Technology to masses, but in a meaningful manner

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Technology? But why?

This was the first question, we also had in our mind. It is true that technology is transforming various aspects of our life all over the world. And it seems that masses of India are not going to be excluded from the benevolence of this so called 'Technology'. From the government to huge corporations, everyone wants to computerize all the villages in the country. Think technology and a virtual computer is right there in front of you.

But is technology all about software and computers? Does putting a computer in every village in a country mean that all the problems of people are solved? Also is technology adoption going to be only by people from villages? Why are we excluding the masses from the cities from benefiting from technology adoption? Why is it that despite millions being poured into efforts to bring information and communication technology to the rural India, we haven't achieved any success? Are there factors, other than accessibility, illiteracy, awareness, and economical solutions as experts list? These are a few of the points that we would like to explore in this article. The article also covers a proposal for a mechanism/framework to help solve this problem and the roles of the various stakeholders in this effort.

Let's computerize rural India!

There have been a number of efforts in order to promote IT amongst the masses and lot more on their way. The government spends millions in trying to promote various activities that promote ICT to common man of India. Research institutes like IBM Research Labs, Media Labs Asia, NCST, C-DAC, institutes like the IITs, IIMs among others, have taken up dozens of challenging projects to try filling the gap of 'Digital Divide'. The private sector is not behind, with companies like NIIT, HCL, Infosys, Wipro and TCS having demonstrated cases for taking computers to the common man.

As an example, rural kiosks is one of the ways in which many organizations are trying to apply information and communication technology for socio-economic development. A number of kiosk based projects have been implemented by n-Logue, Drishtee, ITC e-Choupal, Media Lab Asia and other such initiatives.

Through the e-Choupal initiative, ITC aims to confer the power of expert knowledge on even the smallest individual farmer. E-Choupal services have now reached 31,000 villages through 5200 kiosks. Through village internet kiosks, information about weather, market prices for crops, farm practices etc. will be disseminated. This information is made available in local languages to help adoption. The farmers will benefit through enhanced farm productivity and higher prices. The Drishtee kiosks are focused on providing e-government solutions to rural villages. They have computerized a number of government services like birth certificate application etc. nLogue kiosks are more focused towards varying services. The kiosk owner acts like a local service provider for that area and pays for the network usage. The kiosk owner earns by charging for the services that he provides. The above listed ones are a few of the efforts that give an idea of the varying approaches taken by different groups in India. This List goes on and on.

While trying to bring technology to the masses, majority of the efforts seem to be facing the following problems:

Accessibility
Awareness
Experience
Illiteracy
Economical solution
…

It is observed that majority of these efforts end up in providing solutions to the above problems rather than bringing the real benefits of technology to the masses.

For a while, let us assume that some form of computing is available & all the above problems are solved. Even in such a scenario, what is the compelling reason for a common man in India to use it? Will it be a better alternative to spend those pennies to have a monthly agriculture visit in the village or to have a shared tractor, or to renovate village school building? What we mean is computing is not the solution to the problems. Even putting computer in each village is not going to solve the problems either. Not technology, but technology in a meaningful manner will make the real difference.

Ongoing efforts in India have been trying to get computing to the villages. Even doing that, scaling to the level of Indian villages will take a lot of time. ITC currently targets to get e-Choupal installed in 6 villages per day. Even if these installations were to go throughout the year, setting up these e-Choupals in all the 600,000 villages in India will take more than 200 years.

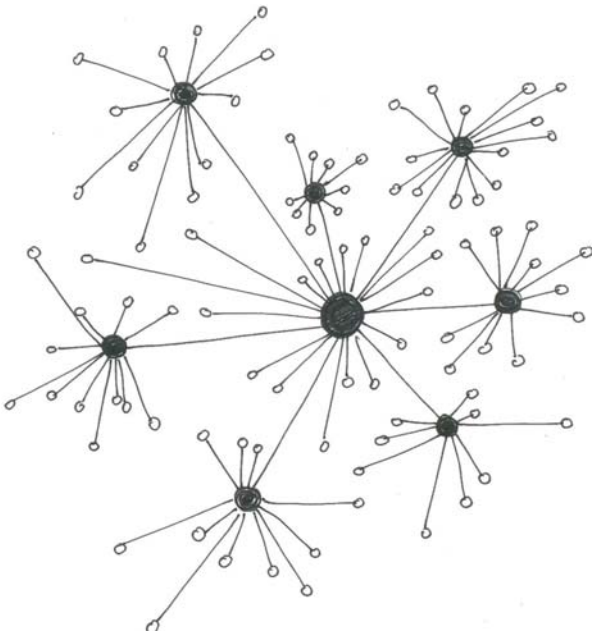
The other observation was that most of the people visiting the n-Logue kiosks were there for entertainment. Kiosk customers tend to be young people primarily students. People visiting the Drishtee kiosk were there only for government document related problems, though it can do lot more than that.

What we want to emphasize here is, though these solutions have been able to get computing to the masses, they were not able to bring meaningful technology to the masses. The core underlying problems of awareness of the benefits of technology and a good experience that the common man gains out of using it are still not addressed fully by any of these efforts. What is required is to help understand the real needs/problems and to solve them by any mean. Computerization is not the only solution.

A 'Tree'

Instead of trying to understand or identify problems of different domains, in fact assuming them, and imposing solutions; the solution in general is to help people understand their needs & think/choose solutions themselves. With the metaphor of a tree, we tried to come up with a logical framework emphasizing this vision.

Let's think of a 2-way tree framework. We will use following terminology here to help understand or refer to the entities of the framework. Let us call the central node in this tree framework as the *trunk* and the second level nodes as the *branches* of the tree. A *branch* can have *branchlets* on it. The very end nodes on this tree are the *leaves*, which are you and me. It is now clear that a *branchlet* is a group of people, a village or may be some distant community. *Branches* are the group of such communities, villages (*branchlets*) sharing proximity and values. These *branches* will be connected to the *trunk* of the tree. We refer to existing frameworks as *star* frameworks and call our framework the *tree* framework.



With the above mentioned terminology let's try to understand the framework. Most of the existing efforts act in one direction. Stakeholders or some managing unit try to understand/identify or sometime assume the problems of the people. They come up with some solutions to the problem and try to apply. It have been observed that during this journey the main focus to help solve the problem end in having some computer installation at villages and some software tools with local language interactions etc. We agree that this is definitely a leap in the positive direction, but what makes these efforts not as efficient is the real understanding of the need of the people, the *leaves*. Besides these, having such one way *star* type of framework will always have problems scaling up. A *tree* framework will scale better and faster. The flow of information in *star* framework happens in one direction. Having information flow in both the directions would be very useful. It is obvious that the *leaf* nodes themselves would think up of innovative solutions to a local problem which could be implemented by the support of the government, organizations, industry, and all together as the *trunk* of the tree.

To make the points clear here we would like to provide some more examples. It is now clear that the problems we are trying to tackle are the base level problems rather than providing computing to the common man.

Problems could be categorized into various types.

Problems those are generic and affect nearly all the *branchlets* and *leaves*.

In such scenarios, the central node; the *trunk* in our case can come up with a solution that will be distributed. As for example it would be a great benefit to people of distant regions to have something by which they can book their railway ticket without wasting their whole day by going to a near by city to book the same. The trunk can even easily identify such generic needs of people and with the help of the already laid downed 2 way tree network it will be easy to implement the solution everywhere.

Problems those are specific to a particular region, specific to one or some *branches* of the tree.

For an example let's think of a something like a Tsunami Warning system for the coastal region. In such a case the *branch* finds/implements the solution. As the framework is a two way system, the trunk can help provide some kind of warning system for the *branches*. Here, it may be possible that the solution of some particular region can be somewhat different than that of some other region. May be a simple loud speaker warning system in local language will be a better solution. The conclusion is that the branches can come up with such needs and with the help of trunk implementing such simple, to the point solutions is the key.

Problems those are specific to a village, a community, or a group of people (the *leaves*).

No one can understand your problem better than you yourself. A number of cases have shown us that the most wonderful solutions/techniques to help a farmer have come from the farmers themselves. Use of a modified cycle to reap or plough the farm was the product of the mind of an innovative farmer in the need. He couldn't afford a tractor. Lets have an another example. Some days back a wonderful innovation was noticed in a village near Pune. One of the farmers used his cell phone in a really unique manner. His farm was far away from his home and to water the farm he needs to start a pump located at the farm. Earlier he used to walk a long distance to switch on this pump. The problem here was the irregularity of the electricity supply in the region. He somehow could manage to have a simple system in place with the use of his mobile phone. When ever he wants to start the pump, he just needs to call his mobile phone. The mobile phone connected to water pump at his farm gets the ring and with some simple circuit in place turns the pump on. This is what we can call the benevolence of technology in real sense. Some TV repair guy helped the farmer to implement this wonderful idea.

The 2 way tree framework not only addresses such real needs of the people but can also help implement them. Later in time, may be such wonderful ideas can solve some other similar problems of the people of some other distant region. For example some one may use his mobile in similar manner to help activate some warning bell.

The tree network will also help in scaling up to provide the required training to the local experts in the villages. The *branches* can impart training to the *branchlets* and *trunk* can provide training to the *branches*. Regular discussions amongst the *branchlets* will help increase awareness about problems being faced in different regions and the solutions being applied there. Increasing awareness amongst the *leaf* nodes about different facilities available to them will also help make their standard of living better.

Since a *tree* framework is being adopted, updating these services also becomes a bit simpler. Applying patches to software or updating a practice that is being followed to solve a problem involves the *branches* providing the solution to the *branchlets*, which in turn applies them to the nodes under them.

Very often, in the *star* framework, long cycles are spent in the central authority coming and trying to identify the problem(lets say problem A) that a particular village is facing, finding a solution to the problem and implementing the solution. In a number of cases it happens that the most pressing need of the village has changed to problem B while the solution to problem A is being researched by the central authority. Self help groups help in such scenarios since the *leaves*(people) themselves know the priority in which problems need to be attacked.

Issues like, language customization of solutions also becomes simpler by implementing the *tree* framework. Since the local people are involved in adopting a particular solution for their region, they can get terminology and phrases that are most appropriate to them.

The main factors that are addressed by the *tree* framework are updation, real time solution to problems, solutions to real needs of the people and language and localization related issues.

Who will do what?

To get the framework in place, different entities/organizations in our society will have to work together as one. The organizations involved would be the Government, the IT industry, Research Organizations, Media and the people themselves. Each of them could have different motivations to help adopt the framework and will reap different benefits. While the government would think about promoting this from the social angle, the IT industry can think from the monetary benefits that they will get out of promoting real usage of ICT.

The government along with the people will have to help bring up the initial tree network connecting India. It will be the tree, *indiTree*. People have to help train the initial people who will be helping solve the needs of a cluster of villages. These trained people will not only solve the problems of the experts from the individual villages but will also train them in getting solutions on their own. Which government would not like to see a better standard of living and increased awareness amongst its people? While the government is setting up the self-help network, the IT industry would bring up the initial hardware and the software that would be needed. While common problems could be solved by the village experts themselves, the research organizations could keep thinking about unique user friendly interfaces and techniques to make the existing solutions simpler and better for the common masses to use. Media plays a major role in ensuring the success of this scheme. It can help increase awareness about the benefits that are available to people residing in a certain area through the use of technology. For example, there could be short programs mentioning how railway tickets could be booked from your local post office, that video telephony is available at a nearby kiosk etc. It can also be used to strengthen the self-

help network through videos demonstrating the problems faced by a certain self-help group and how they went about using technology to solve the problem. It could also be used to encourage more people to join the self-help network. Finally nothing can be implemented without the involvement of the people who will be benefited by technology adoption. They, themselves should be motivated to participate in the self help tree network and the best way to do this is through rewards and respect. If respected and educated people from the community (e.g. postmaster or schoolteacher of a village) become part of this network then they will automatically attract more people. Their presence will also help in ensuring that technology is adopted. The presence of younger generation, who are generally faster at adopting new things, will help the self help groups.

Different entities will play different roles in actualizing the dream, the dream of technology to masses in real sense. With this approach and collective initiative, we should find a solution and work together for bringing benevolence of technology to the common man in India in a meaningful manner. For the sake of the nation, let's hope this happens sooner rather than later.

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