SE12-ENE] Catalyzing Innovation and Development through Targeted Capacity Building in Renewable Energies and Sustainable Food

Abstract (Cont.)

The aim of this session is to identify critical factors and best practices for maximizing the impact of this targeted approach towards technical capacity building in low and medium income countries (LMICs).

How can we identify relevant problems and challenges specifically related to energy and food in LMICs and consequently design suitable solutions for developing regions? How can a relatively small number of scientists and engineers trained in materials science, physics and chemistry have the highest impact?

Description
Proposed discussion focus

Our leading question is: How can capacity building of young scientists from developing countries in renewable energy and sustainable food be leveraged to accelerate the deployment of technologies within these countries? A second, related question is: what are particularly promising and urgent fields of R&D to have impact within these countries?

As an example, targeted programs exist, like the one run through the UNESCO Chair in Materials and Technologies for Energy Conversion, Saving and Storage (MATECSS, start date: January 1st 2014), aiming to infuse targeted LMICs with small numbers of highly qualified personnel. MATECSS aims at hiring a minimum of 24 PhD students over its first four year term and to train them; and at fostering academic exchanges between participating institutions.

As an example, targeted programs exist, like the one run through the UNESCO Chair in Materials and Technologies for Energy Conversion, Saving and Storage (**MATECSS**, start date: January 1st 2014), aiming to infuse targeted LMICs with small numbers of highly qualified personnel. MATECSS aims at hiring a minimum of 24 PhD students over its first four year term and to train them; and at fostering academic exchanges between participating institutions.

The aim of this session is to discuss how highly trained individuals can be effectively used to expedite and support the development and deployment of essential technologies, with a specific focus on energy and food technologies. The discussion will also include ethical issues related to technological development. Other examples of problems to be addressed: is it feasible to identify particularly urgent and particularly high-impact R&D themes related to energy and food ? How to retain within the LMICs highly trained individuals that may not be supported by a viable technology sector within these countries?

Objectives
Justification and expected impact during and after the conference

The objective is to distill, through presentations and panel discussions, new insights and new answers to essential questions – insights and answers that should be endorsed by as many participants as possible. These questions are related to topics as:

- Priority themes and methods for science & technology managers in academia and industry
- Best practices for capacity building (always related to R&D in sustainable energy & food technologies for LMICs)

Catalyzing Innovation and Development through Targeted Capacity Building in Renewable Energies and Sustainable Food

Objectives (Cont.)

- The relative benefits of targeting different parts of the value chain (capacity building in Professors versus capacity building in students)
- Mechanisms for promoting the retention of highly qualified personnel in LMICs.
- Strategies for capitalizing on a targeted infusion of highly trained individuals to catalyze the growth of the energy technology sector
- Promoting women in science and engineering in LMICs
- Evaluating the impact of new energy and food technologies in relation to education in LMICs
- Ethical issues related to technology development and deployment in developing regions

Target Audience

The target audience is fairly large, and while it comprises in the first place people from academia, it is expected that also stakeholders from industry and government will be interested in our discussion themes. Thus our targeted public consists of graduate students and established researchers and teachers in science, engineering and social sciences; and potentially of decision makers in industry and government.

[SE13-ICT] Migrants, Diasporas and ICTs Adoption in the South

Name: Solène Morvant-Roux
Affiliation: University of Geneva, Senior Lecturer and Researcher

Brief Bio
Session Leader(s)

Solène Morvant-Roux is a socio-economist, senior lecturer, and researcher at the University of Geneva, Switzerland. She holds a PhD in economics from Lyon University (France). She has been involved in several research projects in Morocco, Mexico and in the Dominican Republic funded by French Foundation for Science, European Investment Bank, etc. Her current research topics include: financial inclusion and conditional cash transfers, households financial practices, rural credit markets, mobile banking and remittances in West Africa.

Abstract
Short description, including alignment with conference themes and objectives

Until recently migration dynamics have mostly been analyzed through their economic (positive or negative) impact on migrants' homelands. Following the seminal work of Levitt on Social remittances (Levitt, 1998), scholars have started to look at other kinds of transfers such as: ideas, attitudes, identities, know-how, new practices and skills, etc. In the meantime, a great deal of research has been conducted on information technologies towards low-income urban and rural populations in the Global South. The session intends to link these two strands of the literature to better deepen our understanding of the role played by migrants- understood as individuals or collectively, the diapora- (south-south or south-north migration) in the adoption and diffusion of information and communication technologies in migrants' homelands.

Description
Proposed discussion focus

The session will seek to address the question of the role played by Diasporas in the adoption of new IT solutions among rural populations. The session intends to welcome proposals that will provide empirical analyses of the links between ICTs, migration and migrants' families, homeland. The session not only intends to look at migrants as drivers of ICTs uptake and usage but will also try to address the social impact of these ICTs on migration dynamics and power relationships among migrants' family members. Actually, our assumption is that the adoption of a specific ICT device will induce a reconfiguration of family relationships and hierarchies. A specific focus of the session will be on the recent launch of Mobile Money services to channel international remittances. Other ICTs may include mobile phones, internet, etc.

Objectives
Justification and expected impact during and after the conference

The session is in line with the conference's objectives: ICTs for development. It brings a cutting-edge research topic to the conference that will allow people working on migration issues meet with people working on ICTs for development (two hot topics in the field of development). The topic of the session is very much connected to a research project I am leading on mobile money usage by Burkinabé migrants workers in Ivory Coast. The project is starting but we can imagine that this session will allow building a new research network –network building- on such issues in order to build a bigger project in the near future (the European Investment bank is funding research on mobile banking in West Africa). Finally, in case the papers are good enough we can think of a publishing a special issue.

Target Audience Social scientists, policy makers, private actors.

[SE14-ICT] IoT4D: Potential and Open Issues in IoT for Development

Name:	Marco Zennaro
Affiliation:	UNESCO International Centre for Theoretical Physics (ICTP)

Brief Bio
Session Leader(s)

Marco Zennaro is a researcher at the Abdus Salam International Centre for Theoretical Physics in Trieste, Italy, where he coordinates the Telecommunications/ICT4D Laboratory. He received his PhD from the KTH-Royal Institute of Technology, Stockholm, with a thesis on Wireless Sensors for Development. His research interest is in ICT4D, the use of ICT for Development, and in particular he investigates the use of IoT in Developing Countries. He is a Visiting Professor at Kobe Institute of Computing, Japan.

Abstract
Short description, including alignment with conference themes and objectives

The Internet of Things (IoT) has the potential to change the world, just as the Internet did. Maybe even more so. Applications of IoT can greatly benefit populations in Developing Countries: food safety can be checked, water quality can be monitored, air quality can be measured, landslides can be detected and mosquitoes can be counted in cities in real time. To realize these benefits, a number of issues faced by IoT applications in Developing Countries have to be tackled: intermittent energy availability, low speed Internet connections, harsh environmental conditions, privacy issues for underrepresented communities. These peculiar issues require solutions that will then drive new IoT architectures. Building on existing deployments, this session will look at lessons learned from the use of IoT in Developing Countries. We will look at the social impact of IoT and how privacy and security issues were tackled. We will discuss the best technical solutions in terms of connectivity and energy sustainability.

Description
Proposed discussion focus

The focus will be on IoT solutions that fit development goals, from the technical and the social points of view. As ICT in general, IoT technology was designed for the industrialized world. A lot of attention is given to products and devices that fit our world (the Nest energy meter, for example) but that are not particularly useful in the south. In most Developing Countries, IoT applications require different technical solutions (longer wireless links that the ones used for the Nest, for example) and a different user interface (people most in need are not able to understand graphs or figures. I am thinking of farmers monitoring irrigation in fields). From the social point of view, we will discuss about privacy and security issues in the context of development. Ownership of data will also be discussed, especially for communities that don't value data as such.

Objectives
Justification and expected impact during and after the conference

As the problems tackled by IoT researchers and practitioners fall into a limited number of categories (environmental monitoring, air quality, water quality, smart agriculture, weather monitoring etc), it is paramount to establish a network of IoT4D experts working in this domain. The network will provide a way for researchers to share solutions and to collaborate on finding the best solution to their problem. Ways to interact may include social networks, portals, mailing lists, specialized scientific conferences and expert meetings. Particularly important is the exchange of information among researchers from the South, in a South-to-South collaboration.

Target Audience

Researchers in ICT4D; practitioners in IoT4; students interested in this new technology; decision makers that want to understand the potential of IoT for development.

The Contemporary City in the North-South Debate: Innovation Trajectories in Research and Practice

Name: Jean-Claude Bolay and Marija Cvetinovic

Affiliation: Ecole Polytechnique Fédérale de Lausanne

Brief Bio
Session Leader(s)

Prof. **Jean-Claude Bolay**, director of Cooperation@EPFL (2001-2005) and CODEV-EPFL since 2005. A sociologist by training, he specialized in urban issues in Latin America, Asia, and West Africa. He prepared his PhD in Political Sciences at El Colegio de Mexico, then at UC Berkeley, USA. He has carried out many international research projects in urban societies, sustainable development, and poverty reduction in developing countries. He was a scientific advisor and evaluator for Swiss and European institutions. Since 2005, he is Adjunct Professor at LASUR-EPFL.

Marija Cvetinovic is a PhD candidate at EPFL, her research focuses on urban development, post-socialist urban planning and participatory processes and their potential to reduce the negative effects of globalization and urbanization in post-socialist cities. She obtained her Master degree in Architecture (University of Belgrade), has worked in architectural practices, and been involved in artistic and social activities in Belgrade which gave her a broader picture of current potentials and conflicts in transitional countries.

Abstract
Short description, including alignment with conference themes and objectives

The city is dynamic, itinerant, multi-layered, contingent.

It is an arena of exchange among urban actors and stakeholders, built environment, technologies and infrastructures. This is accentuated in the modern globalised world where the rapid flow of people and information has profoundly transformed the perception of space and time, lifestyles and our sense of community and self. In these circumstances, the contemporary city becomes an interface of flattened reality in which the various disciplinary concepts are merely particular entry points from which to reflect on cities and to address the urban in its elusive complexity and dynamics. Meanwhile, the focus of these processes and their immediate effects has shifted to poorer and less developed regions. Although the urban conflicts faced by developing countries seem particularly serious and complex, the possible solutions are not radically different from those applied in developed countries.

Moreover, the principles and aims are the same: theoretical and empirical approaches to cities have underlined both the characteristic complexity and uncertainty of research and the goal-oriented and interest-based nature of practice. This situation has brought to the fore technological innovations that transcend disciplinary approaches in urban theory, practices, techniques, expertise and politics. At this point, we are interested in how technologies cut across the borders of disciplines and foster innovative methods, techniques, instruments and tools in urban planning, management and governance which endeavour to underpin the city and guide its development.

The Contemporary City in the North-South Debate: Innovation Trajectories in Research and Practice

Description
Proposed discussion focus

This session welcomes proposals that:

- Examine the relationship between technologies, knowledge and power in advanced technological, technical and methodological approaches in urban research and practice in the Global South, with an emphasis on developing, emerging and transitional countries;
- Discuss the interplay between the different power poles that deal with urban planning, governance and management. How can we resolve the problem of translating concepts and grafting inappropriate solutions from developed to developing environments? Can we find common ground where contextualized theory, practices, techniques, expertise and politics come together?
- Encourage a critical observation of several contemporary strategies of urban development or of urban planning that integrate social impact (smart cities, sustainability, resilience, urban renewal, green field, brownfield, developed and developing cities...);
- Establish, demonstrate and promote ICT as a tool for efficient urban planning, implementation and governance;
- Discuss new governance models, arrangements and mechanisms in the Global South to address issues of decision making, the rule of urban laws and institutional regulations, the evaluation of plans, policies and projects, and illegal and irregular land occupation and construction;
- Tackle strategies, approaches and tools to enhance the social impact of various urban decision making approaches (top-down and bottom-up) through the use of technological solutions and tools;
- Address the future of technological innovation within the framework of planning ideas, instruments and procedures to direct urban governance and management processes in cities.

Objectives
Justification and expected impact during and after the conference

The session will concentrate on knowledge transfer and encourage the exchange of North-North, North-South, South-North, and South-South experience with regards to the various stages in the application of technological and methodological innovation in the academic, administrative, technical and practical domains in cities and in urban research. In terms of the topic, a multifaceted and unpresuming attitude toward cities, urban research and practice provides opportunities to consider risks and examine challenges in promoting technological innovation for urban development and social change in a variety of cities, all of which are equally significant in their socio-spatial contextual particularity. In this respect, the prospective dissemination of endeavours, attempts and results among the scientific community (including students), policy makers, practitioners and the general public, brings us a step closer to formulating the path of innovation in urban research and practice. Therefore, the intended far-reaching goal is to empower the scientific community, local stakeholders, non-governmental and civil sectors dealing with these topics (urban development, governance, management and planning) and bring about trans-, multi- and pluri-disciplinary cooperation for technological and social innovation.

[SE15-HAB]   ## The Contemporary City in the North-South Debate: Innovation Trajectories in Research and Practice

Target Audience   Both Global North and South professionals from:

- Scientific community (academics, PhD students in urban studies, urban planning, architecture, social design)
- Stakeholders at the local level (authorities and governments, policy makers, national and international non-governmental organisations)
- Urban professionals (architects, engineers, urban planners)

[SE16-HAB] Global Engineering and Sustainable Development

Name:	Shaukat Ali Mirza
Affiliation:	Engineers Without Borders – India (EWB-India)

Brief Bio
Session Leader(s)

Dr. Mirza is the Chairman of EWB India since April 2014 and was instrumental in catering the needs of under privileged members of the society in the areas of sanitation, water management, power (solar) and education. The list of his successful ventures can be seen at www.ewb-india.org.

Formerly the President of American University of Ras Al Khaimah, UAE, Dr Mirza was also instrumental in establishing George Mason University Ras Al Khaimah Campus and RAK Medical & Health Sciences University in UAE. He also held several important positions in Switzerland, USA and in India.

Abstract
Short description, including alignment with conference themes and objectives

In spite of global development there are global inequalities between privileged and underprivileged sections in every society, but most poignantly in developing countries, where abject poverty still persists. While the primary responsibility lies on local government to provide the basic necessities, the role of a non-profit or non-government organization cannot be ruled out and is taking a lead all over the world.

Engineers Without Borders is one such organization which has attained a "brand" in 58 countries. Though each Member country works on subjects which are more relevant for their respective citizens, each one in general creates a sense of responsibility among engineering graduates and other professionals to contribute to the development of the disadvantaged communities. Each member country tries to make the young engineering graduates or professionals to understand their social obligation and should be able to mold their knowledge, wisdom and aptitude to work for a better and more egalitarian society.

EWB India has been actively engaged in promoting the concept of humanitarian engineering among its members and the results are very positive. Improving sanitation facilities and continued research on bio-digestors, providing solar lights, providing smoke free stoves, street-cleaning drives has created awareness among the masses.

A discussion and sharing of projects, thoughts and ideas will be beneficial for all the members of the society, particularly for those from developing and under-developed countries.

Description
Proposed discussion focus

Calculations suggest that in the next two decades, almost two billion additional people are expected to populate the Earth and this growth will create unprecedented demands for energy, food, land, water, transportation, materials, waste disposal, health care, environmental cleanup, telecommunication, and infrastructure. Considering the problems that our planet is facing today, and the problems expected to arise in next few more years, the engineering profession must revisit its mindset and adopt a new mission statement - to contribute to the building of a more sustainable, stable, and equitable world.

[SE16-HAB] Global Engineering and Sustainable Development

Description (Cont.)

An issue of equal importance is the education of engineers interested in addressing problems specific to developing communities. These include water provisioning and purification, sanitation, power production, shelter, site planning, infrastructure, food production and distribution, and communication, among many others. Unfortunately, such problems are not usually addressed in engineering curricula hence they could not address the needs of the most destitute people on our planet.

Engineers of the future must be trained to make intelligent decisions that protect and enhance the quality of life on Earth rather than endangering it. Preparing engineers to become facilitators of sustainable development is one of the greatest challenges. Meeting this challenge may provide a unique opportunity for renewing leadership as we enter the twenty-first century.

Objectives

Justification and expected impact during and after the conference

The word "engineer" comes from the word "genius" and hence it is expected that with his/her knowledge, wisdom, aptitude and skill he/should be able to take up the task to solve the societal basic problems which are health, sanitation, power, water management, transportation, infra structure, etc. It has been observed that the more we are propagating the term "service to the society," the more response we are getting, particularly from the younger generation. Government alone cannot take up these challenges which are growing exponentially.

Though EWB USA, EWB India, EWB Australia and EWB UK are in forefront, but still there are more than 62 countries where EWB actively working with young students and professionals and trying to find sustainable solutions for the growing problems.

Corporates and business houses should also come forward and fulfill their obligation under Corporate Social Responsibility (CSR).

Target Audience

- Engineering graduates, young professionals who are keen to work for the betterment of the society.
- Heads of business houses who can fund the projects
- Members from Non-Government Organizations, Community Leaders
- Faculty/academicians who can be convinced to take up this subject to their classrooms and continue to develop the mindset of the student irrespective of their academic interests.

[SE17-CCI]   Measuring Development Outcomes: A New Frontier in Development Engineering

Name:
Affiliation:

Temina Madon
Center for Effective Global Action (CEGA)
University of California Berkeley

Brief Bio
Session Leader(s)

Temina Madon directs the Center for Effective Global Action (CEGA), a research network headquartered at the University of California, Berkeley. CEGA creates innovative products, services, and technologies for economic development. Madon has advised the WHO, World Bank, and Gates Foundation. Previously, she held positions in science policy at the National Institutes of Health and U.S. Congress, where she served as AAAS Science and Technology Policy fellow. She has a PhD in health sciences from Berkeley and an SB in engineering from MIT.

Abstract
Short description, including alignment with conference themes and objectives

Development engineering (Dev Eng) applies principles from engineering, economics, and the social sciences to solve challenges arising from global poverty. A core focus of the Dev Eng research community is to improve the measurement of development indicators. How can we cost-effectively capture inputs from low-income, remote, and excluded communities? How can real-time, high-frequency, more reliable information be integrated into social policy and program design? How can we track progress toward poverty reduction—especially in light of the new Sustainable Development Goals (SDGs)?

New technologies—from satellites and mobile data streams, to sensors and administrative "big data"—are revealing the demands, preferences, and realities of people living in poverty. This rich information can inform the design of new products, services, and interventions that target poverty alleviation. It also facilitates the evaluation of new anti-poverty strategies and learning about what works. However, mainstreaming these innovations within the social sector has proven slow, given budget constraints, missing technical expertise, and lack of incentives to improve efficiency.

This session invites researchers and private sector product developers to showcase new measurement technologies and strategies that have been adapted for use in developing country contexts. Presentations will highlight how these innovations affect development practice in the field—in terms of resource allocation, program decision-making, and evaluation. We will also examine issues related to privacy and safety, particularly in fragile or conflict-affected areas.

Description
Proposed discussion focus

Global social, ecological, and financial systems have become increasingly unstable and unpredictable in recent years, fueled by climate change, population growth, and resource scarcity. These shifts profoundly affect the poor and require development agencies to become more resilient to change. Organizations that provide social services—from NGOs and social enterprises to governments and multilaterals—will need to become more aware, networked, self-regulating, and adaptive.

Measuring Development Outcomes: A New Frontier in Development Engineering

Description (Cont.)

All of this relies on accurate measurement and monitoring of human and environmental welfare indicators, across different scales and units of analysis. Agencies need to know which communities to target in a disaster, and which households are most vulnerable to shocks. They need to know which services to offer, and how users will respond over time. Recent advances in information technology and remote sensing have revolutionized our ability to track community-level trends, often in real-time and in difficult settings. Yet few governments or NGOs are keeping pace with this trend.

We will invite speakers from the World Bank/multilaterals, USAID/development agencies, and large NGOs to discuss the ways that they are integrating novel measurement technologies into their work. We will also invite contributions from private sector companies (like Planet Labs, Skybox, Premise, Real Impact Analytics, Visa) to discuss the novel data streams they are generating in emerging countries. Finally, we will hear from academics who have partnered with both development organizations and companies to drive innovation in the measurement of development.

Objectives
Justification and expected impact during and after the conference

This conference session will provide development practitioners with opportunities to learn about continuous, reliable, and real-time measurement technologies that are capturing outputs related to agriculture, food security, water quality, market prices, energy access, and more. It is expected to foster new partnerships and collaborations among Dev Eng researchers, technology developers, and service agencies. Results may include new research projects, the scale-up or adoption of innovative approaches, and the development of a more formal network of people and institutions involved in measuring development outcomes.

Target Audience

Researchers in development economics, ICTD/computer science, electrical engineering, mechanical engineering, environmental sciences, and political science; private sector software development companies (e.g. satellite, mobile/telco, IoT); development practitioners and decision makers seeking to adopt better measurement technologies and solutions.

[SE18-CCI] Incubating Tech4Dev and Accelerating Impact

Name:
Affiliation:

Kate Michi Ettinger
Mural Institute, Director

Brief Bio
Session Leader(s)

Kate Michi Ettinger, Senior Fellow, Center for Health Professions, UCSF, is a social innovation consultant, product designer and health care ethicist with over fifteen years of health-related experience in private, government, academic, non-profit sectors. Kate consults with foundations and incubators that support early stage social impact ventures.

Abstract
Short description, including alignment with conference themes and objectives

We have seen that social technology, such as Tech4Dev, take more time than traditional technology to achieve market impact. Incubators and funders (philanthropic and impact investors) are instrumental in enabling a new technology to reach substantial distribution, and they often work together to respond to the needs of new ventures and to shape an emerging market.

Incubators focus on advancing a business: from concept to pilot or from first market to scale. Increasingly, domain specific incubators have emerged (e.g. health, energy, hardware, BoP). These incubators and their funders leverage sector specific savvy in order to accelerate the impact of their portfolio companies. Working with multiple cohorts of companies, incubators and funders have an unique macro level perspective on critical decisions, barriers overcome, challenges navigated and failures.

Learning from this product/technology driven approach, it has become apparent that systems level change often needs to accompany an enterprise with pioneering social technology. As a result, some incubators and funders have adopted an ecosystem or systems level approach to incubation that may include concurrently supporting policy/regulatory initiatives, supply/distribution chain ventures, or other ventures that engage relevant stakeholders. This panel invites incubators and funders to present insights from these diverse approaches on how to accelerate impact for Tech4Dev ventures.

Description
Proposed discussion focus

This panel will feature incubators, accelerators and/or funders of Tech4Dev initiatives. The discussion will focus on the insights that come from this high level view of the landscape, the learning acquired as facilitators of several cohorts. This panel highlights key learning from incubators and funders' experiences with Tech4Dev ventures. Using specific examples from their portfolios to highlight facilitators of success and common issues that arise as well as insights from failed ventures. Our discussion will focus on identifying the drivers of successful Tech4Dev initiatives. We will consider new models for how best to incubate these Tech4Dev ventures in order to accelerate their impact.

Objectives
Justification and expected impact during and after the conference

The objectives are three fold:

1) To learn about new models for incubating Tech4Dev ventures
2) To feature key learning on facilitators of success and common barriers for Tech4Dev ventures from a macro level
3) To develop a roadmap for how Tech4Dev ventures can achieve impact

Target Audience

This panel is intended for entrepreneurs, consultants, incubators and funders. It will also be valuable for governments and policy makers who seek to foster a technology friendly environment within their markets.

[SE19-CCI]

From Developing to Scaling-Up Innovative Social Businesses at the Base of the Pyramid

Name: Grégoire Castella and Jérôme Voillat
Affiliation: Antenna Technologies Foundation

Brief Bio
Session Leader(s)

Grégoire Castella: After completing his PhD in Life Sciences in 2008, Greg got out of the lab and joined the International Committee of the Red Cross. He served as a delegate and manager in Ivory Coast, Afghanistan and Colombia. After returning to Switzerland, Greg joined Antenna Technologies, an innovation-for-development foundation, which has successfully brought to the market innovative products to meet the basic needs of people living at the BOP. Greg and his team recently launched OOLUX SA, a startup marketing a solar kit designed for off grid populations.

Jérôme Voillat: After studying international business in Reins, Jérôme worked in various positions in large private companies. He was then involved several years in the non-profit sector as project manager (Cameroon and Laos). Following these field experiences, he was appointed in Paris as project coordinator for an EU cooperation program in the horn of Africa. He joined Antenna Technologies Water Department early 2015. With his team, he implements projects on autonomous technology and business models for vulnerable communities lacking access to safe water.

Abstract
Short description, including alignment with conference themes and objectives

Identifying and understanding the challenges of scaling up social businesses is key for technology-for-development entrepreneurs. From spotting a promising technology, developing its potential, to scaling it up and building a commercially viable company, many obstacles await the social entrepreneur. At every stage, the startup has to tackle external and internal barriers, ranging from expanding reach, changing a customer's mindset, to accessing financing or building in-house expertise.

This session will entail presentations of companies at every step of the business development. The discussion will focus on successful business models that brought to the market innovative solutions to reach the customers (last-mile distribution) and to make the technology affordable. Concrete field examples from various industries (incl. solar energy, safe water, and medical technologies) will emphasize solutions that work. The session objective is to draw general lessons that will benefit stakeholders active in various social businesses and to identify the key factors young entrepreneurs should keep in mind when designing their own business model.

This session will allow experienced and aspiring social entrepreneurs in technology-for-development businesses to interact and figure out what hurdles still need to be overcome to scale up the ventures to create even greater social impact.

[SE19-CCI] From Developing to Scaling-Up Innovative Social Businesses at the Base of the Pyramid

Description
Proposed discussion focus

Speakers will be invited from various technology-for-development fields and from companies at different stages of business development. Building on their respective experiences implementing social businesses, the speakers will be asked to focus on their key factors for success and also on the major obstacles they have had to overcome to scale up their enterprise. Representatives of recently created startups will detail their development perspectives and the critical factors they consider necessary to scale, while speakers from more mature companies will focus on the solutions they built to expand their reach, such as adaptive social marketing to reach new markets or building and retaining human capital for their business.

Specific barriers encountered by larger inclusive businesses will also be discussed. Finally, the discussion will address the challenge of increasing social impact while scaling. The debate should be lively, drawing on the experience from the panel, audience, and from representatives of Antenna Technologies Foundation. Its expertise in the fields of solar energy, safe water, and agriculture, as well as the experiences of its successful spinoffs will also enrich the debate. The lessons learned, tips and ideas highlighted during the session will be shared with all the Tech4Dev counterparts during the Plenary.

Objectives
Justification and expected impact during and after the conference

Young and creative social entrepreneurs often lack expertise in how to build and scale up their businesses. In the field of Tech4Dev in particular, it is often difficult to gather the different sets of necessary skills (technological expertise, management skills and social impact sensitivity) in a limited-size startup. It is thus important for young entrepreneurs to profit from more experienced social managers. The UNESCO Tech4Dev International Conference is the perfect forum to achieve this.

The debates will give experienced participants the opportunity to share and discuss lessons learned, as well as to examine new ideas from less experienced entrepreneurs. Early stage critical factors such as local communities' involvement in the innovation process, adapted social marketing or clear partnership strategies will be identified and the key factors to scale successfully will be pointed out. The outcomes should help young technology-for-development entrepreneurs' scale up their business.

Target Audience

The session aims to put together experienced social entrepreneurs, technology-for-development startup managers and young talents wishing to launch their own company. Real cases discussed will range from solar industry, to safe water and agriculture. Participants should be motivated to develop and to learn about market-driven innovative solutions for essential needs in the Global South.

[SE20-CCI]　Paths Towards Impact: How to Evaluate Technology for Development Interventions

Name:　Marina Cracco

Affiliation:　Ecole Polytechnique Fédérale de Lausanne

Brief Bio
Session Leader(s)

Marina Cracco is a sustainable development professional with experience working on project and program evaluations, biodiversity, climate change adaptation, environmental and social safeguards, gender and protected areas. She has over 17 years of experience in regional, non-governmental organizations and multilateral development funds. Prior to joining CODEV as the Education Program Coordinator, she was task-managing the First Phase of the Adaptation Fund Evaluation, and the Cuba Country Portfolio Evaluation and the Peru Impact Study for the GEF Independent Evaluation Office.

Abstract
Short description, including alignment with conference themes and objectives

Technology for development interventions must achieve a double set of impacts; those related to the innovation or technology effective operation, uptake and sustainability in particular and those concerning development and social and environmental impacts in general. Evaluating these sometimes potentially opposite impacts is challenging.

This session will devote time presenting experiences and discussing approaches that could offer researchers and practitioners ideas on how to develop pathways towards development impacts.

The session is aligned with all the conference themes because evaluation is a cross–cutting subject. It particularly aligns with specific topics of three conference themes: medical technologies (social impact assessment and field experiments), energy (feasible, sustainable, cost-effective provision of energy) and humanitarian aid (performance and impact evaluation of technological innovations).

Description
Proposed discussion focus

This session will strive to understand the role played by evaluation frameworks and tools to understand the social, economic and environmental factors that promote or hinder the design, adoption by beneficiaries and scale-up of technologies and technology-based interventions that have a development goal.

In the session, case studies and examples of theory formulations and application of methods (including experimental and quasi-experimental designs) will be presented as well as experience measuring social and environmental outcomes and impact of technological interventions and technologies in any of the six core thematic areas of the Conference.

This session will focus its case studies in examples of impact evaluations and evaluations tools that show positive changes in livelihoods achieved by a technology or technological intervention or innovation, specifically quantifying changes in behavior (adoption and uptake) of a technology or impact evaluations that exemplify the challenges of achieving such changes.

[SE20-CCI]

Paths Towards Impact: How to Evaluate Technology for Development Interventions

Objectives
Justification and expected impact during and after the conference

The 2016 UNESCO Tech4Dev Conference is not about *innovation* and *social impact* separately, but about potential paths from innovation to social impact. Specifically, to understand how through innovation we can achieve social impact. Evaluation is the process that helps researchers and practitioners to understand these paths. Evaluation asks: Is the innovation per se bringing the expected impact? How effective is the innovation or technology in the specific development context?

The objective of this session is to try to answer these questions and contribute towards explaining and presenting some of the evaluation approaches and lessons that could be applied to technology for development interventions. The expected outcome of the session is to strengthen participants' knowledge on evaluation of technology interventions for development. Better design and implementation of effective interventions with clear paths to the achievement of social and environmental impacts could be a secondary outcome of the session.

Target Audience

- Researchers working in the development of a technology or a technological intervention
- EPFL and other Academic Institutions' Students wanting to learn more about impact and how to measure it
- Private sector and entrepreneurs
- Government, Multilateral and International Organizations and policy makers
- Professionals working on the design, implementation and evaluation of projects, programs and technologies for development