Global Solutions Summit 2018

From the Lab to the Last Mile: Technology Deployment Business Models for the SDGs

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The Global Solutions Summit (GSS) will convene at the United Nations in New York City on June 4, 2018. It will precede and complement the Third Annual UN STI Forum supported by the UN Department of Economic and Social Affairs, the UN Conference on Trade and Development, and the UN Commission on Science and Technology for Development which will convene at the UN on June 5-6, 2018. The theme of this year's Summit is "From Lab to the Last Mile: Technology Deployment Business Models for the SDGs." GSS 2018 is the third in a series beginning with the Inaugural Summit at the US State Department in April 2014 and a Second Summit at the Clinton Presidential Library in December 2016.

I. General Approach

GSS2018 is based on the premise that "It takes more creativity and innovation to market a new invention than it did to invent it in the first place."[1] Or as Steve Blank noted recently, "it's rare that the smartest technical innovator is the most successful entrepreneur. Being a domain expert in a technology field rarely makes you competent in commerce [or technology deployment]."[2] If these insights are correct, then scientific research to find new or improved development solutions is only a first small step in the long journey from the lab to large-scale, last mile deployment.

To date, the global development community has devoted substantial time, attention, and resources to that first step – developing innovative solutions. These programs have generated enormous benefits and, as a result, we now have proven, effective, and affordable solutions for many of the most pressing development problems – off-grid, renewable energy, potable water, community health clinics, solar powered irrigation pumps, off-grid food storage, refrigeration, and processing, etc. These new solutions should make it even more affordable and easier, in principle, to hit the SDG targets, especially in the least developed countries (LDCs) where enormous progress should be possible simply by learning how to deploy proven solutions that are already in widespread use in other countries. But if that's the case, why aren't we on track to achieve the SDGs?

In almost all cases, the binding constraint is not a lack of scientific expertise, technological know-how, or proven, cost-effective solutions. As even a cursory glance around the world will confirm, technological know-how often co-exists alongside poverty and misery. And the mere fact that development solutions

[1] Vanu Bose, quoted in MIT Technology Review, https://www.technologyreview.com/s/609009/the-unfinished-work-of-vanu-bose/
[2] Steve Blank, "The Difference Between Innovators and Entrepreneurs."

are in widespread use elsewhere, does not mean that they will be deployed at scale in the least developed countries.

The binding constraint is that we haven't yet figured out how address the less-glamorous and more mundane organizational, entrepreneurial, financial, and business development issues associated with getting these solutions into the hands of tens, if not hundreds of millions of people in emerging markets. Ironically, the same scientific progress that generates new technological solutions may actually exacerbate the deployment challenge.

Specifically, new technologies have not only disrupted incumbent firms that rely on older technologies, but they have also disrupted long-standing technology diffusion and deployment mechanisms that were employed successfully for many decades by the World Bank and others. For example, with older technologies, households, factories, and communities had to be connected to a central water treatment plant or central power plant if they wanted reliable access to electricity or potable water. For development finance organizations like the World Bank, a loan to the relevant ministry or state-owned utility company was all that was required to provide new generators and treatment plants and also to extend service to new communities.[3] In many cases, these loans contained a small technical assistance component which trained local engineers and technicians in the ministry or state owned utility to operate and maintain the newest technology.

This is no longer the case. Many of today's newest technologies enable service delivery via small scale, distributed solutions and this, in turn, disrupts the old, tried-and-true deployment mechanisms. For example, it is now possible to provide reliable, affordable electric power via community micro-grids or roof top solar systems without constructing a central power plant and expensive transmission and distribution lines. Similarly, it is possible to provide WHO-quality potable water from salt, brackish, or polluted fresh water by deploying a battery of small, relatively inexpensive community water purification kiosks, each equipped with a technologically-advanced nano-filter. In principle, unlike large-scale power plants and water treatment facilities which take years to build and cost hundreds of millions of dollars, these small-scale distributed solutions can be deployed in a fraction of the time and at a fraction of the cost.

However, the challenge now becomes figuring out how to scale-up the deployment of these distributed, inexpensive facilities so that they reach tens of millions of people in a relatively short period of time. This is easier said than done. Although the capital cost of these new technologies may be much lower compared to older technologies, the community empowerment, organizational, financial, capacity building and entrepreneurial challenge of deploying, financing, managing, and maintaining thousands of water purification kiosks or microgrids in thousands of communities is substantially more complex.

This is only part of the problem. Disruptive technologies have also fragmented the deployment ecosystem and created a series of broken circuits. With old technologies, one general contractor, usually a multinational corporation with extensive financial and human resources, would assume overall responsibility for designing the system, procuring the requisite hardware and software from various specialized equipment vendors, constructing the facilities, hiring the necessary subcontractors, and training the local personnel to operate and maintain the finished facility. Technological information and engineering know how flowed relatively unimpeded through this system.

Now consider all the independent and uncoordinated actors, activities, and mundane tasks required to provide potable water to tens of thousands of villages across Africa, Asia, and Central America.

[3] See, for example, Charles Weiss and Niccolas Jequier, Technology, Finance and Development – An Analysis of the World Bank as a Technological Institution, Lexington Books, 1984.

- An innovator or equipment supplier may have developed a cost-effective, efficient, and affordable nano-filtration mechanism. But a nano-filter cannot produce potable water without pumps, hoses, cisterns, a power supply (grid, solar, bicycle, diesel), water quality monitoring equipment, a retail distribution system, and a payment collection mechanism. Who will organize this supply chain in thousands of communities?
- Those same innovators and equipment suppliers may already be selling purification systems to buyers in the US or EU. But they don't necessarily have sales contacts in Africa, Asia, and Central America nor do they have the personnel, financial resources, and inclination to search for potential customers in numerous far-flung countries.
- It is not always clear who is the customer – A ministry? Wealthy, local private sector investors? Village officials? Individual households? An international foundation or social enterprise? A community-based coop? Young entrepreneurs just emerging from a start-up weekend or local incubator? Who will figure this out? Who will take responsibility for managing local procurement, organizing construction, maintaining and repairing the equipment, obtaining the necessary permits, registering and operating the business, and handling all the other mundane but essential tasks associated with providing potable water in a single community, let alone thousands of communities? In other words, who will figure out how to incorporate this game-changing technology into a financially-sustainable, efficient, game-changing organization? The scientist who invented the nano-filter may be an expert in new materials, but it may be wrong to assume she also has the expertise, business acumen, organizational skills, and personal inclination to handle these other tasks.
- NGOs and social enterprises may be dealing with all of these mundane issues and operating successful water purification pilot programs in one country. But they don't necessarily have contacts to replicate their efforts in neighboring countries let alone countries farther afield. And even if they do locate the necessary contacts, they may not have the organizational capacity and personnel to operate similar programs in numerous additional locations.
- Humanitarian organizations may be present in numerous countries, but they are not necessarily in the business of owning, operating, managing, maintaining and repairing water enterprises in every community where they are present.
- Impact investors and foundations may be willing, in principle, to finance these deployment activities. But impact investors and foundations are not project developers. They expect someone to approach them with a package of "bankable deals" that explain, at a minimum, how the borrower or project organizer plans to address each of these operational issues.
- Last but not least are the households and communities themselves. They may know in broad general terms what they need, but they don't necessarily know where to find it, how to look for it, how to evaluate competing technological solutions, how to organize so many dispersed actors and mundane tasks, how to organize a village enterprise or coop, and how to negotiate terms and conditions with potential partners who are vastly more experienced and sophisticated.

The current deployment ecosystem, in other words, is like a pipeline in which all the essential parts and components are present in one form or another. But instead of having all the parts and components connected properly to each other, what we have instead is a series of broken circuits where essential connections are missing. With all these broken circuits littering the deployment landscape and no one to coordinate all the disparate, dispersed actors, it should come as no surprise that scaling up progress on the deployment front is so anemic.

GSS 2018 will discuss how we can begin to repair these broken circuits and, in the process, create a more effective, efficient deployment ecosystem. It will showcase specific business models and financial mechanisms that NGOs, social enterprises, foundations and others are using to successfully deploy proven, cost-effective development solutions. Speakers will be thoughtful doers -- i.e., women and men

who are actively working in the field to overcome these deployment challenges. These thoughtful doers will explain what they have done, how they did it, what went right and what went wrong, where gaps or broken circuits exist in the deployment ecosystem, and what needs to be done to create a more effective and efficient ecosystem that can support the deployment of these innovations on the scale required to achieve the SDGs by 2030.