Development 2.0: Principles and Warnings for Leveraging Advances in Information Communication Technologies for Improved Development Efforts

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ABSTRACT

Advances in Information Communication Technologies (ICT) have demonstrated tremendous potential for solving development challenges and improving development processes, culminating in the new Development 2.0. Many development practitioners have embraced ICT (particularly on Web 2.0 and mobile phone technologies and applications), which have become hot topics in both the development community and the policy community as they engage in development practice and dialogue. Despite this excitement, there lacks among the policy community a robust understanding of the powers and pitfalls of ICT in development, executed actions to back the excited chatter, and dissemination of this understanding to practitioners and policymakers alike. We conducted a literature review, interviewed experts, and engaged in discussion with leaders in international development and science and technology policy to provide an operational framework base in which to view ICT in development. This framework regards ICT as tools that support more effective and efficient community development actions and appropriate consideration of general guidelines, which enable better engagement across and within sectors and individuals. Flexibility and accountability are critical requirements pervading throughout the various actions and guidelines, which promote transparent, partnership-based, and sustainable development. We highlight the strengths and weaknesses of ICT to focus on the cautions to keep ICT access and distribution in context, understand the various levels of technologies and services, and dig below the surface as excitement about ICT increases and threatens to become a short-term solution. We offer ideas for specific programs that policymakers can implement to contribute to a more efficient and effective development process to ultimately support global human development, but stress the endless possibilities that can be explored with creativity and flexibility beyond what is proposed here.

KEYWORDS: Information Communication Technologies (ICT), Development 2.0, Web 2.0, mobile technologies, accountability, flexibility

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1.BACKGROUND

Envision a future where distributed teams of local and foreign aid workers collaborate side-by-side, foster relationships of trust, and exchange ideas at the local level. Simultaneously, they relay observations, performance metrics, and success stories from the field to colleagues in neighboring regions, as well as back to foreign aid countries for "reachback" support from other government partners. This is one vision of Development 2.0, a relatively nascent term that is being used to describe a new way of doing development by harnessing and integrating the latest technologies into the development process and challenge solutions.

Many experts believe that advances in Information Communication Technology (ICT) can be better leveraged to solve both problems in developing countries and challenges in the international development process. The use of ICT for either of these applications varies greatly across the different stakeholders. While there has been a surge of interest in applying ICT to solve problems in developing countries, appropriate integration with development has lacked in many cases. For example, cell phone applications have been created to be used with Smartphones in countries such as Uganda, where the majority of mobile phones do not have data capabilities or affordable data plans. In addition, ICT use to solve individual challenges as stakeholders in the international development process has remained on the sidelines. For example, interagency collaboration between United States of America (US) government agencies has been a major challenge that includes the development arena. As the US Agency for International Development aims to work closely with the Department of Defense, Department of State, and other agencies, they struggle to communicate and work closely together, partially due to the lack of integrated interagency information and a collaboration virtual network.

2. INTRODUCTION

The overarching goal of Development 2.0 centers on using ICT to support global human development. Advances in ICT create tools, such as Web 2.0, mobile technologies, and interoperable standards, which can facilitate process improvements and support learning from past successes and failures in international development operations. Development 2.0 tools support development community actions. The development community can incorporate ongoing feedback, effectively communicate and collaborate, appropriately monitor and evaluate, and integrate user-centered design. These actions enable better engagement within government, from government to people, from people to people, and from people to government, that support general guidelines to promote transparent, partnership-based, and sustainable development and critical requirements that pervade good development, flexibility, and accountability.

Integration of Development 2.0 tools in development activities benefits developing countries and industrialized countries. These tools enable the efficient allocation of limited funds, increased visibility and recognition of work in development, improved situational awareness, and integrative development and application of future ICT. Today, the policy community has tremendous potential to increase the effectiveness and efficiency of development through ICT by:

(1) Better understanding the powers and pitfalls of ICT in development

(2) Acting upon this understanding by exemplifying the use of ICT for various facets of development

(3) Disseminating this understanding and provoking continual discussion throughout the policy community

In parallel with increasing political commitments to global development using technology, policymakers must increase their use of past lessons learned and carefully embrace new tools and technologies. Tangible commitments and pilot programs from leading governments such as the United States would signal a seismic shift towards improving the processes, culture, and international perspectives associated with foreign involvement in development. In particular, there is a tremendous wealth of resources in mobile phone applications and Web 2.0 capabilities of information sharing, interoperability, user-centered design, and collaboration, which could increase the effectiveness and efficiency of the development community.

Below, we describe several applications of ICT and potential roles for the policy community. Beginning with a discussion of cautions for potentially inappropriate use of ICT in development, including warnings to not let successes pigeon-hole our vision into single technology-based Band-Aids. We then provide a basic framework of principles for Development 2.0 to serve as a launching point for further discussion, and conclude with example action items for policymakers.

3. INAPPROPRIATE USE OF ICT

As ICT becomes increasingly prevalent around the world, it is being increasingly applied to development as the winning solution to many development challenges. As with any relatively new trend or burst in effort, the consequences must be carefully evaluated before, during, and after actions. In particular, mobile phones have often been referred to as the golden example for a technology that has spread wide and far with a great potential to solve both Type A and Type B development challenges. With mobile phones globally pervasive, there is tremendous potential through this widely proliferated technology, but cautions must be taken to help overcome the increasing sentiment of mobile phones as a magic bullet.

CAUTION 1 | ICT Access While mobile phones are increasingly prevalent in developing countries, there is still a large proportion that does not have access to a mobile phone, and even less with access to the Internet. For example, the World Bank noted that only 28% of Africans now have a mobile phone subscription. This subscription is often shared among several individuals or entire communities. While this is certainly an improvement, reliance solely on the mobile phone could miss 72% of the African population. There are a variety of ICT already available in the developing world, including televisions, radio, and walkie-talkies, that have had limited attention, but has tremendous potential for communication, especially when used in conjunction with mobile phones. With expanded technologies in the developed world that seek to bridge various ICT, there is tremendous potential for linking the Internet used so prevalently in the developed world with the various ICT spread throughout the developing world.

CAUTION 2 | Uneven Distribution Despite increasing numbers of mobile phones and access to

other ICT, there are cautions that ICT usage (including mobile phones) may not be spread evenly throughout the population. In areas where women take care of the family and bring in the primary source of income, men may be the primary users of the household mobile phone. As such, even when ICT is available, it may not be used most effectively. Whereas it could be used for market notifications and health information by women, it may be used solely for personal communication. More attention should be paid to the demographic distribution of ICT in general, and work towards a more even distribution where the ICT can become a more effective tool in other areas of development.

CAUTION 3 | Various Levels of Technology Mobile phones in developing countries range from the most advanced Smartphones comparable to those found in the most technologically developed countries to basic 1G flip phones. Though nearly all of these mobile phones have call and SMS abilities, many do not have ability to access the internet or data capabilities. In addition, many of these phones have smaller, basic screens, which may be conducive to only short messages. Not all mobile phones are made alike; as applications and uses for mobile phones are developed, the various levels of technology and their capabilities and limitations must be taken into account.

CAUTION 4 | Limited Service and Energy While mobile phone coverage is expanding in many developing countries, in areas like where Sani Lodge is situated in the Coca region of the Ecuadorian Amazon, individuals may have mobile phones, but irregular use due to poor signals or limited energy sources. At Sani Lodge, mobile phone users had to climb to the top of a man-made tower to get above the tree line. They had unique energy sources for their community-run lodge, but neighboring communities struggled to find regular energy sources to charge their phones. As programs are developed using ICT, energy sources and more reliant service must be considered to avoid disseminating technology that will quickly become obsolete.

CAUTION 5 | Pre-Paid Minutes Many mobile phone users in developing countries rely on the SMS function rather than the call function due to its affordability. Minutes and messages are often prepaid and relied on as the sole means of communication compared to countries such as the United States where there are monthly and yearly plans, often with unlimited options. When developing mobile phone applications or programs for development, both the types of plans available and those most often subscribed in the communities of interest must be taken into account. Just because an individual has a mobile phone and uses SMS does not mean that they will be able to partake in a program which requires SMS every day. There have been creative uses of these plan limitations, such as services in areas where incoming calls are free, where mobile phone users can call a hotline, hang-up before it is answered, and receive a call back from the hotline.

CAUTION 6 | ICT as a Band-Aid Regardless of the ICT being employed, there are limitations to the technology. ICT are tools, not necessarily the solution in themselves. Particularly for many Type A challenges (outside of communication and information challenges), technology can be used to meet the Type B challenges by solving Type A challenges, but cannot solve the Type A challenges themselves. ICT can be attractive and easily publishable solutions, but can be short-term solutions to growing problems that can become unmanageable if not carefully investigated. It is essential that policymakers look beyond the glimmering façade of ICT and understand the core problems and issues that need to be solved to avoid having a large discrepancy between reality and what policymakers think we have or have not accomplished.

With a vast array of development challenges, understanding the various layers and types of problems can be a challenge in itself. For simplicity, here we have broadly categorized challenges into Type A (challenges faced by low income communities) and Type B (challenges faced by those trying to tackle Type A) as described above.

Many experts believe that advances in Information Communication Technology (ICT) can be better leveraged to solve both problems that low income communities directly face (Type A) and those that individuals and organizations face when working to solve those challenges (both internal and external members of these communities) (Type B).

Sani Lodge is an example of a solution to a Type A development challenge that then faces a Type B development challenge as it aims to help other low income communities face their Type A challenges. **Sani Lodge** was the first community-built and community-owned ecolodge in the Coca region of the Ecuadorian Amazon. As the sole owners, the Sani community runs the lodge and freely manages the profits as they see fit. Since the creation of the lodge, neighboring communities have requested their assistance in starting their own ecolodge. The Sani community has assisted them in brainstorming ideas, assessing strategies, and using their own experiences to share their lessons learned. However, this information sharing is limited to word of mouth despite many of these communities having access (limited but fairly regular) to the Internet. They do not have the expertise or resources to build their own platform to share information, but are able to navigate to existing sites. An online platform to share lessons learned (including strategies and technologies that have proven successful) around the world will help individuals and communities build wagons and cars around the wheel rather than focusing their attentions on continuously rebuilding the wheel. It is crucial, however, that the platform is designed for low bandwidth with options for access through more widely available technologies such as cell phones.

Deepalaya, an educational non-governmental organization in a slum area of the Faridabad-Bardarpur border of India, faces a Type B development challenge everyday as it runs free health clinics at school. However, the majority of the community within a mile circumference of the school, does not know about the free clinics at **Deepalaya**. Despite having no other immediate source of medical attention, only a small percentage of community members aware of the clinic actually use it. The majority of local families have at least one cell phone and it would be impressive to leverage cell phone technology so that community members can find information about resources such as the free clinic and provide feedback to the clinic via text message. This sort of directed feedback would help the NGO adjust their plan, budget, and staff to better meet the needs of the community they are trying to serve.

Professionals and the public in both developed and undeveloped areas are increasingly building their own applications and additions to technologies such as cell phones. It would be exciting to create an online network accessible via phone, call-back radio, SMS, and Internet that could be a community ground for feedback and information. As a two-way street, this network would allow the public to hold organizations accountable for their work and would give organizations access to millions of free consultants and potential partners.

As exemplified in both the **Sani Lodge** and **Deepalaya**, Development 2.0 promotes community influence and ownership of development processes, in which local communities work alongside the United States and international partners to address local needs and overarching development goals. The literature review, expert interviews, and discussions with leaders in international development by

STPI yielded eight general guidelines and actions central to Development 2.0 efforts:

(1) Incorporate local community sustainability as central outcomes

(2) Effectively engage the community in all stages to collaborate for appropriate change

(3) Promote transparency and situation awareness among all stakeholders including aid beneficiaries and partners

(4) Actively monitor and evaluate short and long term goals, funding, context and outcomes at an appropriate level

(5) Incorporate an ongoing feedback mechanism from all stakeholders

(6) Improve communication among stakeholders

(7) Develop appropriate, contextualized, and interoperable standards, metrics, protocols, and systems

(8) Reconceptualize the terms "failure" and "success" to support learning from unexpected outcomes, adapting to evolving situations, and embracing complex dynamics

These general guidelines and actions are not meant to be comprehensive, but rather an organization of prominent themes and a launching point for further discussion. Examples of applicable ICT and real-life examples can be found in Table 1. Each guideline and action promotes a flexible, accountable, partnership-based approach to international development efforts, maximizing resources while remaining sensitive to the unique needs of each project, and centered on the ultimate goal of global human development.

It is the process based on partnerships, accountability, and flexibility that enables the successful implementation of technology tools. For example, the non-profit organization DataDyne created the open source software EpiSurveyor for mobile data collection that allows public health officials to create their own surveys and to install the electronic survey forms on PDAs and smart phones. Health professionals in 13 sub-Saharan countries and several organizations worldwide use the software for disease surveillance. Beyond the innovativeness of the technology, several elements have led to the success of DataDyne in implementing the EpiSurveyor. First, the technology was developed in a close partnership with future users, so it was specifically designed by and for the community it would serve. Secondly, the EpiSurveyor is open source software, so it can be adapted for multiple purposes in various contexts (for instance, Kenyan officials were able to use the software to help design and launch an emergency polio vaccination for refugees from Somalia. If Kenyan officials had had to wait for someone else to help them with the technology and data collection or analysis, their response to the outbreak could not have been so swift or effective). Finally, the technology is sustainable and can continue to be adapted by a wide range of users. The technology started on Palm Pilots and has been adapted to popular varieties of mobile phones and other interfaces.

Table 1 illustrates that the suite of Web 2.0 tools can facilitate a shift from top-down, "one-size-fits-all" international development solutions, to bottom-up, community-owned efforts promoting

problem solving and sustainable solutions in line with local needs and goals. These new tools and approaches can improve the transfer of skills and knowledge between aid workers, organizations, agencies, and the public while improving interagency communication and balancing U.S. development, diplomacy, and defense objectives.

TABLE 1 Examples of Organizations and Projects Leveraging ICT Tools to Incorporate Development 2.0 Tools, Actions, and General Guidelines into their Processes*

	Actions and General Guidelines for Development 2.0	Examples of Web 2.0 Tools	Examples of Organizations and Projects**
Overarching Goal Global Human Development; Critical Requirements: Flexibility, Accountability	Incorporate *local community sustainability* as central outcomes.	• Computer curriculum • Mobile Phones	MIT's Entrepreneurial Programming and Research on Mobiles program used computers to create a mobile phone programming curriculum for African computer science departments. This curriculum could then be used by the recipients to expand their knowledge and teach others. This would decrease the dependency on foreign aid.
	Effectively *engage the community* in all stages to *collaborate* for appropriate changes.	• Online platform • Mobile Phones	Google Open Handset Alliance developed an online platform to engage the community in the development of new mobile phone applications.
	Promote *transparency* and situation awareness among all stakeholders including aid beneficiaries and partners.	• Online network	Charity Navigator made information about nongovernmental organizations publically available with individual ratings to increase the transparency of NGO work to the public.
	Actively *monitor and evaluate* short and long term goals, funding, context, and outcomes at an appropriate level	• Online surveys • Mobile phones	The Cell-Life Aftercare project provides feedback to medical counselors via a text message when reports from home health aides are received. This mobile monitoring leverages scarce resources, including a shortage of skilled medical personnel.
	Incorporate an *ongoing feedback* mechanism from all stakeholders.	• Online platform • Mobile phones • Instant messaging • Web Conference • Blog	Kiva holds community conference calls at least once a month open to the public. Participants can call in, join a chatroom, enter a web conference or later read notes taken by members of the public. Calls are designed to listen to the recipients of loans and the general public on both process and outcome. In addition, Kiva uses other web tools such as Twitter and Blogster to maximize community involvement and feedback.
	Improve *communication* among stakeholders.	• Online social network • Microblogging	Twitter was used by Iranian citizens during the 2009 Iranian election to rally and communicate with the outside world when other forms of communication were blocked. Outsiders used Twitter to stay informed and provide the most appropriate assistance and action.
	Develop appropriate, contextualized, and interoperable *standards, metrics, protocols, and systems.*	• Open source platform • Web application	The Open Medical Records System (OpenMRS) is a free and open source electronic medical record application for developing countries that aims to collaboratively standardize software for medical records collection and to standardize the way medical data is collected and managed on computers and handheld or mobile devices.
	Reconceptualize *"failure" and "success"* to support learning from unexpected outcomes, adapting to evolving situations, and embracing complex dynamics.	• Blogs/Forums	Sherine Jayawickrama from the Humanitarian NGOs domain of practice at the Hauser Center for Nonprofit Organizations at Harvard University maintains a public blog aimed to inform and "catalyze interesting exchanges and debates about issues of importance to NGOs." Topics include learning from failure, philanthropic effectiveness, and "Dead Aid." Public comments are permitted and add to the blog entries.

**STPI does not claim this table to be all inclusive and stresses the importance of flexibility in reading the table. This table is only one of many possible visualizations of Web 2.0 tools.*
***STPI does not endorse any of the examples listed. Organizations and projects were selected based on a general reputation rather than a comprehensive review.*

5. POLICY FOR DEVELOPMENT 2.0

As the world becomes more globalized, nearly everyone, including policymakers, has become stakeholders in one shape or form in the development of low income communities.

Policymakers can adopt a variety of roles to improve Development 2.0, including:

(1) Better understanding of the powers and pitfalls of ICT in development

(2) Acting upon this understanding in (1) by exemplifying the use of ICT for various facets of development

(3) Disseminating this understanding in (1) and provoking continual discussion throughout the policy community

Below, we describe several ways policymakers can harness ICT to effectively become a part of Development 2.0, including creating a Development 2.0 - online network, creating virtual communities, hosting virtual meetings, and launching pilot programs to highlight existing and fund new projects that exemplify the general guidelines and actions described above.

6. DEVELOPMENT 2.0 ONLINE NETWORK

Web 2.0 platforms have helped people convene to share ideas, learn, and collaborate. Organizations such as **Threadless**[1] and **Innocentive**[2] have even harnessed these technologies to garner interest and gain ideas from a diverse network of users (a concept referred to as crowd-sourcing). Policymakers can promote communication, transparency, and an empirical approach to evaluation for Development 2.0 by leading the development of a hub for interoperable information sharing, the Development 2.0 Online Network.

The user-friendly Network will link existing and emerging organizations and Networks regardless of their field or focus in development. U.S. agencies and members of the development community could easily access and contribute development information regardless of their physical location. This Network could be based off of a web platform, but would need to be suitable for low bandwidths (potentially with an optional flash version to better attract those with higher bandwidths). Smartphones could access these websites easily, but this Network could be designed in a modular way for usage with conventional mobile phones which are more prevalent in lower income areas. Mobile phone to internet technologies such as those used by Twitter could be used to allow users to input and request information via text message, Smartphone, or web to expand the Network. For areas with limited access to mobile phones, simpler ICT (e.g., radio and walkie talkies) could be looped into the Network. For example, a radio station could broadcast certain pieces of information and set up communication channels to serve as an intermediary.

Successful large scale wikis and social networking technologies can serve as models for user-

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[1] A t-shirt business that allows customers to post designs to be voted on by the public for creation and sale.

[2] An 'open innovation' organization that facilitates connections between problems solvers and organizations that have problems to be solved.

centered design elements. An interface for user-friendly profiles could be available to potential contributors without their own existing websites or databases. This Network would connect all public information available on the web among and between development projects, including location, type of project, technologies utilized, processes, obstacles, and solutions. For example, users would be able to research all the work documented by location, giving them a comprehensive view of the amount and type of development activity in a locality or region. Similarly, a user could research work by topic to find and connect with others who have specialized expertise and who may in turn serve as advisors, consultants, or partners. User-friendly access to timely, accurate, and aggregated information will increase the transparency of international development and may lead to more appropriate leveraging of resources and better decisions. In addition, this Network (if widely accessible) could be used as a feedback loop and accountability mechanism for past and current projects.

An extension of the network could focus on various issues in development such as metrics and evaluation. For example, a network application could connect existing and emerging platforms regarding guidelines and examples of metrics and evaluation methods to help develop a toolkit for a scientific approach to evaluating development efforts. Users could share good principles for evaluation and lessons learned to inform future project design. The Network can instigate conversation and solicit feedback from a wide variety of stakeholders and beneficiaries, enabling development practitioners to conduct richly informed evaluation, supporting community ownership over its own development, and promoting transparency in the development process. Furthermore, an organization like the United States Office of Science and Technology Policy in the White House Executive Branch could hold a competition for ubiquitous technology applications to provide network access to individuals and communities with limited access to the web, ensuring that they have a voice in their own development. A strong, widely publicized event demonstrating good principles and guidelines by a major governing body would have a large, positive effect on the entire development community.

To benefit the wide range of emergent needs, uses, and development stakeholders, the Network's organizational structure should support effective community-building and iterative development. Network should be launched as a cross-sector partnership to encourage Federal and nonfederal participation, to leverage diverse expertise, and to mitigate fears about government misuse of data, including espionage abroad. Network's would benefit from starting as a public program with ample funding and widespread presence, but should be soon converted in part or in full to a private, nonprofit, or academic enterprise, allowing vendors to compete for the most user-friendly interface to access the information.

7. VIRTUAL COMMUNITIES AND MEETINGS

Virtual meetings such as workshops overcome the restraints of a physical location and become open to global participants that form communities such as the proposed Development 2.0 Online Network. Policymakers can effectively reach out to this vast network of individuals in all sectors through these platforms to contribute to complex tasks such as creating a strategic plan for Development 2.0. For example, virtual workshop participants could connect through various ICT to listen through keynote speakers, and participate in a discussion to build a strategic vision for future work in development and identify mechanisms to attain it by analyzing lessons learned from the past fifty years. The actions and general guidelines outlined in Table 1 can serve as the starting point for the organiza-

tion of the workshops. Thought leaders and practitioners from diverse sectors and backgrounds pertinent to development can be selected to facilitate workshops and form cohesive products.

As platforms are used to bring together the many voices in development, they can also be harnessed to convene specific organizations or set of organizations. For example, The United States government (USG) has 12 departments, 25 agencies, and 60 offices within the USG that fund development efforts. A whole-of-government approach that manages development partners, including public-private partnerships and national and international private, nonprofit, and academic partners, as a system would align resources with strategic directions and broaden the scope of an integrated development space. Interagency working groups are often second jobs to most of the members, making it difficult to make forward progress and maintain continuity between changing membership and wide gaps between meetings. An effective virtual workshop or meeting can better document information in one location and maximize time. In addition, the workshops themselves can embody transparency and collaboration by actively engaging the public and inviting broad participation.

To promote effective information sharing, interoperable standards for definitions, metrics, and information reporting guidelines must be developed. Even the term development in itself is used to describe a vague concept which is continuing to evolve. What is "development"? Is it a process? A set of objectives? An attempt to solve major global problems? There is no common agreement on what the term means or even understanding of different variations of how it is used, promoting "development" remains murky. At a more detailed level, identifying and funding "capacity building," "monitoring and evaluation," or "technical assistance," proves elusive. Even budgets for "overhead" are not consistent enough to be compared across projects. Accordingly, evaluations of seemingly similar efforts are difficult to compare, and funding strategies for development activities and outcomes are often inconsistent and poorly guided. Interviewees consistently recognized that entities involved in development each tend to use their own definitions, metrics, and information reporting guidelines. Hence, there is little consistency in how information is captured, stored, and exchanged. In environments when partnerships are built around the ability to communicate effectively, common documentation standards are essential. Standards for development information would enable collaboration, empirical rigor, and transparency in development by minimizing confusion and misunderstanding, facilitating stakeholder communication, and easing the process of knowledge sharing. An integrated organization such as OSTP can convene stakeholders and conduct a deep public survey of agency and other stakeholder needs. A public workshop series can suggest and discuss methodology and technical tools for creating interoperable standards for development information. Thought leaders and practitioners can facilitate the workshops and present the conclusions as publically available standards. Organizations like OSTP can serve as a leader to bring together large and small players in an equitable standards setting process.

8. DEVELOPMENT 2.0 PROGRAMS

As technologies are increasingly used in development, policymakers must go beyond discussion and act to implement programs designed to identify good practices of development work that meet the needs of recipients and to test Development 2.0 policies as they are put into practice. Specific criteria and program details can be determined by stakeholders including the public through public interaction through platforms such as virtual workshops.

One such program could virtually solicit exemplary, existing international development efforts that embody Development 2.0 actions and guidelines explored in Table 1 and agreed upon in a virtual workshop. Selection criteria would include the record of appropriate community interaction, transparency, and use of "lessons learned" by the group. Successful applicants could be funded for demonstration programs that exemplify their model and disseminate good principles in context.

A similar program could solicit new proposals to launch Development 2.0 projects in alignment with workshop recommendations. Akin to an "Advanced Research Project Agency" model, the second program could seek to bridge the gap between the discovery of novel international development tools and approaches as well as the provision of new aid capabilities and processes. An example project might involve leveraging the mobile phone and internet capabilities of Twitter to create a solid platform for local beneficiaries to actively participate in their own development despite the distance from management in the US and limited access to ICT. The public could evaluate and vote on applications with the goal of generating a diverse portfolio of positive Development 2.0 efforts.

Together, these two Development 2.0 programs would demonstrate tools, actions, guidelines, and critical requirements for identifying and supporting good development practices. In contrast to an "only one right way" viewpoint, the demonstration efforts foster a climate of experimentation to support data and evidence-driven decisions to contextualize policies and procedures in usable lessons learned. The cadre of grantees would demonstrate multiple facets of Development 2.0, including new uses of social media, creative partnerships with the private sector, empowerment of local groups, and the ongoing evaluation of projects to produce data and evidence that drive future policy decisions.

The Development 2.0 Demonstration Programs can be the first users of the Network. The Programs can update their independent web pages or create Network Profile pages to maintain the information associated with their projects, in line with the Strategic Vision and following the OSTP Recommendations.

9. CONCLUSION: TOWARD DEVELOPMENT 2.0

The initiatives of the Obama Administration to improve accountability, transparency, and community involvement resound in international development circles. The time for change is now. Currently, some experts believe that as much as eighty-six cents of each dollar the USG spends on development is deemed ineffective in fighting poverty. The public is watching and realizing that from climate change to pandemics to social unrest, what happens to the rest of the world affects us locally. There is a growing understanding that global poverty and disenfranchisement threaten our national security. Accordingly, a diverse and broad bipartisan coalition is currently positioned to support a new approach to the global development enterprise. This effort is already underway inside and outside of government, and high-level government organizations that facilitate interagency collaboration, such as the US Office of Science and Technology Policy, is uniquely positioned to leverage tools to improve the international development processes.

Practitioners realize that no outsider develops a country, but that outsiders can contribute tools, knowledge, and support, while communities must shape local development to best meet their needs. Nevertheless, real impacts on development outcomes for the poor depend on the policies implemented in developed countries like the U.S; it is critical to build effective and long term partnerships by identifying shared values and maintaining a productive dialogue with both community partners and

government partners. More historically stable governments such as the USG can capitalize on its own institutional memory and build on its strengths to pursue development objectives by incorporating a scientific approach to setting, executing, and evaluating development policy. While no overarching development policy will fit every scenario, practitioners can test policies in practice to determine what works where. These changes are already being pursued in some settings and should be broadly institutionalized.

Policymakers can take the first step by developing Development 2.0 Strategic Visions for their nation, sponsoring a series of demonstration programs to exemplify guidelines for good development, and collaborating to develop a robust online network to support Development 2.0 processes. Both "top down" organizational efforts and "bottom-up" project efforts will be more effective as a result of improved communication, information sharing, and processes.

Policymakers face the challenge of balancing flexibility and accountability for effective and positive global development. To truly embark on Development 2.0, policymakers must go beyond individual projects and work to implement changes in current systems and processes, starting with their own to exemplify through action. The development climate is changing; the development community is split between the old development and Development 2.0 systems, and they require leadership to embark upon the present window of opportunity and fully embrace Development 2.0. As primary contributors to international development, policymakers must be leaders in creating this systemic change.

References

Atwood, J.B., McPherson, M.P., and Natsios, A. "Arrested Development: Making Foreign Aid a More Effective Tool." *Foreign Affairs* (2008) Vol. 87, No. 6.

Brainard L & Chollet D. *"Global Development 2.0: Can philanthropists, the public and the poor make poverty history?"* The Brookings Institution Press. 2008.

Broad, R. and Cavanagh, J. *"Development Redefined: How the Market Met Its Match."* Paradigm Publishers. Boulder, Colorado. 2009.

Brookings Institution. *Brookings.* 16 Apr 2009. http://www.brookings.edu/.

Caprara D L. *"International service and the Obama administration."* The Brookings Institution. 19 Feb 2009.

Caprara D L, Bridgeland J, and Wofford H. "Global service fellowships: Building bridges through American Volunteers." *Policy Brief*, The Brookings Institution. *March 2007, No. 160*.

Cárdenas M. *"Latin America, the global financial crisis and the velocity of business."* The Brookings Institution. 11 Feb 2009.

Clinton, H.R. *"Foreign Policy Address at the Council on Foreign Relations."* Washington, DC. July 15, 2009. http://www.state.gov/secretary/rm/2009a/july/126071.htm.

Committee on Science and Technology in Foreign Assistance, National Research Council. *"The Fundamental Role Of Science And Technology In International Development: An Imperative For The U.S. Agency For International Development."* National Academy of Sciences. Washington, D.C. 2006.

De Ferranti D, Griffin C, Escobar M L, Glassman A, and Lagomarsino G. "Innovative financing for global health: Tools for analyzing the options." *Global Health Financing Initiative Working Paper 2. The Brookings Institution*. August 2008.

Economic Commission for Africa and the Organisation for Economic Co-operation and Development. *"The Mutual Review of Development Effectiveness in Africa: Promise & Performance."* ECA and OECD. 2009.

Flannery M. "Kiva and the birth of person-to-person microfinance." Innovations. Winter & spring 2007.

Gates B. *"2009 Annual Letter."* Gates Foundation. 2009.

Gates R M. "A balanced strategy: Reprogramming the Pentagon for a new age." *Foreign Affairs*. Vol 88: 1. Jan/Feb 2009, pp. 28-40.

Global Development Commons. 2009. Available at http://www.globaldevelopmentcommons.net/.

Herrling, S. and Radelet, S. *"U.S. Foreign Assistance for the Twenty-first Century."* CGD Policy Brief. Center for Global Development.

Kalil T. "Harnessing The Mobile Revolution." *New Policy Institute.* 8 Oct 2008.

Kinkade, S. and Verclas, K. *"Wireless Technology for Social Change: Trends in Mobile Use by NGOs."* United Nations Foundation and Vodafone Group Foundation. Access to Communication Publication Series, Volume 2. 2008.

Kreutz, C., ed. *"The Participatory Web - New Potentials of ICT in Rural Areas."* Division 45, Knowledge Systems in Rural Areas. Deutsche Gesellschaft für Technische Zusammenarbeit (GTZ) GmbH. Eschborn, 2008.

Lagace M. "Misgovernance at the World Bank: Q&A with Eric D. Werker." *Working Knowledge*. Harvard Business School. 20 Apr 2009.

Lawson, R.L., Lyman, J.R., and McCarthy, E.R. "A 21st Century Marshall Plan for Energy, Water and Agriculture In Developing Countries." The Atlantic Council. Policy Paper, September 2008.

Miotke, J. "International Science and Technology Cooperation." Testimony before the Subcommittee on Research, Science Education, House Committee on Science and Technology, united States House of Representatives. 2 April 2008.

Modernizing Foreign Assistance Network. *"New Day New Way: U.S. Foreign Assistance for the 21st Century."* 1 June 2008.

NetSquared. 2009. Available at http://www.netsquared.org/

Obama '08. "Strengthening Our Common Security By Investing In Our Common Humanity." Obama for America. 2008.

Quigley K F F & Rieffel L. *"The Peace Corps and More."* The Brookings Institution. 10 Sept 2008.

The Reality of Aid 2008, Aid Effectiveness: "Democratic Ownership and Human Rights." IBON Books, IBON Center, Quezon City, Philippines. The Reality of Aid Management Committee. 2008

Rieffel L. *"A better place for the Peace Corps."* The Brookings Institution. Fall 2008.

Tarnoff, C. and Lawson, M.L. *"Foreign Aid: An Introduction to U.S. Programs and Policy."* Congressional Research Service. Washington, D.C. 9 April 2009.

United States Government Accountability Office. *"Foreign Aid Reform: Comprehensive Strategy, Interagency Coordination, and Operational Improvements Would Bolster Current Efforts."* GAO-09-192. Washington, D.C. April 2009.

Vital Wave Consulting. *"Health for Development: The Opportunity of Mobile Technology for Healthcare in the Developing World."* United Nations Foundation and Vodafone Foundation. Washington, DC. 2009.

Wat kins A & Ehst M. *"Science, Technology, and Innovation: Capacity Building for Sustainable Growth and Poverty Reduction."* The World Bank. Washington D.C. 2008.

Yamada, T. *"Remarks by Dr. Tadataka Yamada."* PCAST public meeting. 24 April 2007.