Helping Rural India Ride The IT Wave

A look at some of the projects attempting to take the benefits of information technology to rural India shows just how much common sense and sound use of existing technologies can achieve. One such project is _it-rural.com_

there is nothing unusual about information technology benefiting the urban, tech-savvy population. But if it starts making a difference to rural India—which is undoubtedly the major chunk of our economy—it is definitely worth noticing.

We took a detailed look at the work of IIT-Madras' TeNeT group in the July 2006 issue of _'i.t.'_. This group not only works on creating technologies to make the last mile link cheaper so that telephone and Internet can reach more areas, but also explores methods to help rural India realise the information-

"My point is not that the IT industry should do something for the country at large, for that it does anyway...My point, rather, is that it can do even more...This is partly because the reach of information is so wide and all-inclusive, but also because the prosperity and commanding stature of the IT leaders and activists give them voice, power and ability to help the direction of Indian economic and social development."

—Amartya Sen, keynote address at the NASSCOM 2007 India Leadership Forum in Mumbai, on 7th February 2007.

Senior scientist of *it-rural.com*, Ramasubba Reddy at an awareness programme in Nallapareddy Palli village

Literacy Programme—K. Vellamavaripalli Village

On-field demonstration—Pest control—Redgram—Yerripalli Village

sharing potential of the Web, and make the Internet a communication medium that can be used to create a livelihood. Through its Chirag project, the group has managed to take ICT to smaller towns and villages and created a sustainable business model, enabling local people to effectively run these Internet kiosks to offer communication, learning and other services to the rural population. The group's success has proved that it is not all about technology, but more about creating sustainable business models and fostering entrepreneurship around IT services.

Taking technology to rural India

it-rural.com (ITR) is a project on the same lines. It was started by Thiruchelvam Ramakrishnan and a group of like-minded individuals around six years ago when Ramakrishnan, an IT professional, realised that those involved in Indian agriculture suffered from a number of social, economic and administrative problems. These included knowledge gaps, credit gaps, logistical constraints, unpredictable weather, marketing gaps and administrative constraints that resulted in limited crop selection, insufficient institutional credit and insurance coverage, unreliable quality, low productivity, lack of storage facilities, desperate selling, a middlemen-oriented marketing system, and more.

Ramakrishnan felt that IT, which played an important role in the modern day industrial revolution, could also play a vital role in curing India's rural society of its problems. IT works very well as a tool in closed systems; it can also work just as well in an open system like the rural sector with relevant modifications, he thought. So, along with a team of software engineers, Ramakrishnan started researching our rural economy to develop a system aided heavily by IT, which could help improve rural GDP and per capita income, in addition to improving the quality of life in general.

According to Ramakrishnan, the solution to the problem involves the effective and efficient dissemination of knowledge in a controllable way, with IT-enabled logistical support to the villagers to take prompt action based on the knowledge (since marginalised and small farmers, most of the time, are unable to make use of available information).

Simple but effective rationale

The major objective of ITR is to increase the per capita earning of villagers, so that the facilities reach the villages, or the villagers reach these facilities!
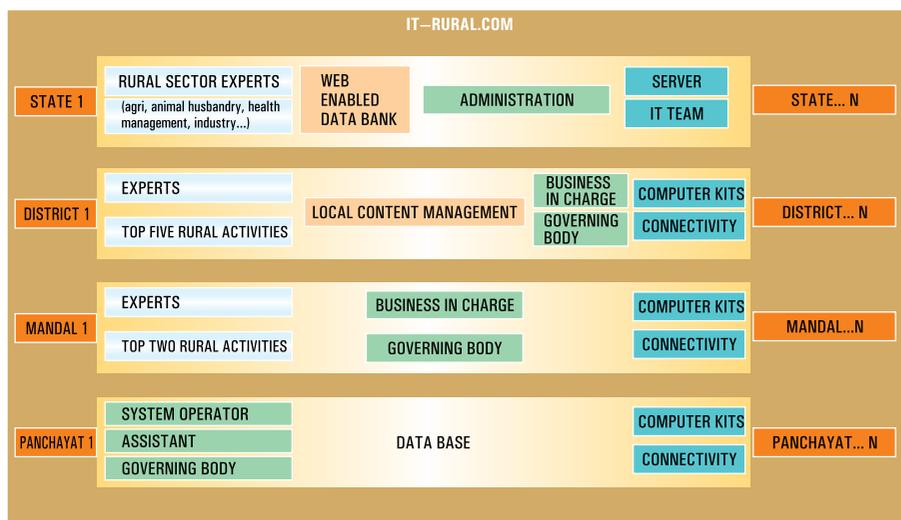
"The villagers are divided into four

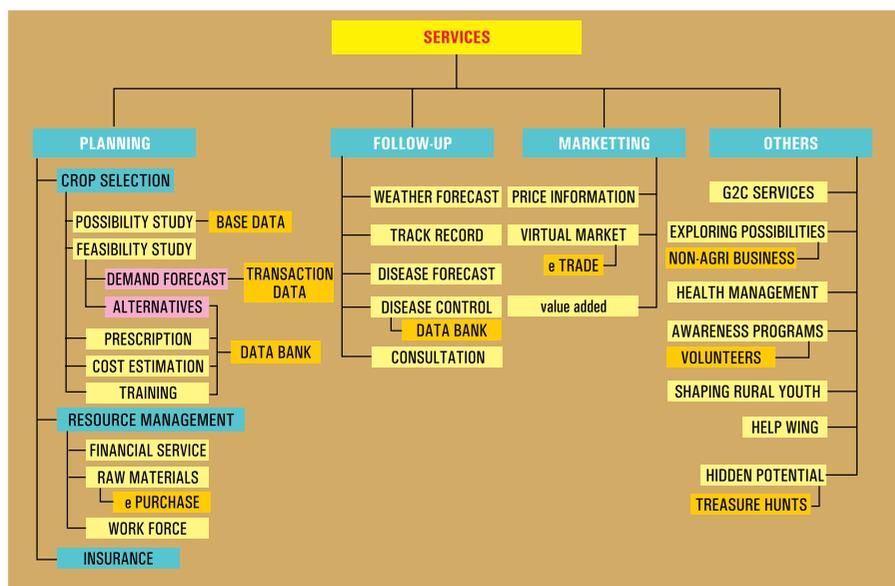Figure 1: The *it-rural.com* solution architecture

Figure 2: Services covering the complete lifecycle in the farming sector

moment (like students), the aim is to provide free access to computer literacy, spoken English, learning resources, etc. And finally, we need to help those who cannot earn money (like the diseased, aged, disabled, etc). This can be done by giving those in need of aid enough visibility so that they get connected to appropriate donors and also in ensuring accountability of the recipients."

Each category operates in a different way. For example, farmers can avail of various services relevant to their role—selecting the crop based on its potential and demand forecast (a feasibility study); getting qualified prescriptions for the selected crop and arranging prescribed inputs (brand selection is decided by the farmer) such as seeds and fertilisers. ITR also helps farmers in reaching financial institutions; in arranging for the workforce; in providing regional weather forecasts and effective diagnostic tools in the case of insects, pests and diseases. Other opportunities for farmers exist in spotting markets based on current trends and direct marketing through the virtual market at *it-rural.com* (both domestic and international markets have been successfully experimented with).

The proposed system would essentially cover all categories of people (land owners, labourers, dependants, etc) and touch every sphere of life (revenue, literacy, health, moral values, entertainment, facilities, etc).

"All together, ITR has proved that without doing anything extraordinary, if IT-enabled intervention takes care of the complete process management in the farming sector, a minimum of 40-50 per cent improvement in net profit is assured. Calculated investments in the greater production of quality seeds, more credit facilities, upgradation of technology like effective irrigation methods and cold storage facilities, value-added conversion units, etc, could increase the net profit by over 80 per cent," explains Ramakrishnan.

categories and each of them is dealt with separately, and in a different manner," explains Ramakrishnan. "There are those who earn money. We need to help improve their net revenue by improving productivity and yield, and providing direct marketing facilities for better realisation of productivity, etc. Then there are those who could earn money. We need to convert this trainable workforce into an employable workforce, and connect them with urban and semi-urban employment opportunities. For those who need not earn money at the

Reaching the common person

All this sounds good. A Web portal that can provide all the information to the farmer, act as a virtual marketplace, connect the sellers and the buyers directly, and so on. But, ultimately, what matters is the how? How do you take such ICT services to farmers? Where do they go for computers and the Internet? The farmer may not even understand English or might not know how to operate a computer. In order to tackle all the hurdles that lie between the rural public and its access to relevant IT, the ITR project has been designed and implemented in such a way that at all levels the farmer can connect to the best information services.

The architecture of the solution operates at various levels, according to Ramakrishnan. At the Panchayat level, the Information and Data Processing Centre (IDPC) or kiosk is provided with the necessary computer kits, with Internet connectivity. A systems operator and an assistant help the villagers to communicate with the system through the *it-rural.com* portal. The system maintains information in English as well as in the regional language to overcome the linguistic barrier. ITR owns the kiosk; hence, it is not a franchise model, per se.

The relevant computer kits and Net connectivity are also provided at the mandal/taluk level. Two business transaction controllers and two rural experts control this level. At the district level, the headquarters is provided with the necessary computer kits and with Net connectivity. Three business transaction controllers, five rural experts (for the top five business activities of the district), two Web experts and five governing bodies manage this level. And at the state level, a full-pledged IT team (to handle software, hardware, content development and Web page design), rural experts and administrators take charge.

The system coordinates service providers like bankers and insurers, facilitates business activities like manufacturing, construction, trading, food processing, logistics, etc, establishes a work force and creates an integrated database of the macro, personal and professional details of the rural population. The system also helps build an automated databank of regional language-based standardised information and optimised solutions, and gathers volunteers to provide a wide range of services within the reach of the rural population.

So, at the heart of the system, you have the database that holds personal information, agricultural base data and agricultural transaction data, and the dynamic data bank that is constantly updated with information based on expert inputs. At the core is also a virtual marketplace to buy and sell agricultural produce on an international scale; a workforce creation wing that brings together employees and employers; and the manpower and volunteer backing that helps run the whole system—even conducting occasional workshops and campaigns on various relevant issues.

"If you ask me what IT can do best in the process of knowledge dissemination, the answer would be 'proper utilisation of the strength of Relational Database Management Systems (RDBMS) combined with n-tier architecture.' Basically, we change the present scenario of 'Villagers vs Experts' into one that could be termed as the 'Data of the villagers vs Digitised version of the knowledge of the experts' scenario. This would create a big turnaround in the process of rural development," says Ramakrishnan.

Sustainable and scalable

It is very rare for any system that's based entirely on service-oriented premises to sustain itself in

Comprehensive, reliable, updateable database (dual language)

Diagnosis tool of the databank (regional language)

The core aspect of marketing is export. Here, Hon'ble MP Y.S. Vivekananda Reddy is inspecting cartons at Vengatapuram village.

Visual Training on SRI cultivation—R Thummalapalli Village

Event management for Dept. Of Horiticulture—Banana & Sweet Orange—Pulivendla

Senior scientist of it-rural.com, Mr Ramasubba Reddy—Encounter—Sweet Orange—K. Vellamavaripalli Village

the long run. Stepping down from a visionary plane to a practical one, we have to admit that for a system to be self-sufficient and sustainable, it needs to have a successful business model.

Ramakrishnan explains, "The system has been designed in such a way that it generates sufficient revenue through its unique revenue generation model (semi-automated e-commerce), in order to make it not only highly service-oriented but commercially viable as well. The major revenue sources are the transaction-related service charges from the buyers and sellers (e-purchasing and the virtual market); the service-related charges from the service providers such as bankers, insurers, recruiters, etc; facility-related charges for application forms, ticket reservation, browsing, DTP services and so on; and income from business promotion (online ads, etc.) and from event management (product demonstrations and awareness programs)."

"Since sound economics is the core objective in the process of rural development, striking a balance between service and business is very important and we should be clear on what kind of services should be charged for and what should be free of cost," he adds.

Successful pilot, promising future

The project has been piloted successfully over the past 18 months, in the 12 panchayats and 30 villages of Pulivendla mandal in the Kadapa district of Andra Pradesh. "We operated 11 information and data processing centres covering 24 villages. One project leader, eight software engineers, one senior retired agri-scientist, four advisors, two administrators, 11 systems operators and 11 assistants (at the panchayat-level) worked for 18 months on the pilot and proved our objectives as both possible and feasible," says Ramakrishnan.

ITR is now in the process of executing a Memorandum of Understanding with the government of Andhra Pradesh, which has requested it to scale up the project to cover the entire Kadapa district by establishing 1000 information and data processing centres. That is a clear sign of the success of the model. "As another benchmark, NASSCOM has recognised our IT-oriented rural development initiatives by selecting *it-rural.com* as a resource partner for its Rural Knowledge Network Programme," adds Ramakrishnan.

ITR's work extends beyond this project too. For example, it has found a few major drawbacks in the government's new scheme to establish 1,00,000 CSC centres across the country through the franchise model. "We are discussing this with the concerned executives and our opinion has been received well. We feel that contributing our experience to this scheme could strengthen the large-scale effort," says Ramakrishnan.

It's ITR's belief that rural development initiatives should be considered and projected as a movement for the development of the entire nation, which should be driven by passion and powered by information technology. The model developed by them might well be applicable to other developing nations as well, but we must first wait and watch how well it is rolled out across our own country and how well the common person uses it.

After all, the success of any project lies not only in its successful implementation, but also in how well the beneficiary recognises the value of the facility and uses it. **I.T.**

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