

How not to do ICT4D:

A study of failed ICT4D projects and what to learn from them

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Information and Communication Technology for Development (ICT4D) is not a new concept. From the early days of modern ICT in the 60s, there were people who believed that bringing contemporary and newest technological advances into developing contexts will help improve quality of life. Through the years we have seen a myriad of well-meaning individuals and organizations finding creative ways of trying to better the lives of people in developing countries through the use of ICT. Surprisingly, it seems that we still haven't figured out a way to do so effectively. In a report by Independent Evaluation Group about World Bank projects to increase universal access between 2003 and 2010, [Dodson et al. \(2012\)](#) found almost 80% failure rate of ICT projects. [Musiyandaka et al. \(2013\)](#) found that in a wider area of Zimbabwe, only 5% of computers donated to schools were actively being used. Sadly, those are not isolated cases. Arguably, the definitions and extent of failure vary somewhat throughout the literature as well as in practice. Even so, looking at such statistics, it is natural to wonder why there is such a big number of failed ICT4D projects. What did they have in common, and what are the things that the future researchers and organizations should avoid?

To understand the current state of ICT4D, one should first inspect how it evolved. [van den Hoven et al. \(2012\)](#) define three big pushes and shifts of philosophy when it comes to ICT4D. The first push came together with the introduction of modern ICT in the 60s and 70s. The initial approach was centered around core computational functionality - the idea was to simply bring our technology to poor areas without much thought about how it can be used, accepted, appropriated or maintained - technology came first, and it was up to people there to come up with good uses for it. In the 80s and 90s, after many failed projects, the views started to slowly progress towards more user-centric design. The technology still played an important role, but the end-users were finally considered in the requirement design. Nowadays, ICT4D heavily focuses on the people. Quoting [van den Hoven et al. \(2012\)](#), "Users, values, requirements and culture are put first, while technology is build around them. What was previously seen as obstacles or constraints, are now drivers, things to be preserved and facilitated."

Nowadays, the disconnect between the system designers and end-users often rises as one of the most important reasons for failure. The One Laptop Per Child project, which tried to bring personal computers to children in Africa, provides an illustrative example of such a problem. The designers in United States failed to understand the local environment and built a laptop suitable for their environment. When used by African children, the laptop

was not sturdy enough and could not withstand the more extreme weather conditions or lack of easily accessible recharging. Subsequent iterations of the project did work on those issues, but the initial problem stems from insufficient research the local aspects. The study by [Warschauer and Ames \(2010\)](#) concludes that "provision of individual laptops is a Utopian vision for the children in the poorest countries, whose educational and social futures could be more effectively improved if the same investments were instead made on more sustainable and proven interventions". It is important to discard most assumptions we have from our environment and include locals throughout all stages of the project. A solution that works in one environment might fail spectacularly in another, so understanding the users and their needs is a strong requirement for a successful ICT4D project.

Another common mistake is going against local traditions, culture and user wishes. The difference from the aforementioned problem is that here designers might be aware of some existing approach that locals have been using, yet they choose to ignore it. This can cause the users to rebel and refuse to adopt the system. If they do, they might not be able to adapt to it sufficiently, or some part of culture and local tradition is lost in the process. This almost happened in Subaks in Bali, where an advanced watering system has existed for centuries in the form of Water temples ([Lansing, 1987](#)). In the 70s, the efforts to modernize agriculture almost erased this system. In cases where there is an existing system embedded in several layers of social structure, the best solution might not be to bulldoze over it completely. Instead, a good solution should try to work with it, and see how the existing solution can be improved, while still respecting the social structures and environment. Respect for local establishments will not only lead to happier people, but also help preserve rich cultural and natural heritage as well increasing the take-up of new technologies.

While not strictly failures, there are some cases where the donors behind the projects have questionable or even malicious intents. Interventions like this might seem promising at first, but can end up backfiring and putting the users in a worse-off position, while also illegitimizing good projects. An example of such intervention is sponsorships and free trials of for-profit nutrition companies such as Nestle or Danone, which enter some developing environment with a promise of free workshops, trials and research. Companies that do this are often accused of weakening national regulatory frameworks and aggressively flooding the market with misinformation or own products. Nestle was, for example, accused of introducing baby formula to breastfeeding mothers in Laos. After they became reliant on the formula, the company ended free trial, which resulted in babies dying as the mothers could not afford the formula ([Brady and Srour, 2014](#)). A similar, but potentially less deadly case is when for-profit companies, such as Facebook or Google promise to bring internet to villages. They might decide to only allow access to some services, severely limiting the freedom of people relying on the infrastructure. One could argue that they can try to do the same in developed countries, which some companies undoubtedly did. The difference is, that there are several mechanisms and policies in place preventing companies from carrying out their intentions in the developed countries, while such mechanisms are lagging behind in the developing countries.

Research by [Marais \(2011\)](#) lists unsustainability as another very important factor. Several views need to be considered: financial, social, institutional, technological, and environmental sustainability. If any of these elements is missing, the project is in risk of collapsing. It is very common for a project to collapse after initial funding runs out. In order for it to stay

a float, a strong and sustainable business plan needs to exist. Financial aspects of a project need to be considered from the beginning. Some careful analysis can stop a badly designed project before donors money is lost or locals become reliant on a solution that needs to be abolished.

There are numerous other reasons for such high failure rate. Projects are often trying to satisfy founders or donors rather than the users, because the metrics to determine success are often biased towards their expectations. Academics are regularly accused of failing to influence policies or engage in practice and fieldwork (Dodson et al., 2012). Projects have to deal with mismanagement of funds, natural disasters, unpredictable political environment and countless other project-specific issues. Given all these circumstances and relatively bad outlook, what are the current trends that show good promise?

Most recent literature emphasizes the focus on users. It is important to understand the context of their needs and the environment. Terry Winograd of Stanford Computer Science Department formalized this in the form of Value Sensitive Design. He argues that software engineering should be approached from an ethical perspective. (van den Hoven et al., 2012) emphasizes that "intentionally and explicitly design for values such as accountability, safety, inclusion, privacy, trust, or sustainability. In VSD the incorporation of moral values into the design is a primary goal instead of a by-product." Diniz et al. (2014) similarly argue for focusing on users and contexts, not technology. Consequently, the designers, researchers and project managers should not only work hard to understand the users and their needs, but also ensure they work closely - not only conceptually, but also geographically - with the end-users of the solutions they are trying to create. This way, they can hope for long-lasting and impactful projects that will contribute to body of knowledge, broaden our perspectives and, most importantly, continue improving lives.

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