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Citizen Centricity: E Governance in Andhra Pradesh

Introduction

Have you ever wondered why developing nations are most plagued with disease, corruption, poverty, crime and various other ills? Billions of dollars are poured into addressing these issues year after year in the developing world with little impact. How can a country break out of this unending vicious cycle when poor governmental practices are standard, when citizens do not trust their government and corruption is accepted as a daily part of life? Most countries are unable to escape the evils of bad governance. However, one Indian state, Andhra Pradesh, is in the middle of a bold experiment to fundamentally change the way it governs its citizens, by using Information and Communication Technology (ICT). Government processes have become more transparent, government more accountable and a growing belief among citizens that the future can be different and exciting for all its citizens. Highlighting the specifics of this bold initiative will give governments in both the developed and the developing world clear examples of the how and why specific programs work.

THE INNOVATION. . .

The e Governance experiment in Andhra Pradesh is a bold attempt to use Information and Communications Technologies (ICT) to improve governance processes. The setting is one of poverty, illiteracy, and corruption. The experiment is motivated by the desire to transform the state as captured by the vision statement:

That Andhra Pradesh should be a state where poverty is totally eradicated; that every man, woman and child in the state should have access, not just to basic minimum needs, but to all the opportunities to lead a happy and fulfilling life; and that we must emerge as a knowledge and a learning society built on values of hard work, honesty, discipline and a collective sense of purpose.

Vision 2020

This report was written by Praveen Suthrum and Jeffrey Phillips under the supervision of Professor C.K.Prahalad. The reports are intended to be catalysts for discussion and are not intended to illustrate effective or ineffective strategies.

ANDHRA PRADESH:

Andhra Pradesh is the fifth-largest state in India. It covers an area of 275,068 sq. km. and has a multiethnic population of 76 million, 48% of whom are illiterate. Seventy percent of the population earns a living through agriculture. The average annual household income is $600, with 20% of the population below the poverty line of $49 per year. Fifty percent of the homes have no electricity, and 69% do not have piped water. Only 8% of the population has completed high school.

Additionally, the state has 26 districts and three distinct geographical regions: Rayalseema, Coastal and Telangana. Five languages are spoken in Andhra Pradesh: Telugu, Urdu, Hindi, Tamil and English.

Nara Chandrababu Naidu, President of Telugu Desam Party, became Chief Minister of Andhra Pradesh in 1995 (chandrababunaidufanclub.com). His governmental reforms and popularity got him re-elected in 1999. Mr. Naidu is often referred to as the CEO of Andhra Pradesh because of his atypical view of government and the state; rather than maintaining the status quo and have AP languish as other Indian states, he wants the area to become India's Silicon Valley. Political will, tenacity and courage are needed to push eGovernance issues through to fruition, and Government of Andhra Pradesh (GoAP) has a leader in which all three are demonstrated.

In the late 1990s, the CM employed McKinsey & Co., to guide Andhra Pradesh in developing a comprehensive vision for the future. *Vision 2020*, a forward-looking document, was the outcome. Covering everything from agriculture, healthcare, education, industry and more, *Vision 2020* lays out what AP will look like in 20 years and the hard challenges it must face to get there.[1] One notable, recent outcome from *Vision 2020* is the concept of a *simple, moral, accountable, responsive and transparent* (SMART) government.[2] Each component of the SMART acronym can be reached easier through the state's eGovernance initiatives.

Principles of e-Government and the basic Motivation: Citizen centricity, at its most fundamental level, is a mind shift from an "institution-centered" (Figure 1) view of government to a "citizen-centered" (Figure 2) view of government. In familiar business vernacular, it is simply "putting the customer first."

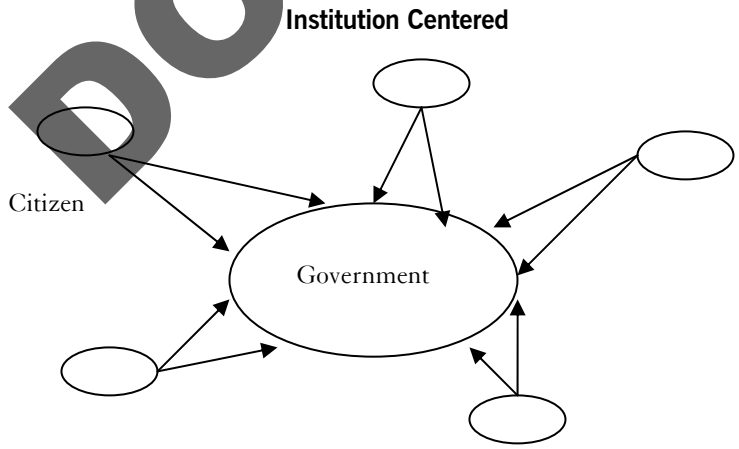


Figure 1
Citizen Centered

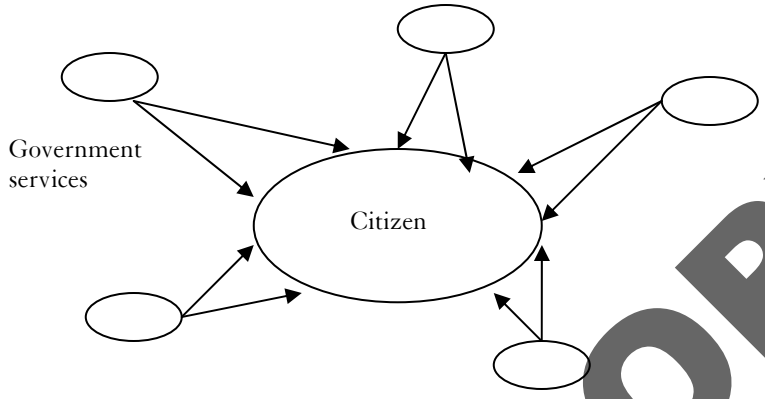


Figure 2

The traditional mindset of government employees can best be described as not service oriented. Anecdotally put, government workers will make your visit to their office as difficult as possible because they can. There is little enthusiasm displayed in their work and, consequently, the citizen suffers. Why is this behavior evident predominately in government settings?

Pervasiveness of Government in Citizens' life:

Government is a constant, pervasive influence on the lives of its citizens. For example, the government is approached first for a birth certificate, then a caste certificate when a child reaches school age. Later, the government presents itself in distributing scholarship funds for college. . The final face a citizen's family is exposed to is when a death certificate is given. As one official put it, "The government is a club whose membership is compulsory. One can't choose to be a member and one can't choose to quit."[2]

People inside the state recognize now is the time for change as well. "India, the country, is not poor. Our policies are no good. Second, we are not able to implement our policies utmost efficiently," stated Mr. Naidu, the head of the state.[3] It was also recognized that simple "band aid solutions" will not work. The system needs radical change. More than one citizen told us that "…corruption is 'sucking the blood' of the common man."

eGovernance and Good Governance

eGovernance simply harnesses the power of ICT to provide better-quality and tailored services to citizens. Four critical components must be in place for this to happen, and GoAP is intelligently pursuing all four:

(1) Sustainable and affordable infrastructure; the state has established communications networks at the district, mandal and village level. Further, it is building and refining the backend and service delivery infrastructures.

(2) Well-architected and sustainable software development; Andhra Pradesh has established core projects around such clusters as health, agriculture, education and business.

(3) Human resources; the state is actively recruiting recent ICT graduates while training existing staff.

(4) An implementation plan; initiatives have been rolling out since the late 1990s.[4]

"Andhra Pradesh will leverage Information Technology to attain a position of leadership and excellence in the information age to transform itself into a knowledge society." GoAP further envisions benefits to citizens and employees.[5]

BENEFITS TO CITIZENS AND BUSINESS
Streamlined, standardized electronic information gathering and access
Electronic delivery of services to meet citizen expectations and requirements
Convenient, anytime, anywhere citizen services
Support for e-commerce initiatives (e.g., online filing, payments, etc.)
Significant improvement in Government-to-Citizen (G2C) and Government-to-Business (G2B) interfaces

BENEFITS TO GOVERNMENT
Increased employee productivity
Facilitation of information reuse across and within the departments of GoAP
Reduced system maintenance and training requirements by adopting standard systems/processes
Cost-effectiveness in the operations of Government agencies
Improvement in Government-to-Government (G2G) interfaces

These lists establish the crucial link between eGovernance and good governance. Using ICT allows GoAP to do things smarter, quicker and more effectively, factors that facilitate citizen centricity and good governance.

Andhra Pradesh's eGovernance Framework

The GoAP uses the following framework to guide its e-government strategy and circumvent challenges posed by management of technology, resources and implementation.[6]

Implementation Framework	6C Model
Resource Framework	PPP Model
Technology Framework	ICT Architecture

6-C Model for Implementation

The government developed the 6C model from the experience of implementing/ coordinating several projects in its departments. The model incorporates features essential for successful implementation of IT projects.

1.	Content – Developing application software content that translates end objectives into visible results.
2.	Competencies – In place of hiring new employees, the government focuses on training existing top, middle and cutting-edge level employees. Specially hired CIOs (even at district levels) ensure the spread of IT skills.
3.	Connectivity – Besides connecting its departments, the government is encouraging private operators to lay fiber-optic cable throughout the state.
4.	Cyberlaws – AP's Information Technology Act 2000 provides a legal framework for all projects. The law gives legal recognition to electronic records and to authentication through digital signatures. The law addresses issues such as data privacy, integrity, access control, non-repudiation and audit of electronic transactions.
5.	Citizen Interface Options – Multiple interfaces are provided from citizen service centers, Internet Kiosks, Home PCs, Set-top-boxes etc. Each e-government project defines the levels of interface.
6.	Capital – The government actively partners with private enterprise to raise capital and bring its projects to fruition. The PPP model described below defines the framework for such a partnership.

Resource Framework: Public Private Partnership (PPP) Model

Computerizing all departments in central and state governments in India is estimated at an intimidating cost of Rs. 350 billion and an effort of 130,000 person-years.[7] The Public-Private-Partnership (PPP) model was created to make the task of e-governance in Andhra Pradesh less formidable. Imperatives to provide high-quality infrastructure, a shortage of public funds and profit motives in privately managed areas are reasons for the PPP concept.[8] PPP assumes a wide spectrum of models like Build-Own-Operate (BOO), Build-Own-Operate-Transfer (BOOT) and Build-Operate-Transfer (BOT), depending on the needs of both parties. The hope is to blend the appropriate amount of public sector accountability with private sector efficiencies while sharing the risk.[9]

The Department of Information Technology and Communication's abstract on the PPP model concludes eGovernance will involve implementing 1,500 applications across 160 departments at about 10,000 sites.[10] The government uses the following unofficial rule of thumb to identify bundles for eGovernance: "Anywhere citizens are standing in line or using paper, there is opportunity for e-government."[11] Clearly, vast amounts of financial, managerial and technical resources will be required. The abstract further cites the following factors enabling the rapid adoption of the PPP framework in Andhra Pradesh: a proactive government seeking administrative reforms, thriving IT skills in the private sector, entrepreneurship, increased connectivity, IT architecture and framework for security and Public Key Interface (PKI).[12] The Andhra Pradesh Infrastructure Department, which uses the PPP model, notes that private investment is hampered by inadequate legal framework, cumbersome procedures, delay in obtaining clearances, inadequate administrative support, threat of public interest and inadequate grievance-handling mechanisms.[13] Andhra Pradesh is addressing each factor to make the investment environment easy for private companies.

Andhra Pradesh is extending the PPP model to every facet of development in the state from biotechnology to education to international airports. Private enterprises are scurrying to lay fiber-optic cable through the entire state, and every village is scheduled to have Internet access within 12 months considering the initiatives that have begun, it is reasonable to assume the development of Andhra Pradesh will be driven in many ways by the Public Private Partnership. Already, the government is

effectively using the PPP model to achieve what the Chief Minister, Mr. Naidu, calls "leapfrog development through IT."[14]

Reforms and eGovernance

eGovernance can, and should, be viewed as a much-needed governmental reform. In fact, it is only one of the many substantial reforms that have occurred in GoAP during the last eight years. Many of the outcomes of the Impact Cycle of eGovernance would be less substantial, if at all possible, had it not been for these other reforms. Likewise, if these reforms had occurred in the absence of eGovernance, it is doubtful their impact would have been felt as strongly.

ACTION

The approach to the reporting of the study of this complex social transformation through the use of ICT will be as follows:

a. We will outline the changes that have been made to the routine transactions that individual citizens have to make on a routine basis like paying utility bills, getting a birth or death certificate. We will describe eSeva, the experiment in the capital city of Hyderabad and in the rural area, Naagampally.
b. We will recognize the alternate experiments in other major metropolitan areas of the State. The State is not prematurely settling down to one model
c. We will describe in depth the back end work required to get ICT going. We will describe the water department in Hyderabad- the capital. Similar experiment in the electricity department was studied in depth but will not be reported in this version
d. We will then describe the additional demands imposed on the system when infrequent but complex and large financial transactions are involved such as acquisition or selling of land and property.
e. Finally, we will describe the effects of this system on the citizens. The initial studies show great promise and some clear problems.

e Seva: Dealing with the Routine Interactions of Citizens with the Government

Among the many eGovernance initiatives being implemented, we studied the one having the greatest impact on citizens and businesses – eSeva. We also outline initiatives where eGovernance alone did not solve all problems. Alternate eSeva models from various parts of Andhra Pradesh are presented to show the extent of the eGovernance drive. Further, we researched two organizations (Water and Electricity) to explore the extent of e-governance in the back end to make the front end e-governance possible.

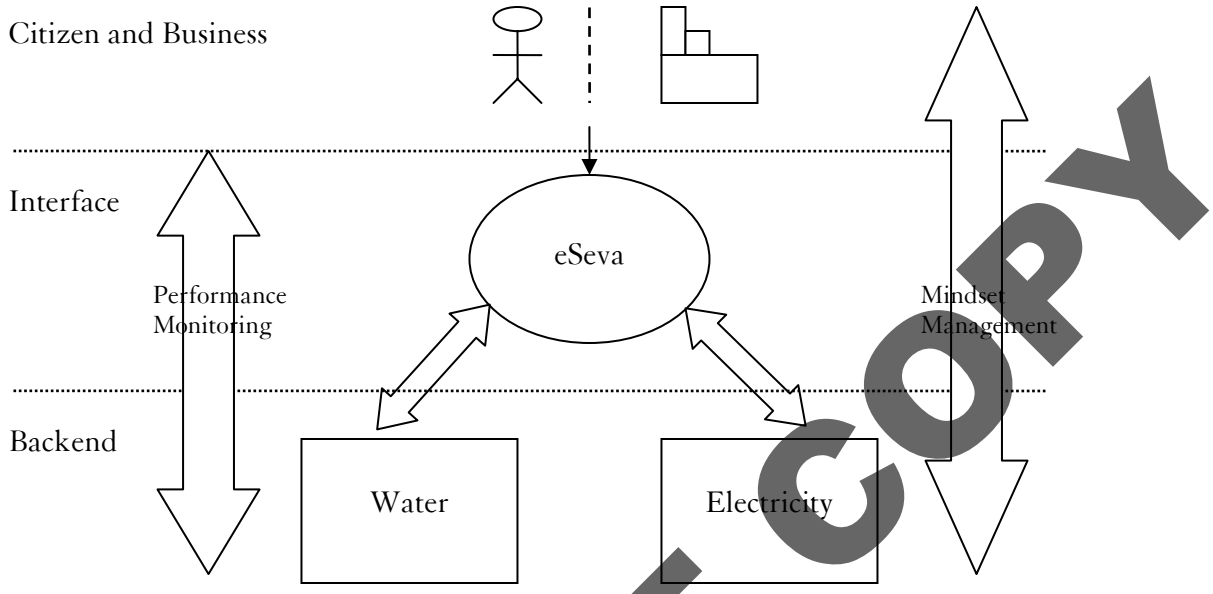


Figure 3

eSeva

In the words of Mr. Phani Kumar, the Director for eSeva, eSevais a "killer app" that attempts to end the old system and a "halfway house that is relevant to all developing countries."[15] The government has converted its old offices into eSeva Centers and *outsourced the day-to-day operations to private companies, as per the Public-Private-Partnership (PPP) model.* Seva in Sanskrit means service; appended with an e makes it 'electronic service.' It offers a much-needed alternative not only to utilities-related interactions but also to a whole range of 45 different services. We visited three urban eSeva Centers: Khairtabad, Ramnagar and Banjara Hills. Using a self-operated token system, citizens seek different government services. In addition to housing management offices, the Khairtabad center also operated the data centers that runeSeva across the city.

The eSeva centers operate from 8 a.m. to 8 p.m., making it convenient. The service itself operates 24 hours –a day, 7 days –a week over the Internet through www.esevaonline.com. The centers have an average staff of 24 members with a minimum of 16 and a maximum of 44.[16] Citizens are not charged for using the service, but the utilities are billed Rs.5 per transaction regardless of transaction amount. Payment is accepted through check, cashier's check, cash or credit card. The transactions update the department databases in real time. In order to pay over the Internet, eSeva has partnered with regional banks for direct debit transactions. eSeva is designed over a three-tier technology using the following hardware and software in[17] Table 1:

- Sun E250 servers, Compaq ML 530 database servers - Oracle 9iAS, application server running on Sun Solaris - Oracle 8i R3 database server running on Microsoft Windows 2000 - Firewall server - Network monitoring system running on Cisco - 10 KVA UPS with one-hour backup and 5 KVA UPS for all servers in the datacenter10 client machines and 10 printers at each eSeva Center

Table 1

As of November 2002, the following costs were associated with eSeva[18]:

Pilot: $200,000 Site/Building Preparation: $600,000 Hardware/Software/Networking: $1M

Table 2

Users consistently cite the following as the main advantages of eSeva (Figure 4).

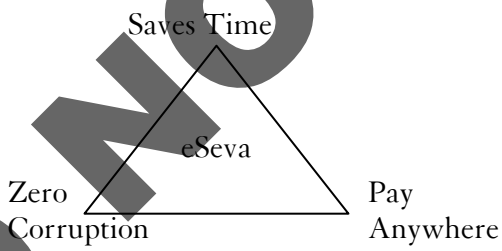


Figure 4

The services are used by an average of 1,000 citizens per day ranging from 400 to 2,000.[19] Being a networked system, citizens can pay their bills in any of the 34 locations in Hyderabad. A citizen is not bound by the region she lives or works in.

The eSeva operators are provided with a secure web browser that prevents any tampering with the system or accounts. The operators can only enter data and take prints of receipts. The software is cleverly designed to prevent operators from altering the system and stores detailed transaction information making every interaction completely transparent.. Every single customer we spoke to testified there was no element of corruption.

From the urban to the rural eSeva centers, customers embrace the system because it saves an enormous amount of time. The government targets completing each transaction in 90 seconds.[20] It also saves time because a citizen can pay all her bills at one counter in a center instead of traveling all over the

city trying to connect with various agencies of the government.. If one so wishes, she can avail all 45 services in one sitting.

We found the time saved was more critical for the poor and the middle-class than it was for the elite; the middle-class miss work and the poor are kept from their hourly wages. The Institute of Public Enterprise survey showed that 40% of the users earned incomes ranging from Rs.5,000 to Rs.15,000 per month and 17% earned below Rs.5,000 per month, indicating predominately middle-class users.[21] The survey also found 78% of users to be educated.[22] An alternate survey conducted by the Administrative Staff College of India further asserted that 97% of the surveyed users were literate.[23] Our analysis found that of the 750,404 transactions in March 2003, the number of transactions that had a rupee value below Rs.100 contributed 11% (presumably the poor), greater than Rs.20,000, about 1%, and the middle segment, Rs.100 to Rs.20,000, about 80%. Considering the amount collected during the same period, the middle segment contributed 73% of the Rs.4.3 billion. Further, during the eight hours we spent at the eSeva centers, we found the educated middle-class frequenting centers more. We are led to believe that eSeva is helping the middle-class citizens the most.

When we asked Mr. J. Satyanarayana, the Principle Secretary for IT, on how the government measures success, he said, "Transactions."[24] There have been 7.02 million transactions since its inception in August 2001 and Rs.19.6 billion has been collected - an indication of the number of citizens who have benefited from the new system. Currently, the majority of the transactions are through utility bill payments. TRANSCO, the electricity organization, contributed 67% of the overall transactions (Rs.4.7 billion in collections), followed by the water department at 9% (Rs.1.76 billion in collections). Our findings were further reinforced through the Institute of Public Enterprise survey that found 93% used eSeva for electricity bills, 77% for telephone bills and 72% for water bills.[25]

Interestingly, the Commercial Taxes Department, CTD, which was started in February 2002, contributed Rs.16.2 billion. We also noted a high degree of variability in that certain centers had 585,845 transactions (collections of Rs.4.4 billion) in March 2003, starkly contrasting with other centers with transactions as low as 286 (collections of Rs.294,958) per month. Highlighted below in Chart 1 is a graphical representation of the number of transactions for the following organizations: Hyderabad Metropolitan Water Supply & Sewage Board, Electricity Corporation (TRANSCO) and Municipal Corporation of Hyderabad (MCH).

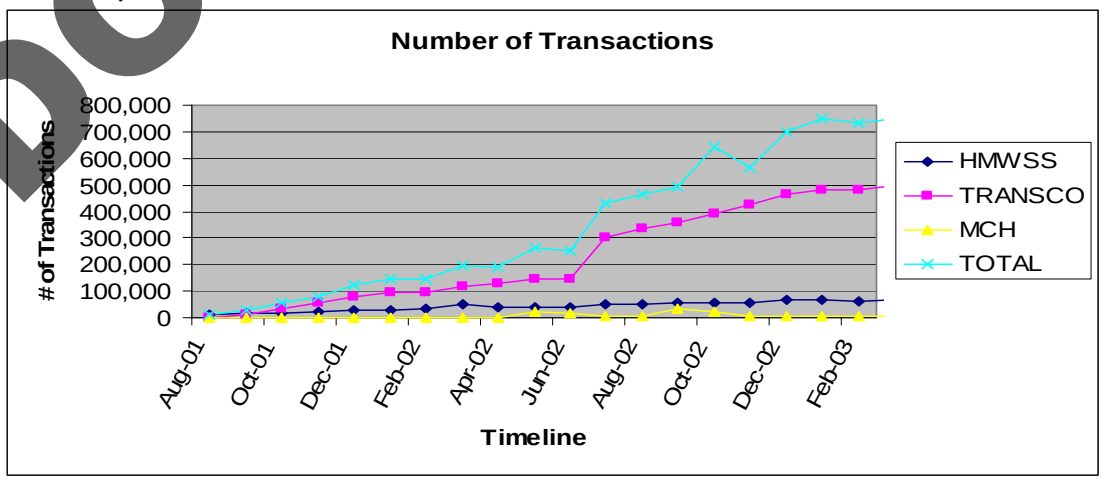


Chart 1

We also were interested in observing how citizens adapted to new services offered over eSeva and how the departments benefited in terms of collecting bills online. As can be seen in Chart 2 (number of transactions per month) and Chart 3 (number of rupees collected per month), collections and transactions spike when new services are offered. One observation can be made: The collections toggle before settling constantly at a higher level, e.g., BSNL–the telephone service. In Chart 2, BSNL is Bharat Sanchar Nigam Limited, CTD is Commercial Tax Department, TTL is Tata Teleservices Limited (private phone company) and Road Transport Authority is RTA.

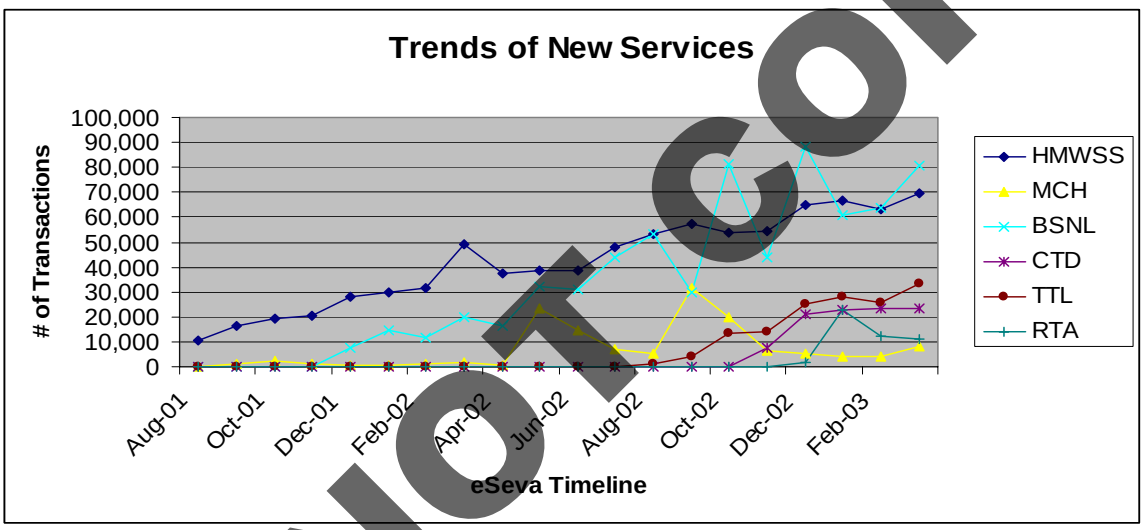


Chart 2

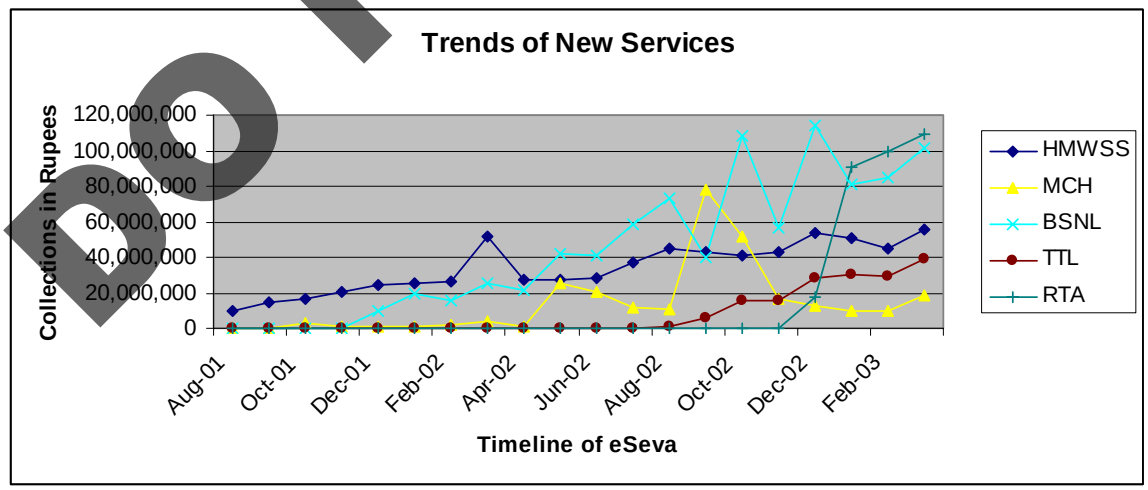


Chart 3

The low levels of comfort with the Internet were evident when we noted the total collection through citizens transacting online and on their own was Rs.2.5 million over a mere 3,725 transactions since inception (0.05% of total). We were further intrigued by the change in the number of transactions

per day for the three predominantly used services of electricity (Chart 4), water (Chart 5) and MCH (payment of property tax, Chart 6). The number of transactions spiked on similar dates for the utilities but entirely different dates for MCH, thus causing irregular loads on the eSeva system. Differing payment cycles for each department cause this balance in load. It is also important to note the spikes in transactions are not extreme on any given date; they are distributed through the month. The departments manage the load on the individual systems by spreading the payment dates across the month.

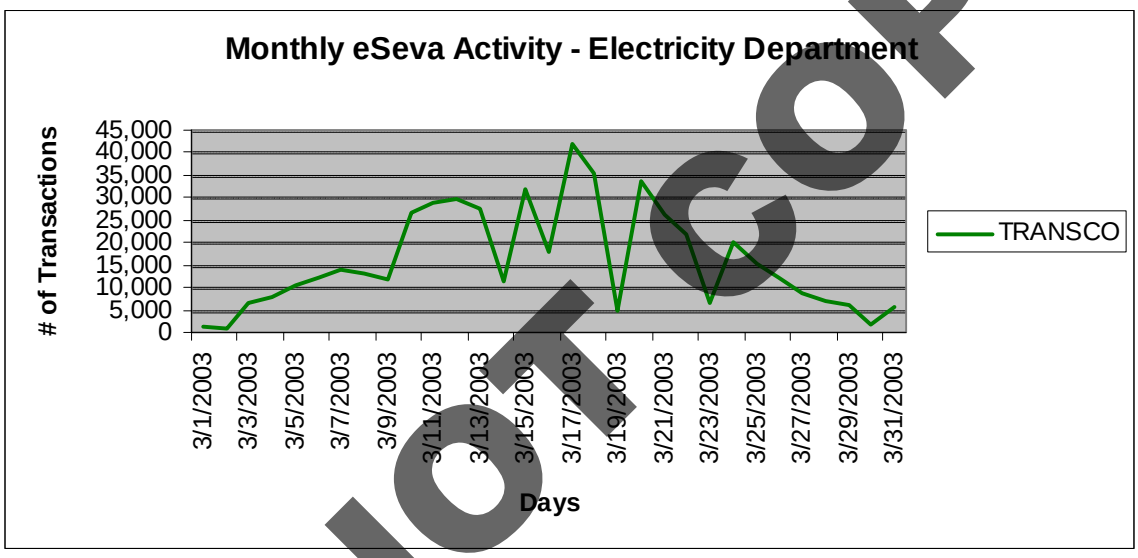


Chart 4

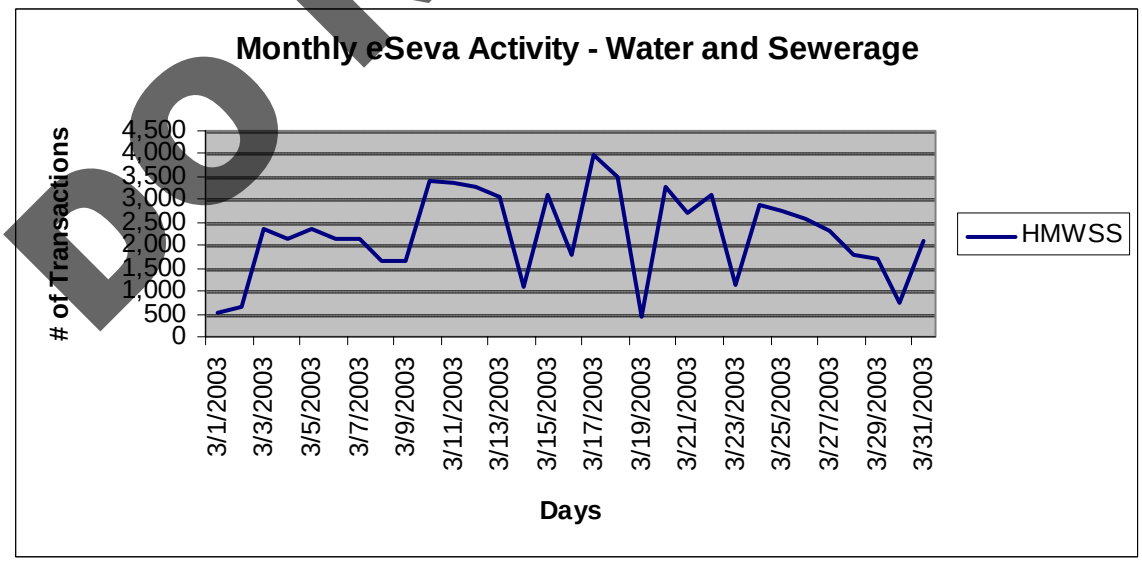


Chart 5

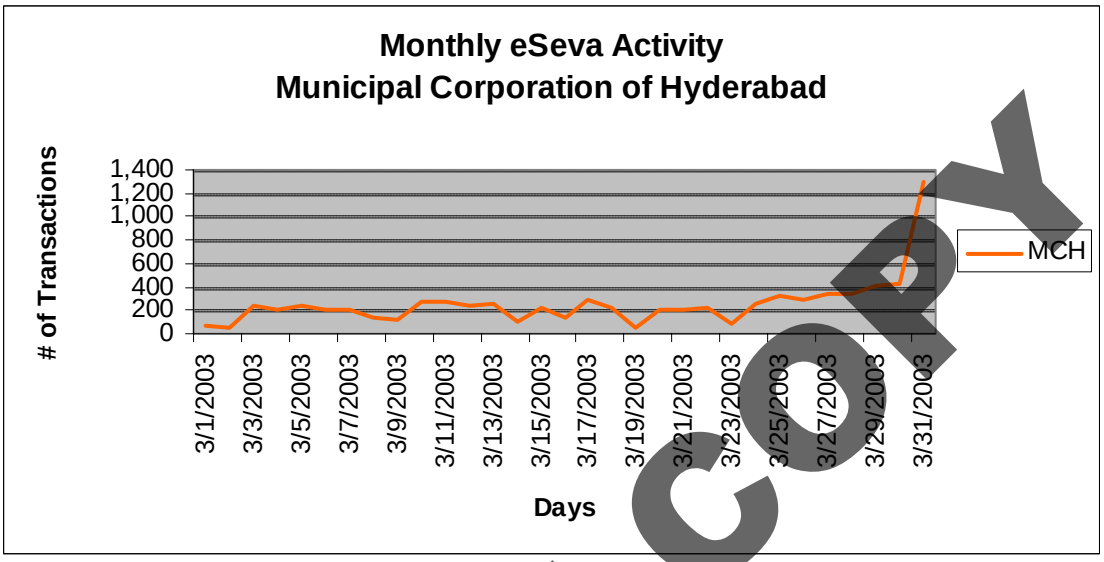


Chart 6

Operational Hiccups

The Administrative Staff College of India, ASCI, in its study of eSeva highlighted the following issue. The 'normal' eSeva center is designed to serve about 2,000 citizens per day. Assuming a normal eSeva center has 10 counters, the number of citizens handled by each counter per day is 200. Given 12-hour operations, this translates to 16.6 customers handled per hour, or one customer every 3.6 minutes. The ASCI found an average 80 transactions took place per counter per day vs. the planned 200 (assuming that 20,000 transactions occur per day in a sample of 25 eSeva centers).[26]

We observed that citizens living in housing complexes employed a single person to pay all their utility bills together. Citizens paying a large number of bills together created an unexpected bottleneck, especially for customers who come to pay a single bill. When customers paid their electricity bills after the due dates, the arrears still appeared on the next month's statement, creating confusion among users and eSeva operators. Mr. Ravi Kumar, an eSeva Operator said, "The customer thinks we are not working properly. We've complained to the management about this issue."[27] With respect to telephone bills, citizens who paid late had to return to the telephone company to clear their accounts.[28]

eSeva Rollout

We asked Mr. Phani Kumar, the Director of eSeva, on how they measure success."Number of services offered" was the reply.[29] Mr. Kumar recently received an award from the Computer World Honors Committee for the best eGovernance initiative [eSeva]. He envisions eSeva to be the only face of the government for most citizen interactions. He said, "There is a possibility to offer as many as 7,000 transactions over eSeva in the not so distant future."[30] Having achieved much success in the capital city of Hyderabad, eSeva will be rolled out in 2003 to 117 municipalities through 229 centeRs. The rural eSeva centers, described in the next section, go further to the sub-municipality level. It is important to keep in

perspective that eSeva never had a model; it is the first time in the world that a government has attempted to create such a system. The approach, therefore, is to build, test and innovate continuously. Table 3 illustrates the current range of services offered at eSeva centers.

PAYMENT OF UTILITY BILLS	PERMITS / LICENSES
Electricity Water and sewerage Telephone bills Property tax Filing of CST returns Filing of A2 returns of APGST Filing of AA9 returns of APGST Collection of examination fee Filing of IT returns of Salaried class Sale of prepaid parking tickets	Renewal of Trade licenses Change of address of a vehicle owner Transfer of ownership of a vehicle Issue of driving licenses Renewal of driving licenses (non-transport vehicles). Registration of new vehicles Quarterly tax payments of autos Quarterly tax payments of goods vehicles Lifetime tax payments of new vehicles
CERTIFICATES Registration of birth Registration of death Issue of birth certificates Issue of death certificates **INTERNET SERVICES** Internet-enabled electronic payments Downloading of forms and Government Orders	**RESERVATION AND OTHER SERVICES** Reservation of APSRTC bus tickets Reservation of water tanker Filing of passport applications Sale of non-judicial stamps Sale of trade license applications Sale of National Games Tickets Sale of entry tickets for WTA Sale of EAMCET applications
B2C SERVICES Collection of telephone bill payments Sale of new AirTel Prepaid Phone cards Top up/recharge of AirTel Magic cards Sale of entry tickets for Tollywood Star cricket Sale of entry tickets for Cricket match (RWSO) Filing of Reliance CDMA Mobile Phone connections	

Table 3

Table 4, below, highlights the range of services that are soon to be offered:

SERVICES IN THE PIPELINE
Railway reservation
Sale of movie tickets
Payment of traffic-related offenses
Payment of degree examination fees of O.U.
Sale of I-CET applications
Online reservation of Tirupati Temple Tickets
Collection of bill payments of Idea Cellular
Collection of bill payments of HUTCH
Issue of encumbrance Certificate
Market value assistance
General insurance
Reservation of Tourism tickets for accommodation
Reservation of tourism bus tickets
Call center
Indian Airlines ticket reservation
Life insurance premium payment
Issue of caste certificates
Sale of Indira Vikas Patra
ATM services
Collection of bill payments of Air Tel
Renewal of drug licenses
Issue of bus passes
Collection of trade licenses of Labour department

Table 4

Rural eSeva

We traveled to Naagampally village (one hour from Hyderabad) in Shadnagar Mandal, one of the 64 mandals in the district of Mahaboobnagar. There are 1,550 villages in Shadnagar. Andhra Pradesh conducted two pilot projects, one of which was in Shadnagar. Each pilot meant back-end networking of departments and setting up Internet kiosks in 10 villages. Naagampally, with a population of more than 2,200, was one such village. The Gram Panchayat or the main government building in the village, was converted to an eSeva center (earlier called Online Transaction Processing - OLTP). The operator, Indira, was recruited from a women's self-help group called Mahalakshmi and is from the same village. Rs. Indira was recruited because she studied until her 12th grade and was eager to use a computer. The center offered three types of services: Agricultural and Veterinary Services, Rural Development and Welfare Services and General Services shown in Table 5.[31]

AGRICULTURAL AND VETERINARY SERVICES
Services for selection of crops, advice on farm practices, support for tackling pests and diseases and tele-veterinary services. Availability of agricultural market prices and employment information.
RURAL DEVELOPMENT AND WELFARE SERVICES
Self-employment, pension and welfare schemes. Transparency in government programs, engineering works, development schemes and selection processes.
GENERAL SERVICES
Registration of births and deaths, issuance of caste, income, residence and nativity certificates, land record extracts, filing of grievances, payment of electricity bills, access to Internet, e-mail and messaging services.

Table 5

The pilot, which was three months old at the time of our visit, has generated a lot of curiosity among the villagers. Citizens come to the center to see their names and what a computer is. They are free to operate the system if they are comfortable in doing so. An online interface in the vernacular, Telugu, makes it easy to use for everyone. Citizens typically apply for a caste certificate (required for subsidized admission into schools) by providing personal information at the kiosk. Data collected is transferred to the Mandal office at various times of the day. The Mandal office prints the certificate, signs it and sends it back the next day via a messenger. With the advent of digital watermarking, the certificates can be printed and given directly to the citizens without the need for a functionary's signature. GoAP's IT Act 2000 accommodates for electronic signatures.[32] Shared databases running on an Oracle 9i database enable departments to provide complex and integrated services. The horizontal and vertical integration of departments bridges the distance from the villages to the state headquarteRs. The villages also are provided with handheld devices to make transactions easy. The scope of the pilot was limited to integrating 16 departments and 10 villages in each mandal. The pilot project was implemented at a cost of $200,000 per mandal through the PPP[33] model. The future plan includes replication of the rural eSeva project in 1,125 mandals of the state in a phased manner.[34]

eSeva is not a standalone success; various eSeva-like experiments are underway in different parts of the state, such as Saukaryam and the Vijayawada Municipal Corporation.

Alternate eSeva Models:

The government allowed experiments to evaluate the benefits of alternate models of providing e-Governance services in the state. A project 'Saukaryam' (which means facility) was started in January 2001 in the seaside city of VisakhapatnamDriving 382 kilometers farther from Vishakhapatnam to Vijayawada will reveal the spread and diversity of the eGovernance drive in the state. Since the beginning of 2001, Vijayawada digitized its departments, but the challenge of transferring the benefits effectively to a population of 800,000 lay ahead. Vijayawada partnered with the local cable television corporation, Siti-Cable. Eighty percent of the citizens have access to TV in the city. Today, any citizen with access to a phone and TV can dial a number to get connected to the servers of the Vijayawada Municipal Corporation (VMC). Once the caller is connected, the phone instrument serves as a keyboard and the TV works as the monitor of a computer.

eGovernance Cannot Replace Inefficiencies in Law – CARD

Computer-aided Administration of Registration Department (CARD) was one of the first eGovernance initiatives implemented in Andhra Pradesh. The project, designed to eliminate the problems affecting the conventional land registration system, was the brainchild of Mr. J. Satyanarayana, now Principle Secretary for IT. The project was started with the objectives of demystifying the registration process; bringing speed, efficiency, consistency and reliability, and substantially improving the citizen interface.

The first phase of the project was successfully implemented and improved transparency and speediness of transactions. Using a sophisticated document management system with imaging technology, the department digitized 2.8 million land records dating from 1983 and implemented the project in 387 offices around the state.[35] A pilot was conducted in 1996 at a cost of $55,000; the project, which was launched in 1998, cost $6 million to implement.[36] Employees embraced the project wholeheartedly because eliminating drudgery was emphasized as a major priority. The pace of implementation quickened when employees realized that computerization did not threaten their jobs. In the words of Mr. M. Veerabhadraiah, the Inspector General for Registration and Stamps Department, his department "has now imbibed the technology."[37] The technology used was client-server based with an Oracle database on an SCO UNIX/LINUX platform.[38] Six months following the launch of the CARD project, about 80% of all land registration transactions were carried out electronically.[39] Land registration now can be completed in one hour instead of seven to 15 days as in the earlier system. Title searches over the past 20 years can be done in 15 minutes vs. three days as earlier. Certified copies of documents can be obtained in 30 minutes vs. three days in the conventional system.[40]

Unlike with other departments, most citizens use this department twice or thrice in their lifetime. For such limited usage, they do not have the patience to understand the legal aspect of land registration, title transfers or Encumbrance Certificates (EC). ECs are mortgages, trusts or deeds. Therefore, citizens rely on brokers or middlemen who have experienced the process many times over. According to Mr. Veeerabhadriah, "The department has a near-steady one million transactions every year."[41] He also feels the challenge now is to communicate to these fleeting one-time customers the benefits of the new system and to prevent them from using the middleman.[42] Further, the first phase of the project did not reduce corruption to a large extent. Employees embraced it because they did not see a large reduction in their 'unofficial' income. The day we visited the Stamps & Registration Department, we were met with brokers outside the office. They wanted to help us register our 'fictitious' land plot for Rs.800. When we shared our experience with Mr. Veerabhadraiah, he told us about the next phase of the CARD project and its benefits.

The department is well on its way to integrating 148 offices in the state, which would empower the citizen to choose any office for registering her land.[43] If one office demanded a bribe, the citizen can choose another. Further, time and money can be saved in traveling to a particular location to register land. For example, land in Vishakhapatnam can be registered in Hyderabad, which is 650 kilometers away. The integrated offices also will be monitored on the intranet, and it will be easy to identify the changes in numbers of registration(s) from office to office. A successful office will indicate it is either highly corrupt or very 'clean.' Concerning employee resistance to the next phase (it will mean a definite reduction in their unofficial incomes), Mr. Veerabhadraiah said, "They are stuck in a loop. With the next version, they know they will not be able to take bribes. They can't stop it because the government will encourage more private partnerships, compromising their own positions within their departments. The employees will lose the power of harassment."[44]

In spite of the clever ways the government is implementing eGovernance in land registration, basic reform change is needed for societal change to result. A recent survey conducted by the Center for Good Governance (CGG), the think tank instituted by GoAP and the Department of International Development, uncovered disappointing insights into the current registration process. Eighty-seven percent (90% rural and 80% urban) of all those registering land went to the CARD office with the help of a document writer or a middleman.[45] The average bribe paid was an additional 7.95% (2.85% urban and 25.81% rural) of the actual fees due.[46] Eighty-three percent (60% urban and 94% rural) of citizens share the view that the registration officer is corrupt, and 85% (64% urban and 96% rural) feel the land department is corrupt.[47] One hundred percent do not feel GoAP has done anything to tackle corruption in the registration department.[48] The study also observed that citizens and document writers consistently under-declare the actual transaction price, and real market values are far higher than those kept on the CARD systems.[49] Rural transaction prices (Rs.550,000 per year) are under-declared on average by Rs.48,000 each,[50] and urban transaction prices (Rs.450,000 per year) by Rs.36, 000 each.[51] This adds up to potential revenue loss to GoAP of Rs.4.5 billion per annum.[52] The think tank recommends privatization of the front office as one of the ways to reduce corruption; this would mean providing land registration services through the zero-corrupt eSeva environment.[53]

Land registration traces its roots in India's colonial history; land records were prepared and maintained by the state governments primarily for revenue collection.[54] As per the Indian Registration Act of 1908, a land title does not ensure certainty of land ownership. The title, issued by the government, is only a public document recognizing a private transaction. It has been estimated that India loses 1.3% economic growth annually as a result of disputed land titles, which inhibit the supply of capital and credit for agriculture.[55] The millions of small, illiterate, backward, poor farmers in India, whose only evidence of title to their holdings is the entry in the record-of-rights in land maintained by the state governments, exacerbate the problem.

But the entire exercise is drained of all significance if this entry in the record-of-rights in land has only superficial value. To clarify the presumptive nature of land registration, Mr. Veerabhadraiah said, "The government cannot stop a citizen from registering the Legislative Assembly in his name if he so wished. It is up to the civil court to handle disputes of such nature after the title registration is done."[56] A CARD project, or any other eGovernance project, will not help with resolving such a problem; however, it can drive reform change. With due credit to the benefits of making the registration process easy, computerization is only a means to an end and will not help in freeing up the dead assets in Andhra Pradesh. According to Prof. D.C. Wadhwa, who has been proposing his ideas to the Indian government for 13 years, the conversion of the present system of presumptive titles to land into conclusive titles to land is the only sensible solution of this problem.[57] If Andhra Pradesh were to truly enhance the marketability of land and advance its agricultural and industrial development, bold reform change must go hand –in hand with CARD.

Varying eGovernance Initiatives

After the government came up with its vision for eGovernance, department after department envisioned their own eGovernance plans. The Transport Department conceived the Fully Automated Services of Transport Department (FAST) project and actively supplements services offered through eSeva. The FAST project, partnering with private companies, was launched in 1998. Since then, more than 663,000

licenses have been issued, and 416,000 vehicles have been registered electronically.[58] According to Mr. A. Giridhar, the Transport Commissioner, "The computerization project was started with least procedural change so it will have the least employee resistance."[59] The main objectives were to provide a safe and secure database that is accessible from anywhere and to facilitate inter-department transfer of data. The department was careful not to cite curbing corruption as a goal. Mr. Giridhar believed if curbing corruption was attempted at the outset, the employees would plan a "rearrangement of corruption sources" which might be a bigger danger.[60] Discretionary procedures have slowly been converted to a software-based model. The department is also trying to remove its monopolistic authority by offering its services through multiple channels, so a customer can pay vehicle tax through FAST as well as eSeva.

Through a project called Multi Purpose Household Survey, the Revenue Department created a socioeconomic database of all 76 million citizens in the state using citizen IDs.[61] The database, which cost $10 million, forms an integral backend for projects such as the rural eSeva.[62] We met with consultants from Tata Consulting Services (TCS), a major eGovernance partner for Andhra Pradesh. The company invested $4.25 million in building a SMARTGOV framework to automate workflow within the Secretariat of GoAP.[63] The primary responsibility of the Secretariat is to formulate policies, procedures, rules and guidelines that govern the implementation of various schemes and projects. TCS sells the framework to governments of other states and countries. At the time of our discussion, the project was implemented in Sri Lanka, Jammu and Kashmir.[64] Since GoAP co-created the original model, it receives 20% royalty from TCS every time the project was implemented in another location.[65] The consultants were confident TCS will recover its investment in the framework soon enough.

Another example of the government's radical use of ICT is the Ku-Band Satcom Project, which uses satellites from Indian Space Research Organization (ISRO) for distance education, telemedicine and agricultural services.[66] The Chief Minister mentioned he wanted to use the satellites to monitor specific e-government initiatives in the state at a macro-level.[67] Other projects include Integrated Financial Information System for the Finance Department, eCOPS (Computerized Operations for Police Services), e-Procurement to automate procurement procedures of the government, Human Resources Management System for use of all departments to automate administrative and HR procedures and Social Benefits Management System for use of all welfare departments.[68]

Back-end Implementation of eGovernance

A critical aspect of eGovernance involves understanding the back-end digitization required to make the front end of eGovernance possible. Mr. Randeep Sudan, Special Secretary for IT said, "The front end is just 2%. But the back end contributes to 98% of the eGovernance drive in the state. Years of work were done in the back end to offer as simple a service as utility payment through eSeva."[69] In order for GoAP departments to offer bill payments through eSeva, digitization of customer databases had to be accomplished first. Connection to eSeva centers via secure networks finished the conversion process. It is important to understand both the distinction between the citizen-facing eGovernance initiatives and the eGovernance initiatives taking place in these back end departments, and realize the crucial link between the two: that poorly constructed back-end schemes and institutions facilitate and encourage front-end, or citizen-facing, corruption.

Hyderabad Metropolitan Water Supply & Sewage Board

Since inception in 1998, the Hyderabad Metropolitan Water Supply & Sewage Board (hereafter referred to as water board) has been the model of back-end "e-readiness" in the government of Andhra Pradesh. As early as the mid-1990s, the water board realized efficiencies could be gained both in customer service and employee productivity by utilizing ITC. According to the Managing Director, Mr. M.G. Gopal, "The Water and Sewage Board is consistently two to three years ahead of every other government office in terms of our exploitation of IT."[70] With this in mind, it is necessary to determine the impact of their IT leadership?

The water board is chartered to provide two basic services essential to life: 1) an appropriate supply of potable drinking water and 2) sewage collection and disposal. The water board has 406,659 customers, of whom 87.4% are classified as "domestic" users, i.e., households. The water board states in its Citizen Charter that it will provide a minimum of 250 liters/connection/day of potable water (most connections have water flow only every other day for one hour). Four reservoirs surround the city of Hyderabad and are the city's main sources of water. Leaky mains, broken connections and disrepair describe the state of many of the water connections. Similar adjectives can be used to describe the city's often overflowing sewage lines. Coupled with an exploding population that is demanding more water and recent severe shortages of water, it is plain to see these exceedingly simple goals for a country in the western world have become difficult, if not impossible, for the state of Andhra Pradesh to achieve.

The water board used Oracle technology for all its applications. Most of the software packages were developed internally with minimal costs.

Effect of eSeva

Three districts were chosen for analysis: one that houses predominately elite citizens (Division 6), one with predominately middle-class citizens (Division 5) and one where the majority of citizens are poor (Division 1). It is important to note these divisions were selected based on broad assumptions related to geographical locations of Hyderabad.

The eSeva centers around Hyderabad have had a dramatic increase in the number of paying customeRs. Chart 7 displays the number of paying water board customers from August 1999 to February 2003.[71] Prior to April 2002, the average number of customers who paid was roughly 60,000 across all districts. The spike in April 2002 can be attributed to a "critical massing" of eSeva centers in Hyderabad. Starting in August 2001, the government was using TV, print media, computer advertising and word-of-mouth advertising to spread the word of the new services. Since then, the number of paying customers has leveled around 100,000, a staggering increase of 66%.

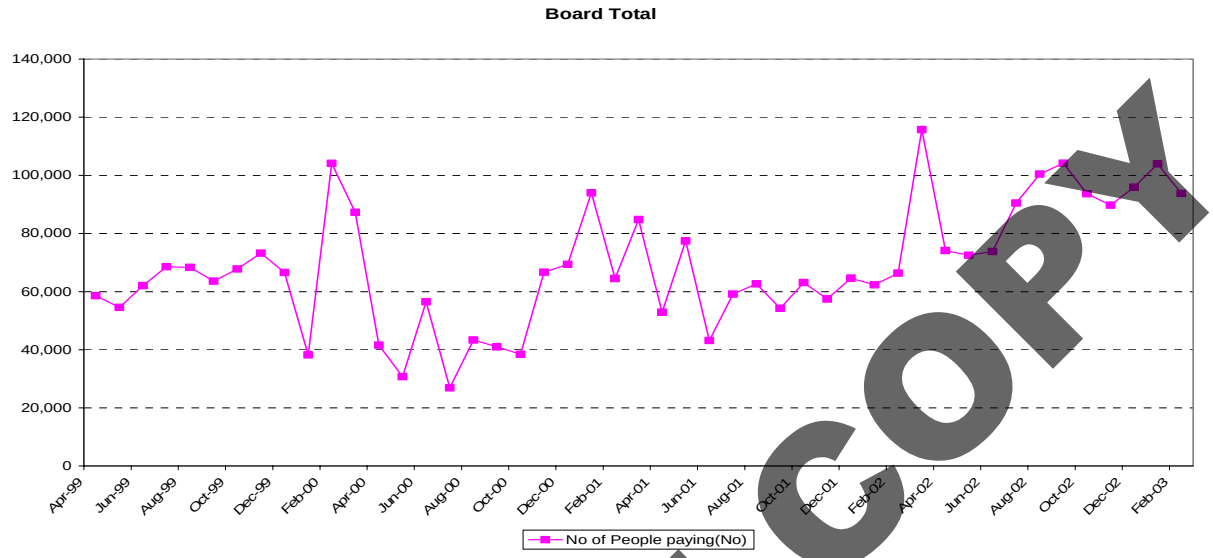


Chart 7

Chart 8 provides similar data as Chart 7, except that it represents the three districts chosen.[72] The aforementioned spike in April 2002 is clearly seen for the rich and the middleclass. A spike for the poor never really materializes, although there is a slight increase in October 2002. One can conjecture many possibilities for this. First, the marketing campaign initially was targeted at the rich and middle-class – especially if one assumes the majority of poor are illiterate. Second, the poor may not have felt they belonged in such nice facilities that were frequented by rich and middle-class citizens. Third, which often defies logic, is that the poor always pay a greater percentage of their bills when due than the other two segments. If this is true, we can assume the number of paying customers who are poor will not dramatically increase over time when additional eSeva centers are rolled out.

The water board Managing Director, Mr. Gopal, said, "Citizens are utilizing eSeva to pay their electricity bills, because an overdue bill in that department guarantees immediate cancellation of service. Because it was so easy and fast, while they were there, they decided to pay their water bills too."[73] This is a textbook example of a network externality.

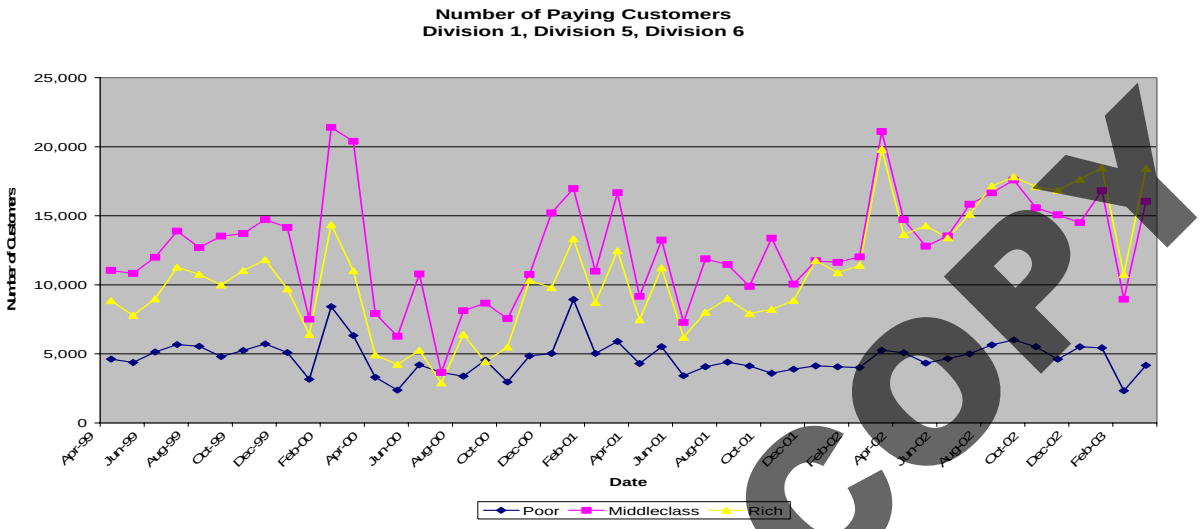


Chart 8

Chart 9 is a visual description of the amount of collections, in rupees, from August 1999 to February 2003.[74] The spike in the amount received matches the spike observed in the number of paying customeRs. And as with the previous graphs, the increase in amount received is beginning to level off 66% higher than before. Chart 10 details the rupees collected from the selected divisions in Hyderabad.[75] The trends in Divisions 1, 5 and 6 echo what is occurring throughout the city as a whole. Important to note again is the increased level of rupees that are being collected after the April 2002 jump.

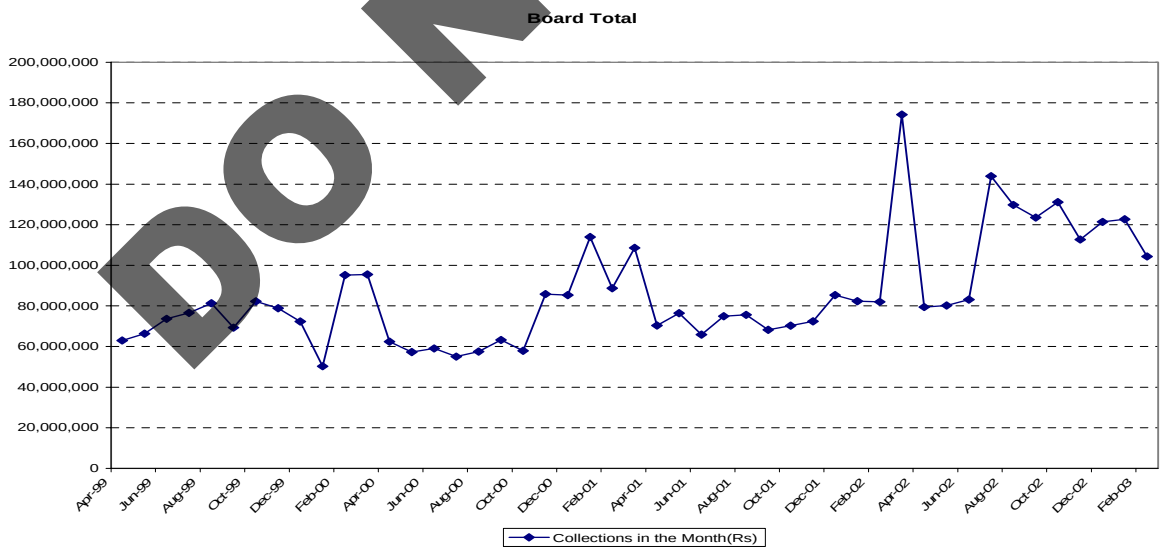


Chart 9

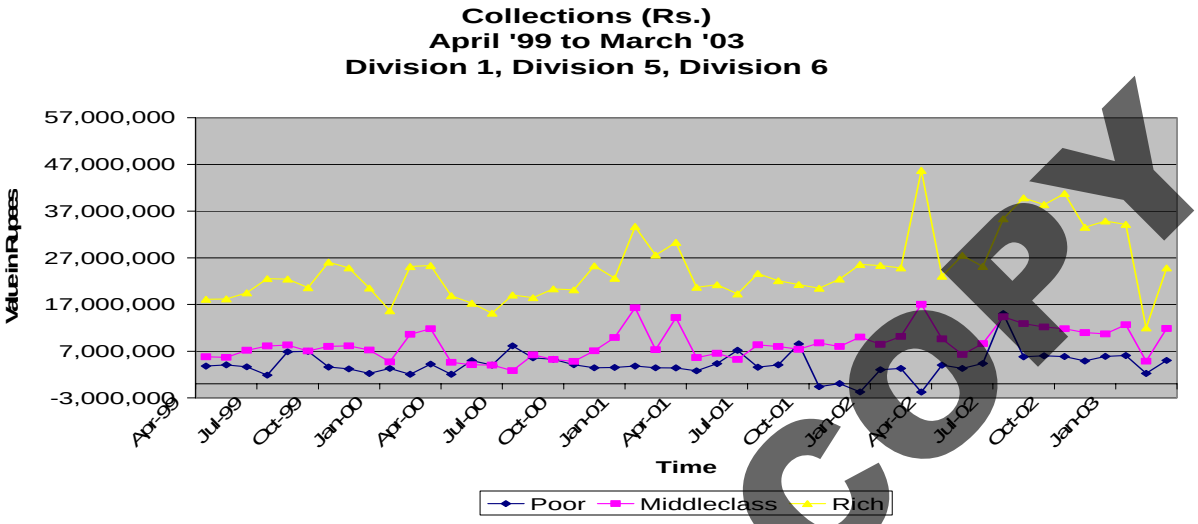


Chart 10

Operational Improvement – Tracking Defaulters

Prior to the introduction of eSeva, the total amount owed by citizens in these three districts was Rs.123,026,281 (Table 7)[76]. 14,529 citizens were deemed "Never Paid Customers" (NPC) and/or "Defaulters." Through the use of an MIS database it is possible for the water board to track the 400,000+ customer accounts. Information such as customer name, address, account number, amount due and pipe size is available at the touch of a button (Figures 7 and 8).[77] To get this point, past customer information had to be digitized–a process that had been ongoing since the mid-1990s.

	Prior to eSeva	**Prior to eSeva**	**Post eSeva**	**Post eSeva**		
	Rs. Owed	NPC '00-'03	Rs. Recovered	Paying Customers	% Rs. Recovered	% Gain Customers
Poor	66,021,275	8,134	7,160,910	2,239	10.85%	27.53%
Middleclass	34,624,548	4,236	8,646,933	2,160	24.97%	50.99%
Rich	22,380,458	2,159	6,080,865	1,265	27.17%	58.59%
Total	**123,026,281**	**14,529**	**21,888,708**	**5,664**		

Table 6

Table 8

Greater visibility into personal accounts allows the water board to track defaulters better and leads to increased revenue. For the three districts chosen, Rs.21,888,708 have been "recovered" since eSeva's inception compared to Rs.60,486,858 for the rest of Hyderabad[78]. Interestingly, the greatest percentage gains have come from middle-class and rich citizens. The most obvious conclusion is that these two segments have, on average, higher water bills, and any increase in the amount of rupees collected will have a greater impact on the total. If the water board can get one rich or middle-class citizen on the margin to pay, it is a much larger gain, both nominally and on a percentage basis, than having one additional poor citizen pay.

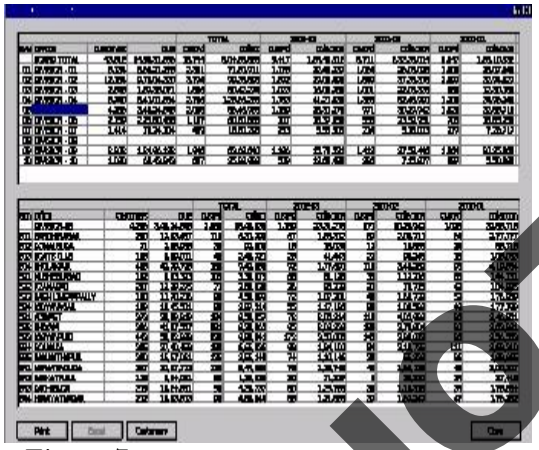


Figure 7

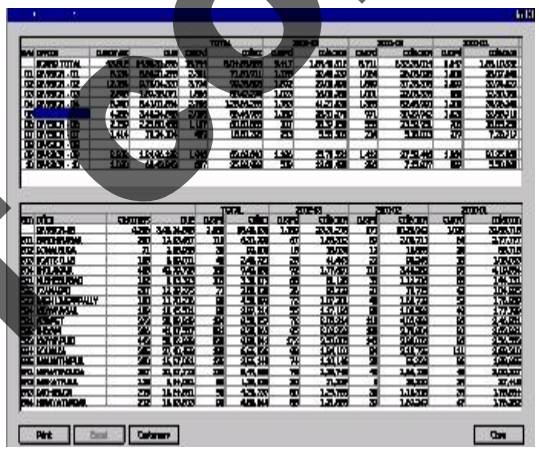


Figure 8

Mr. Gopal has been able to bring current commercial business practices to the water board to additionally combat defaulters during his tenure. For instance, he offers his employees a 5% bonus of the rupee value received for getting past NPCs to finally pay. Plans such as this provide the needed incentive for employees to enforce water board policies, while also lessening the need for employees to demand bribes[79].

When the number of defaulters is substantially reduced, the overdue or outstanding money will lessen and this is exactly what we observed. Chart 11 perfectly illustrates just how effective eSeva and Mr. Gopal's practices have been.

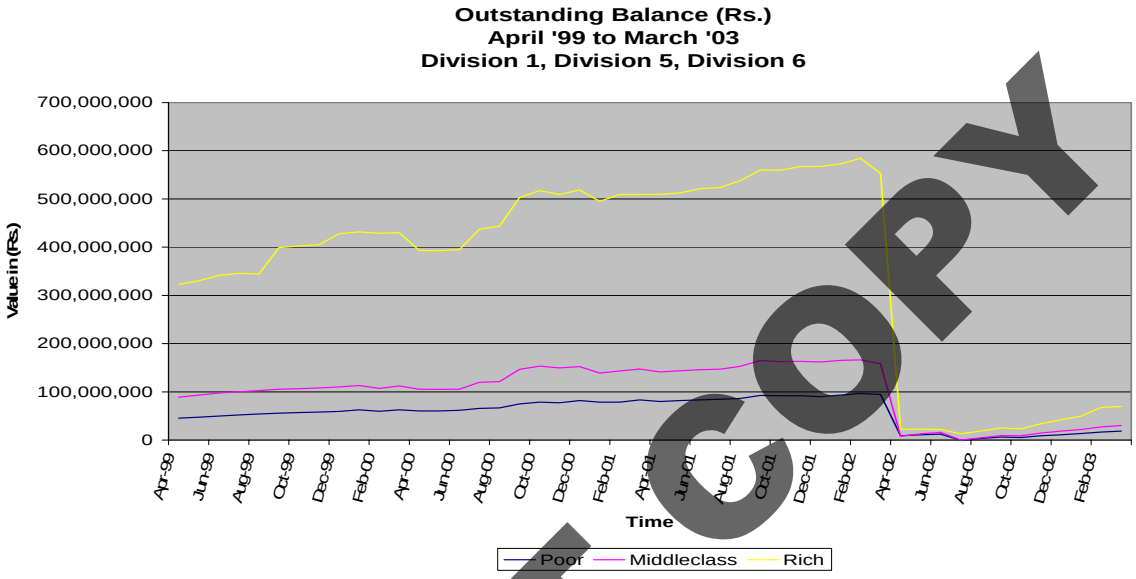


Chart 11

Redressing Grievances

A key aspect of e-governance initiatives in general is the increased transparency afforded to citizens. For water board's customers, one benefit has been in the area of resolving grievances. Historically, customers had to lodge a complaint at one of the water board offices in the city.[80] The only guarantee the citizen had was that someone would write the complaint down. After that, the chances of having management track, and much less worry about, an individual's complaint was slim; there was no centralized data bank available for analysis.[81] Management had no incentive or motivation to follow up. If, however, management did want to systematically track a specific individual's complaint, it was nearly impossible. In fact, the only chance s/he would have of tracking a complaint from inception would be if it were lodged at the head office.[82] These two critical aspects of grievance solution were dependent upon the interest of the government official (whose interest level often increased with the level of bribe paid).

In 1999 the Board launched the Metro Customer Care program in hope of increasing customer service. Customers can call a toll-free telephone number, 1916, and lodge water and sanitation complaints.[83] This system operates 24 hours –a day, 365 days –a year.[84] Prof. Jennifer Davis of MIT co-authored a paper dealing with water and sanitation in South India that perfectly outlines the MCC process: "The hotline is staffed at water board headquarters by 13 trained operators, who log each complaint in detail into a computer database and relay it directly to the section manager in whose jurisdiction the customer lives. Once the section manager resolves the complaint, s/he completes a compliance report, asks the customer to sign it and submits it to the MCC system."[85] This is made possible because of a sophisticated MIS system available across the organization by a WAN.[86] The WAN also makes it possible to analyze the performance of all operational sections.[87] A trend analysis also is being completed on which geographical zones receive the most complaints. Medium- and long-term

funding decisions can be made to areas that need upgrading the most. Additionally, this performance information is available for everyone to see, so there is peer pressure for managers to perform. It is also possible for customers to lodge complaints via the Board's Web site.

The water board managing director and other superior officers have immediate access to complaints and routinely monitor complaint status. If action is warranted on their part, often because of the inaction of a low-level manager, it is swiftly taken. In fact, customers themselves may receive phone calls from the MD or other officers and be queried about the level of support they received and their satisfaction.[88]

In the future, there is a plan to provide handheld devices to mobile unit manageRs. New applicants could be processed quicker, and grievances solved faster. Plotting complaints on a digitized map, when coupled with the above-mentioned trend analysis, will enable system design improvements.[89]

Monitoring

Per its Citizen Charter, the water board has a list of categories and sub-items it deems most essential to providing quick grievance solution. Because of the lack of a dedicated monitoring system, historical data is not available on complaints prior to the MCC's inception. Table 8 below outlines the top eight complaints from February 1999 to November 2002 and the redress efficiency. During this time, 246,080 complaints were lodged.[90]

COMPLAINT	% OF TOTAL COMPLAINTS	REDRESSAL EFFICIENCY
Sewarage overflows	35.34%	64.0%
Chokage customer premises	30.27%	78.2%
No water for x days	17.53%	58.9%
Water leakage	5.23%	54.3%
Low water pressure	4.84%	58.8%
Replacement of manhole	1.04%	65.2%
Non-receipt of water bill	.33%	55.4%

Table 8

The water board also tracks the redress efficiency of its nine divisions. The efficiencies of the three chosen divisions are shown in Table 9.[91]

MAJORITY OF CITIZENS	DIVISION	REDRESSAL EFFICIENCY
Poor	1	38.6%
Middle-class	5	41.8%
Rich	6	59.3%

Table 9

Data was not available on the number of complaints per division. It would be useful in examining why Division 1's efficiency is lower than the other two. Is it because of a greater number of grievances or simply a catering to upper class citizens?

The initial success of the program is hard to argue with. According to the MIT paper, "40% more complaints are handled per month than before."[92] Also, the number of phone-in complaints is increasing at a rate of 10% per month.[93]

Prior to eSeva – Single Window Cell

In the late 1990s the water board was searching for a way to improve the performance of managers and employees while reducing customer hassles customers had to deal with. Their creation was the Single Window Cell (SWC), a centralized process for customers to apply for water and sewage services. The Single Window Cell is similar to eSeva in that citizens interact with a water board employee in a non-threatening environment.

In the past, a customer had to visit multiple offices to obtain the necessary documentation to receive a connection[94]. Time-consuming processes, lost paperwork and hassles by government bureaucrats were common before the SWC. Anecdotal evidence suggests that customers were paying government officials bribes to facilitate this process. Now, information about new connections is computerized, allowing for greater visibility by management into the quality of employee service. For instance, if the water sanction is not completed within 30 working days, the Board is liable to pay Rs.20 to the customer.[95] Additionally, time demands on the customer have been substantially reduced since everything is taken care of in one office. According to the MIT paper, virtually all new applications are completed within the requisite 30 days.[96]

Tied to the SWC is the Green Brigade – a select group of water board workers who establish water and sewer connections for customers.[97] In the past, citizens were responsible for finding their own plumbers; quite often, a government official might have an "acquaintance" who is a plumber and if the citizen wanted her application processed quickly, she had to agree to use the "suggested" plumber.[98]

The benefits of SWC and the Green Brigade are numerous for customers: There is no need to obtain counseling and guidance from middlemen, no need for interaction with division or section offices, no need to engage multiple plumbers and labor for establishing a connectionand the Green Brigade will lay the necessary lines and install the meter.

A visitor to the water board's Web site is greeted with a quote from Mahatma Gandhi:

> *A customer is the most important visitor to our premises.*
> *He is not dependent upon us. We are dependent upon him.*
> *He is not an interruption in our work. He is the purpose of it.*
> *He is not an outsider in our business. He is part of it.*
> *We are not doing a favor by serving him.*
> *He is doing us a favor by giving us an opportunity to do so.*[99]

As the e-governance initiatives are gaining momentum, this mindset is becoming the norm, rather than the exception. Better transparency is allowing customers to demand better service from the water board. The Board cannot do anything about the amount of water that falls from the sky, but it can do everything in its power to serve its customers as best as it can.

Andhra Pradesh Central Power Distribution Company

Owing to new power sector reforms, the original Andhra Pradesh State Electricity Board was unbundled into Generation and Transmission Corporations APGENCO and APTRANSCO. APTRANSCO was further unbundled into four distribution companies (discoms).[100] We chose the Andhra Pradesh Central Power Distribution Company (APCPDCL) that distributes power in seven districts, including the capital city of Hyderabad, as a representative sample to understand the eGovernance initiatives implemented under the electricity umbrella. (details not included in this report).

Figure 10

We visited the main data center that resides in the busy APCPDCL office. The servers and networks have had minimal problems to date and effectively handled the ever-increasing load of online bill payers through eSeva. Given the success through eSeva (Chart 12 below), the company is systematically shutting down its own Electricity Revenue Offices (EROs).

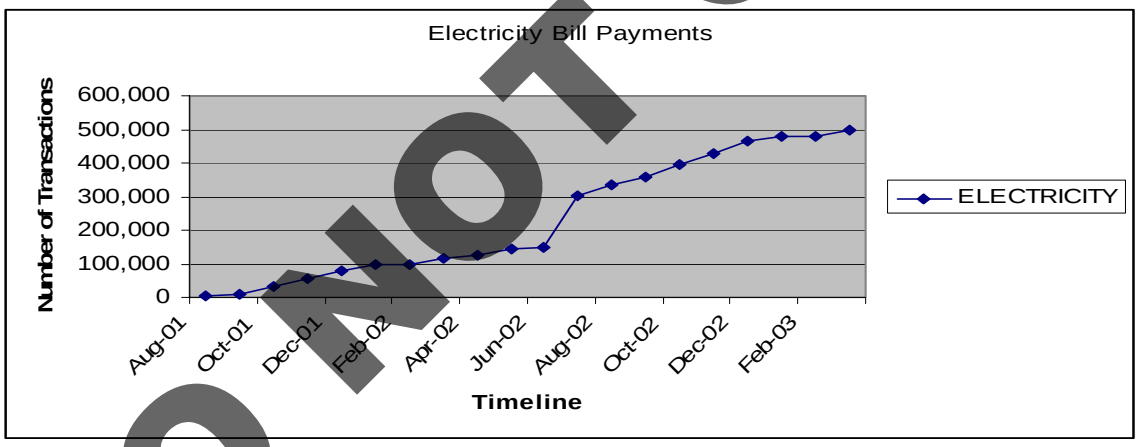


Chart 12

eGovernance Initiatives

The various eGovernance initiatives underway are described below.

1. The company uses a Customer Analysis Tool (CAT), a data mining tool, to grade defaulting customeRs. Inspections carried out by four dedicated personnel across 10 sections based on targeted reports over two months resulted in recurring revenue impact of approximately Rs.10 million by focusing on consumption, billing and metering irregularities. Further, additional collections of Rs.3.6 million were made using the focused reports generated by CAT.[101]

2. Another ITC tool used to identify loss and theft of electricity is Monitoring and Tracking System (MAT). CAT and MAT generate various reports used by vigilance staff to track defaulting customers and by executives to measure internal efficiencies.

3. The company built a software tool that reduces the failure of distributed transformers, saving on distribution losses and maintenance costs.[102] The package, called Transformer Information Management Systems (TIMS), was deployed in all discoms. TIMS helps in inventory management by increasing visibility of assets.[103] The system has an in-built database that captures every transformer erection, failure, repair and replacement.[104] The company is also making use of microcontrollers to trip transformers from power overloads and to log activity at every installed transformer.[105]

4. A similar tool the company uses to monitor electricity-measuring meters is called Meter Information Management System (MIMS). Yet another tool, called Performance Review and Monitoring (PRMS), monitors financial performance indicators, operational statistics and customer complaints. The tool provides a single view of both financial and operational information and allows drilling down to the lowest level.[106]

5. However, SCADA (Supervisory Control and Data Acquisition System), the microwave communication-based network provided us a glimpse into the future. With the help of four engineers working at any given point in time, SCADA automatically controls power transmission through unmanned transformeRs. The facility that covers an area of 1,550 square kilometers, ensuring power supply to one million customers, was established at a cost of Rs.320 million.[107] We witnessed the engineer-in-charge receive a phone call concerning a power outage and saw him resolve the issue in four minutes by opening an alternate neighboring power tap allowing electricity to flow into the area with the outage. The facility, which covers 24 unmanned sub-stations, will soon ramp up to 300 sub-stations.[108]

6. Any consumer in the city of Hyderabad can dial 1912 and be connected to the Trouble Call Management System installed in the SCADA office. The system, which was developed in UNIX/ Sybase, will soon be using Geographic Information Systems (GIS) technology to provide mapped directions to a customer location when calls arrive. The system also was being migrated from manned to unmanned control. The call center serves 1.35 million consumers.[109]

7. Finally, electronic spot billing through hand-held computers using GSM cellular technology was introduced in Hyderabad and Secunderabad.[110] Though no data was available, Mr. S.S. Rambabu, the Assistant General Manager for IT, ascertained that considerable improvements in cash flows occurred through the new system.[111] Bills now are issued on the spot. Apart from bringing transparency into bill generation, this system also helps in generating staggered due dates for bills, thus avoiding crowds at the eSeva centers.[112]

Andhra Pradesh's eGovernance initiatives seem to move together, one influencing the other all the time. Just as the water board saw spikes in its collections because of electricity bill payments through eSeva, the electricity companies are fast catching up with the water board in automating their back-end processes. We further observed the eGovernance mantra was consistent in every department. We observed varying versions of cutting-edge technology being applied cleverly and effectively to catapult the departments into the future.

Performance Monitoring

In large organizations it is often possible for mid- and low-level managers and employees to simply not comply with the large, sweeping changes enacted by their superioRs.The Center for Good Governance (CGG) is a quasi-governmental office of approximately 50 employees whose main role is as a government

think-tank. According to Dr. P.K. Mohanty, Principle Secretary and CGG Executive Director, "Government employees are too busy handling their day-to-day responsibilities to think strategically and creatively about the future."[113] As such, government executives lean on CGG to provide this service for him. The objectives of CGG are:[114]

- To translate government goals, objectives and priorities into tangible reform actions.
- To identify core issues and areas for change which will make the most impact in improving performance and enable it better to respond to needs of citizens.
- To work with functionaries to analyze key issues in governance, identify solutions to plan actions and to support implementation of administrative reform.
- To identify and codify best practice in administrative reform for wider implementation.

To develop an integrated performance tracking system, CGG leaned on the expertise of Prof. Subbarao Ghanta, State CIO and Officer on Special Duty to Chief Minister. Prof. Ghanta had a team of bright employees exhaustively study the aspects of successful performance-monitoring systems. Their vision is based on a simple idea, "To each unit of power given by the People to Government, there must be a commensurate accountability of Government to the People."[115] This is illustrated perfectly below in Figure 11.[116]

Figure 11

This vision provides a link between performance measurement, accountability and results-based management in the AP government.[117] A traditional government, through public audit, adheres to an idea of "accountability for compliance," i.e., the government ensures the public that money is being spent in ways that comply with both laws and regulations.[118] The AP government, however, wants to move beyond this mode of thinking and achieve an idea of "accountability for results"; outcomes are now monitored as is the impact of particular policies and actions, which still includes, as a subset, the idea of accountability for compliance.[119] The Online Performance Monitoring System (OLPTS) created by Prof. Ghanta and his team focuses on the outcomes and impacts of specific actions, leading to a "results-based management" approach to governance.[120] In addition to this simple, yet powerful, vision, CGG's PMS is centered on eight guiding principles, illustrated in Table 10.[121]

GUIDING PRINCIPLES	EXPLANATION
Consultation	Public consulted regarding service level and quality
Service Standards	Educate pubic on level of service entitled
Access	Equal access regardless of societal position
Courtesy	Treat people with courtesy and consideration
Information	Give public full and accurate information about service

Openness and Transparency	Inform public about government operations and budget
Redress	Apologize and redress if promised service is not given
Value for Money	Public services provided economically and efficiently

Table 10

These principles give rise to the performance monitoring system's strategic objectives:[122]

1. Create a performance culture with shared values, outcome orientation and best practices.
2. Empower citizens to generate pressure for change and transformation at various levels.
3. Promote accountability of employees and organizations.
4. Guide capacity building development.
6. Contribute to overall development agenda.

AP Government Performance Monitoring System

The PMS is a relatively new phenomenon. A beta version was rolled out in April 2002 with the initial results made available to the Chief Minister in July 2002.[123] Currently, CGG is using the third version of the PMS, with the fourth in development.[124] Continual trial –and error and feedback from various functionaries are the main drives in upgrading the system.

According to Dr. Mohanty, the PMS was developed as a "hexagonal model." In other words, it can be used to rate a department against six things: (1) relative performance compared to last year, (2) relative performance compared to peers now, (3) relative performance compared to peers last year, (4) relative performance to benchmarks, (5) relative performance to targets and (6) relative performance compared to government as a whole. This model presents a complete picture of a particular department over time, allowing senior officials to get to the root cause of problems that arise.[125]

The AP government is comprised of more than 200 separate departments. To ease the monitoring burden, CGG grouped these departments in eight synergistic groups, consisting of around 30 departments each, listed in Table 11.[126]

Group 1: Primary Economic Development – Agriculture, Fisheries, Animal Husbandry
Group 2: Secondary Economic Development – Public Enterprise, IT, Tourism
Group 3: Human Development – Education, Housing, Family Welfare, Medical
Group 4: Welfare – Social, Youth, Minority
Group 5: Local Bodies and Self-Help Groups – Rural, Urban
Group 6: Infrastructure – Roads, Transport
Group 7: Revenue Generation – Taxes, Revenue-Generating Activities
Group 8: Governance (Regulatory & General Services – Police

Table 11

The premise of the system is to add accountability from the bottom to the top of an organization. For instance, Figure 12 details the levels of organization in a typical Indian governmental office.

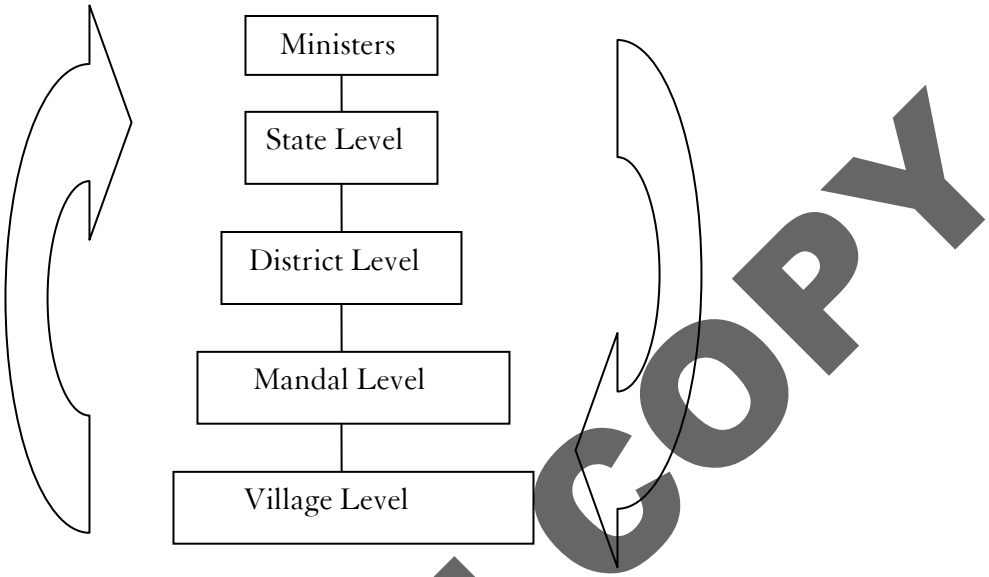


Figure 12

For instance, a mandal-level officer's performance is driven by those who work for her at the village level. A district-level officer's performance is driven by those who work for her at the mandal level, etc. Essentially, a feedback loop is created throughout the organization where goals and objectives are determined, progress is monitored, performance evaluation occurs and actions for improvement are implemented. This level of accountability has never before been attempted in Indian government.

Every functionary in every department is graded on two sets of indicators: performance (weighted 70%) and process (weighted 30%).[127] Performance indicators, generally speaking, are the deliverables and outputs of each department. The AP government's fiscal year runs from April 1 to March 31; therefore, annual targets are set and agreed upon in the first three months of the new calendar year with discussions between department heads and government executives. Averages from the last three years' targets plus a certain growth percentage also are used in generating performance indicators.[128] There is no set number of performance indicators. Process indicators are specific to each functionary and are based on three items: (1) Tours and Inspections (2) File Disposal and (3) Action in Important Matters.[129] File disposal refers to closing out any file that has been generated. Action in important matters is a very nebulous category that can include, but is not limited to, vigilance cases, department inquiries and audit reports.[130] Little negotiation, if any, takes place in these determinations. A quarterly and mid-year review is conducted for both performance and process indicators.[131]

Implementation

Designated employees are issued a password and are tasked with inputting their functionary or department's results into an Internet Explorer-based Web site. Typically, results are entered once a month, although the CM may ask for results anytime sooner. Once the numeric results are input and transferred to the CGG office, an algorithm, shown below, generates appropriate letter grades.[132]

One can imagine how detailed this process can get when the sheer number of processes is considered. But the reward is well worth the work. A large number of reports are generated from this data.[133]

If one department or functionary consistently receives poor marks, an analysis is undertaken to determine which indicator is causing the problem.[134] It is possible the indicator needs to be tweaked for that particular area; this is a good barometer for usage by the CGG. If more departments are asking for an analysis that means more departments are using the system as it is intended.

A management committee has been charged with reviewing the aforementioned performance and process indicators. This group will ensure every indicator is tied back to *Vision 2020* and will help the state achieve those goals. This committee also will tweak the current grading system. The plan is to introduce stratification within each letter grade, i.e., B+, B, B-. This will provide greater transparency into a department's actual performance.[135]

Performance Monitoring System in Action

We witnessed firsthand the OLPTS in action. The Chief Minister holds monthly, sometimes weekly, video teleconferences with all 26 district collectors. The CM is located in the state's capital, Hyderabad, and each district collector is located in his/her respective district headquarters. Each district collector had a room with more than 50 support staff personnel with him or her. The press was given full and open access to this meeting; in fact, they recorded the entire five-hour meeting.

Various subjects were covered throughout the meeting, with the CM driving the discussions. Significant time was spent on the issue of drought remediation actions taken by the mandals, particularly the drilling of additional borewells. The CM was using data from the PMS and forcing the district collectors to explain any negative trends. It was very evident when a particular district collector was not familiar with the data that had been entered. What the reader must realize is that this was taking place in front of more than 1,000 government employees across the state, plus the press. The pressure to perform in front of peers is a huge motivational factor for the district collectors.

The CM also used this forum to discuss public opinion numbers. Each district collector was again asked why things were going poorly in their mandal and what they planned to do about it. It was evident during the meeting that many figures that had been input into the system were not the "actual" numbers, but simply placeholders that were entered by the cut-off time, four hours before the meeting. Staff scrambled to present the CM with appropriate numbers, especially when the new numbers were better than the fictitious ones. Transparency such as this, in front of the press, is forcing government officials to embrace the PMS. Also, they must now pay attention to the citizen and only perform actions that are really important.

During these meetings the CM chooses a random subject to drill down into. At this particular meeting commodity prices were picked. The officer in charge of this was caught, and subsequently embarrassed, because he had simply entered data to enter data. Quite often his commodity prices were off by a factor of 10 or 100! There is no doubt this particular gentleman will input proper data from now on. And no doubt that seeing one's peers publicly embarrassed will have district collectors ensuring proper data is input by their staffs.

Everyone from Dr. Mohanty to the Chief Minister, Mr. Naidu, believes the PMS is having the desired affect. According to the CM, "The employees know that someone is watching their performance

like never before."[136] One particular department in Group 1 (Primary Economic Development) improved their grade from a "C" to an "A" in the span of 10 months.[137] Not a small feat, considering the numerous processes and interactions that take place on a day-to-day basis.

Challenges

As with all the e-governance initiatives the Chief Minister has driven through, employee resistance is still the largest challenge facing the OLPTS. According to Mr. Manish Agarwal, a CGG employee who oversees the PMS, initially only 50% of the departments were inputting data.[138] This trend quickly reversed itself when the CM started "cold-calling" various government officials in front of their peers.

Another challenge highlighted above is simply entering data for the sake of entering data. Another spin on this is an employee entering better scores than were actually received. Anticipating this, Prof. Ghanta's team incorporated a series of checks and balances in the system. For instance, the Education Minister will enter certain data about elementary schools that should check with information reported at the village/mandal/district level. If it doesn't, it is possible to uncover where the discrepancy occurred.[139] Also, the CM will go on field reviews throughout the month. If he doesn't see in person what is being presented in a spreadsheet, the problem is quickly uncovered and dealt with.[140] The last thing being done to curb improper data entry is a relaxation of the cut-off time. Currently, data for a video teleconference must be in by noon, and the meetings start at 4 p.m.; this will be moved to 3:30 p.m. Unfortunately, numbers will still be entered carelessly – it's a given considering the magnitude of this initiative. However, it will only take getting caught once for that person to never enter false data again.

Dr. Jayaprakash Narayan, the Founder and National Coordinator of Lok Satta (People's Power) believes it is precisely this kind of monitoring that creates centralization of power within a government. Lok Satta is an organization dedicated to political reform. Dr. Narayan said, "We are a power-centered society, and information is power. Monitoring more will not empower district level employees, but will curb innovation."[141]

Mindset Management for eGovernance

The success of the e-governance initiatives outlined above, as with all the others, depends on mid- and low-level government employees embracing and accepting computer technology. How does a government executive convince an employee, much less one million employees, to accept radical new ways of completing their everyday, mundane office tasks? Especially when these initiatives will require them to re-learn how to do familiar tasks and will take away two of the greatest perks of a government job: the power of harassment and additional income that comes from bribes. It is altering this mindset that most senior government executives find as their biggest challenge. The government also has to deal with the mindset of the very citizens it serves. In people's minds, the image of government is a corrupt, bureaucratic and humiliating beast. A middle-class citizen we spoke to shook his head in disdain when talking about the government and said, "It will never change. India will never change."[142] Surprisingly, the very citizen was an avid user of the eSeva system in Hyderabad Mindset management for eGovernance is about finding innovative ways to change and influence the mindsets of government employees and

citizens. We highlight some of the unique ideas that GoAP is incorporating to make its eGovernance vision successful.

Employee Resistance

To employees, most eGovernance projects appear quite harmless in the beginning. When starting an initiative, the government stresses how the project will reduce drudgery in work and how the employees will be able to go home early. It constantly emphasizes employees will not be laid off but will be re-deployed. Curbing corruption and removing discretionary power are never communicated as objectives; however, government executives stated those were in fact the primary objectives. One executive even told us that CARD, an e-government project touted as a highly successful eGovernance initiative in the media, is not yet successful because it did not reduce corruption. Initially, there was resistance in the form of non-compliance and sabotage. But when the employees did not see the government laying people off, but rewarding them for implementing eGovernance projects, they started embracing technology.

It was interesting to note the transport department prepared a minimal amount of documentation and never revealed its complete ideas to employees. The Transport Commissioner, Mr. A. Giridhar, said, "We keep everything under wraps. We keep things fuzzy. That's our strategy."[143] Therefore, every major initiative appears undisruptive in the beginning. After reaching a certain stage in implementation, the department bulldozes its way through to closure, totally removing discretionary powers of the employee. We were able to relate this trend in other projects as well. The PPP model creates an element of caution in employees' minds. Employees know if they don't comply, the government will bring in a private company to share their job. Once a private partnership is set up, the employees lose whatever little positional power they could have had by walking the path alone. Needless to say, the potential to make the "extra" money disappears.

The CM, Mr. Naidu, noted, "The employees have a traditional mindset. They enjoyed the power of position for many years. This older generation has lost the creative track and is not adaptable to technology."[144] So even if employees were convinced technology brought no harm to their positional power and livelihood, they feared using computers. Further, what was the incentive to learn the new technology? To motivate its employees, GoAP revamped its training institute, the MCR Human Resources Development Institute, and launched a State Training Initiative.[145] The Institute partners with one of India's top management schools, the Indian Institute of Management in Ahmedabad, to offer training to 500,000 functionaries in SMART and eGovernance every year.[146] Management training in Leadership Skills & Motivation, Negotiation Skills, Management of Change, Communication Skills, Team Building and even courses on Stress Management aim to make the employees motivated to work with passion.[147] The Institute imparts decentralized training at the district level and even through DVDs.[148] IT training is given to everyone and extends from basic to advanced courses.[170] The Institute is gearing itself to seek ISO certification in quality by the end of 2003.[149] We were fascinated to note the business-like attitude GoAP held with regard to employee training. According to MRs.Chitra Ramachandran, the Commissioner for MCH, "Andhra Pradesh has crossed the hurdle of employee resistance to technology. Employees are comfortable with using technology."[150]

Citizens' Mindset

Mr. Ramamohan Meda, who is in charge of SCADA, the automated electricity monitoring unit, described the attitude of citizens toward electricity. "People think electricity must be free because they already pay property tax for their house."[151] Jaya Surya, a small shop owner we spoke to outside of eSeva center in Ramnagar reflected this attitude. He said it was unfair for the electricity department to penalize him for stealing electricity from his neighbor, who was also his brother. He couldn't understand how it could amount to stealing.[152] Additionally, citizens have experienced humiliation at the hands of government employees for many years; so they are averse to whatever initiative the government takes up. It was the same when the government launched SCADA or the "Call 1912" grievance center. The electricity company works hard to change the attitude of its customers through effective communication and results-oriented action. For example, the department communicates upcoming power cuts before they occur on its Web site.[153] When a customer calls 1912, precise answers are given on when power will be restored. The department also uses media to communicate its plans and market itself well to its consumeRs. The mindset of citizens described above and the way the electricity department is changing it can easily be extended to other areas of governance.

"Self-Assessment" of property taxes (described in greater detail in the next section) is another example that succeeded in radically changing the mindset of citizens. eGovernance initiatives will be successful only if citizens use it. Citizens will adapt to eGovernance only if they see a benefit and understand that benefit. Therefore, apart from building applications that are useful to citizens, the government must communicate its goals and strategies well.

Another interesting challenge is occurring in the rural areas. A majority of the villagers continue to travel great distances to the main government office to apply for various certificates in spite of having an eSeva kiosk in their village; we witnessed long lines of villagers at the Mandal Revenue Office (MRO). The villagers are satisfied only if they hear the thump of a stamp on their certificates and see a functionary sign it for them.[154] To change this, the office is enforcing a rule that certificates that can be processed through the kiosks will not be processed at the MRO. We expect to see a greater challenge when certificates will be issued using digital signatures and watermarking technology.

OUTCOMES

The previous section has detailed how eGovernance initiatives have resulted in good governance. Be it through eSeva, the electricity company, the water board, or Vishakhapatnam's Saukaryam, the eGovernance initiatives have clearly made the government function in a SMART[155] manner. Now we must ask, "Is good governance leading to positive outcomes, such as state development and investment inflow. Are the initiatives ultimately leading to improved quality of life for the citizen?" This section explores answers to these questions.

Impact Cycle of eGovernance

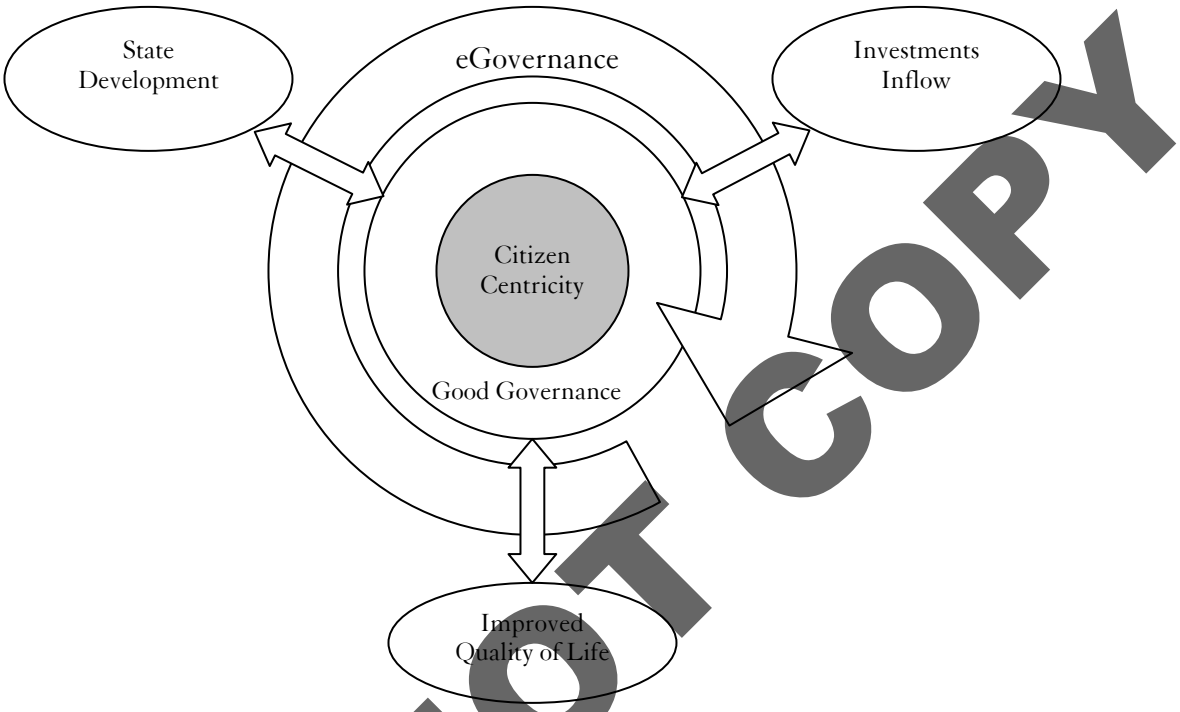


Figure 13

State Development

We will focus our exploration on Hyderabad where most of the e-government initiatives have played out. The capital city comprises two sub-cities, Hyderabad and Secunderabad, together known as the Twin Cities. Hyderabad is rapidly emerging as a center of commerce, education, bio-medical research and IT; in other words, evolving as a "knowledge" hub in the country.[156] The Municipal Corporation of Hyderabad (MCH) is the statutory civic body entrusted with civic affairs in the Twin Cities.[157] The city competes with Bangalore for the unofficial title "India's IT Capital" and is often addressed as Cyberabad because of its innumerable IT ventures. Without question, Hyderabad is achieving what the Chief Minister calls "leapfrog development through IT."[158]

MCH, which received an AA+ credit rating from the credit rating agency CRISIL for its municipal bond issue of Rs.1 billion, has had a number of achievements in the past few years.[159] The performance on a wide range of government activities are shown below:

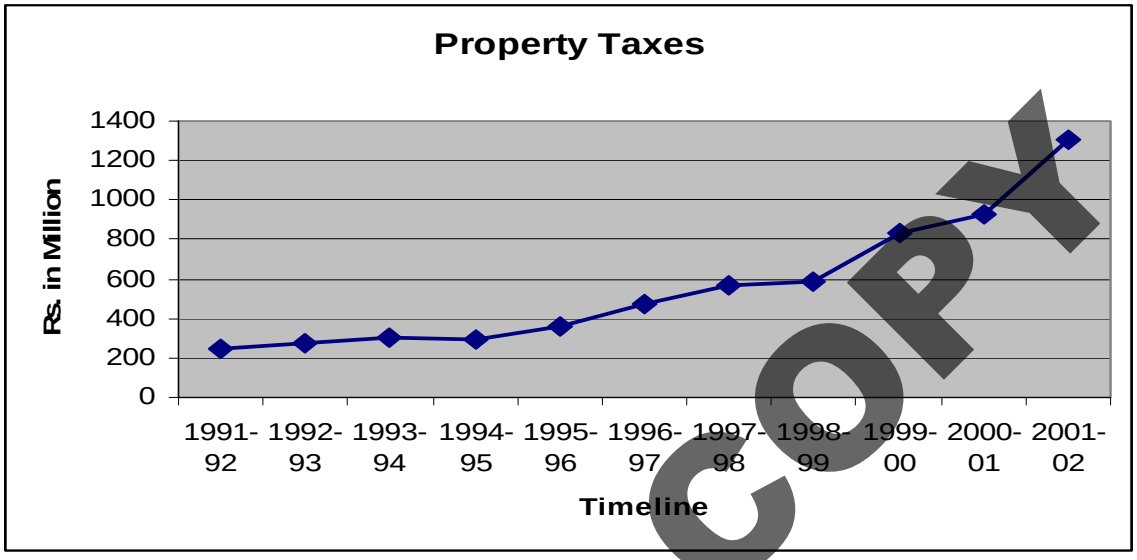


Chart 13

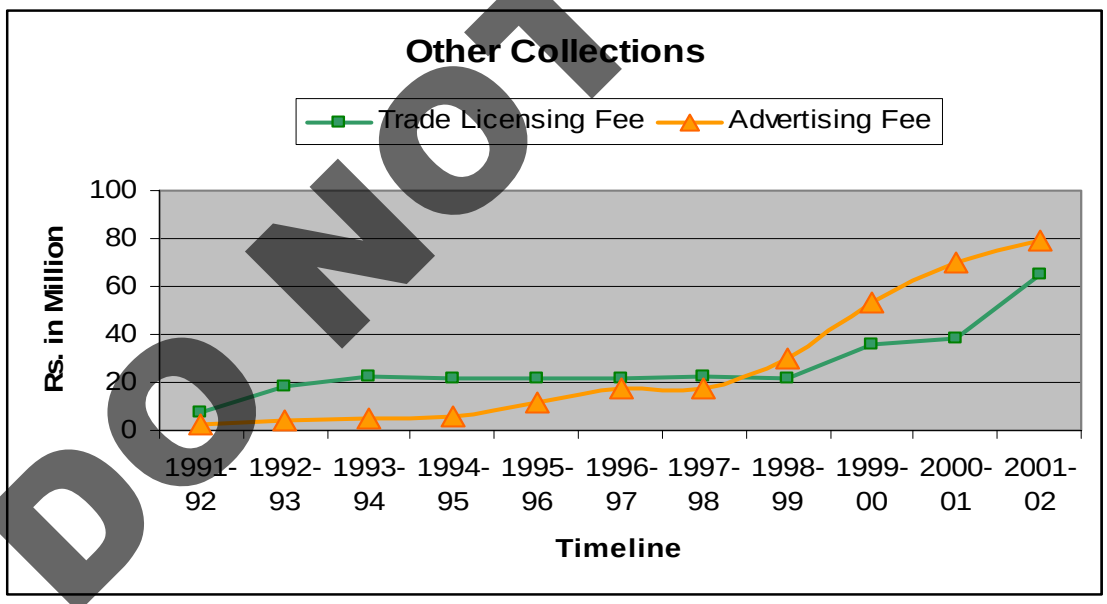


Chart 14

Notice the sudden increases in revenue collection from 1999-2000 onward and the similarity in the trend with the other major revenue sources. We explored further on expenditures by the corporation, again during the same period, as shown in Chart 15[160] and Chart 16[161].

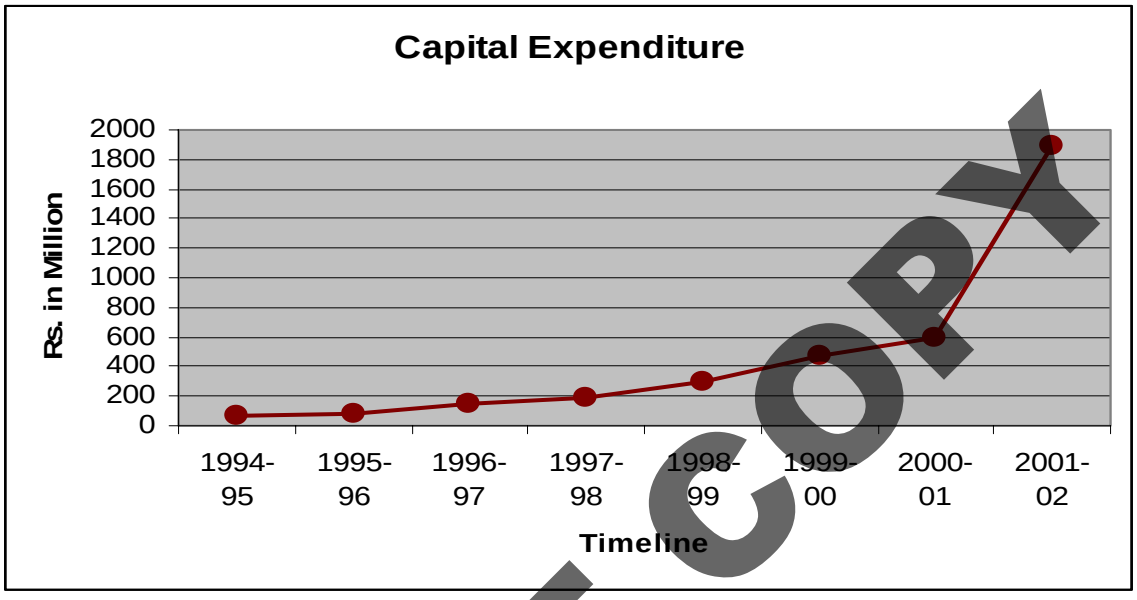


Chart 15

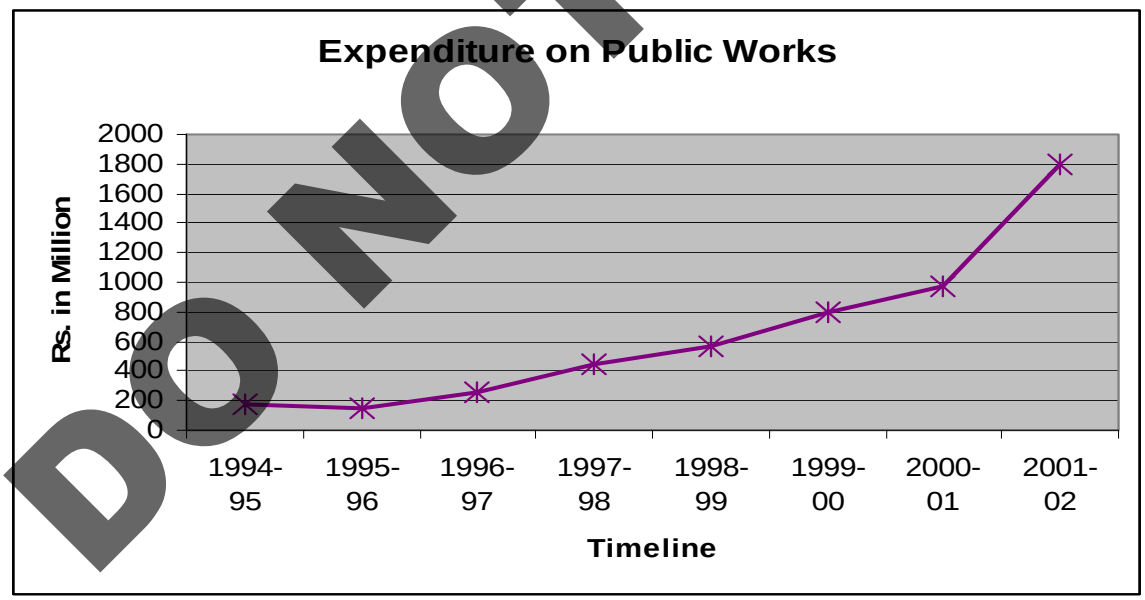


Chart 16

There is a definite upward trend. Clearly, the revenue generated was utilized in city development. We researched property taxes further to identify what led to the sudden spikes in revenue. In 1999-2000, MCH introduced an innovative program called "Self-Assessment".[162] The program put the onus of assessing, declaring and paying taxes on the citizens. Further, a computerized property tax database was introduced. Each property in the Twin Cities was assigned a unique Property Tax Identification Number, which eliminated discretion in the levying and collection of taxes; computerized records were made public through the Internet for the first time.[163] The transparency provided by the

"Self-Assessment" program was phenomenal. Citizens began to believe in MCH and began trusting the corporation with their tax money. MCH went on a massive media campaign with the slogan, "MCH trusts you for the future of your city and your children."[164] City development went hand-in-hand with the initiative. The results, as seen above, were dramatic. Changes were ubiquitous; citizens believed they were getting value from the taxes they paid.

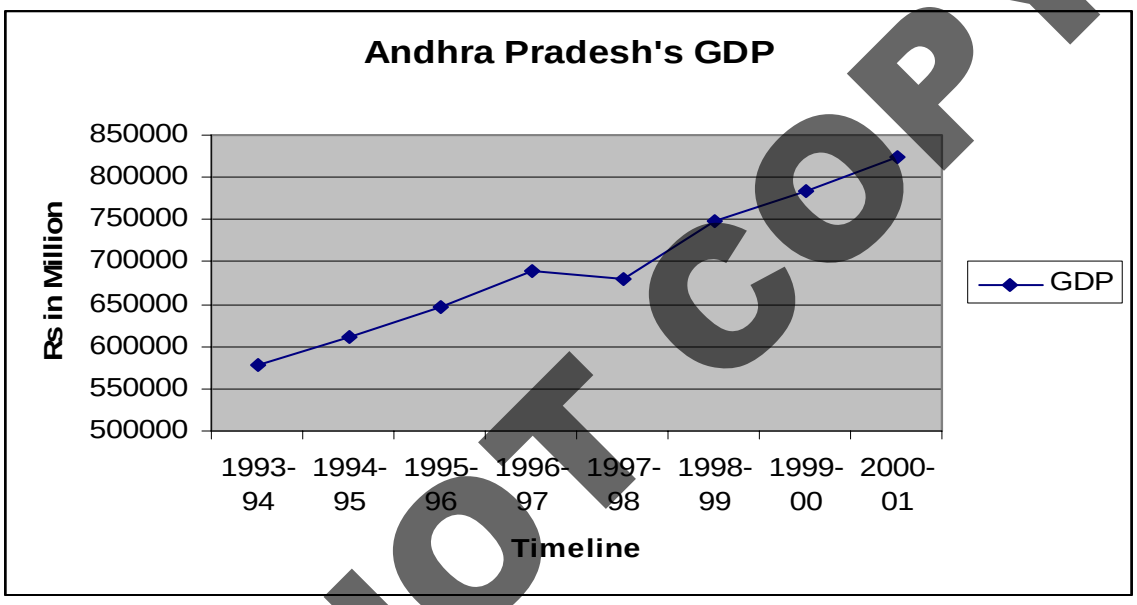


Chart 17

In addition to engineering schools and graduation, we noted the International Institute of Information Technology (IIIT), established in 1998 with investments from IBM, Motorola, and other multinational corporations shown in Chart 18 (further detail on IIIT in Investment Inflow below).[165]

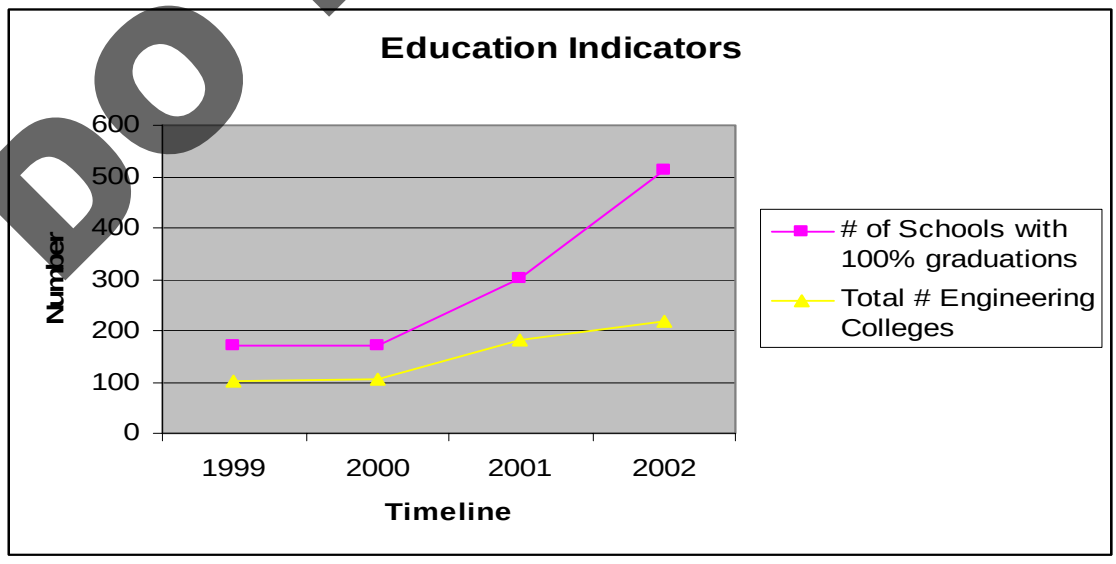


Chart 18

We further looked into the trends during the same period for Hyderabad's most successful sector, IT. Chart 19 and Chart 20 illustrate the results.[166]

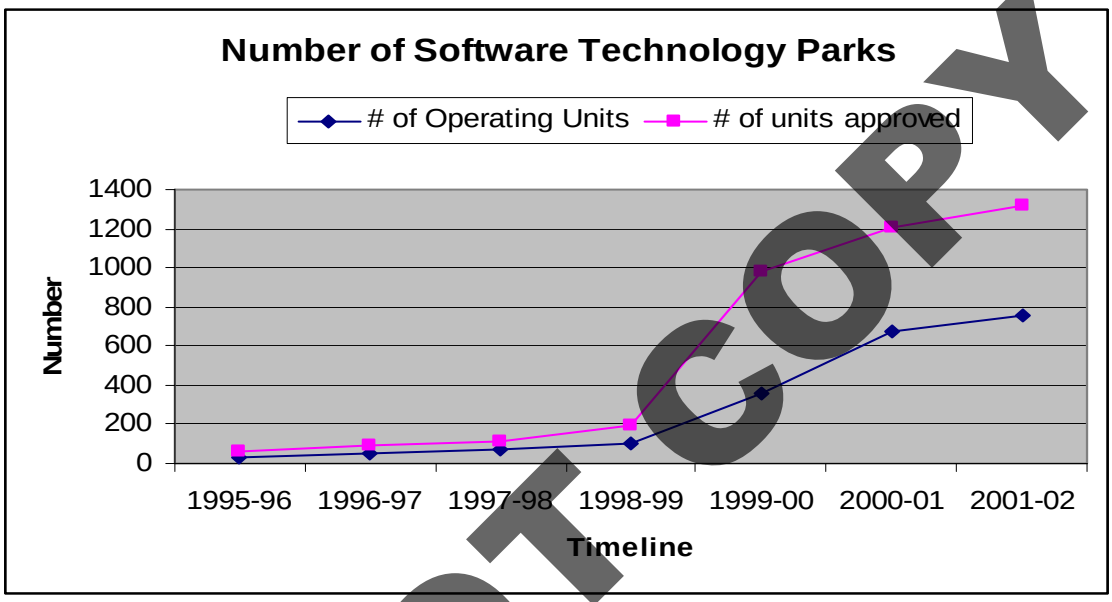


Chart 19

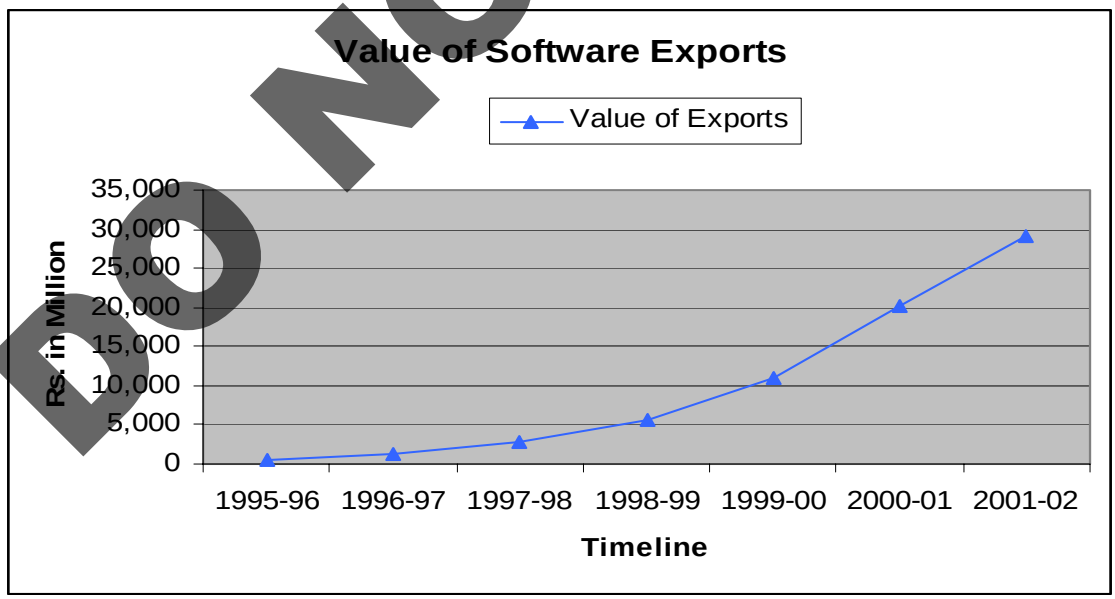


Chart 20

What we observed is a new belief, a new force in governance during the period of eGovernance initiatives that has since pushed development in Hyderabad and Andhra Pradesh to new levels.

Investments Inflow

Another outcome that results from the Impact Cycle of eGovernance is attracting investments from MNCs and International Development Organizations. India, and Andhra Pradesh, has always been a steady recipient of international aid. However, International Development Organizations such as the World Bank and the United Kingdom's Department of International Development (DFID) have recognized the shift to good governance in Andhra Pradesh and are increasing the amount of funds to the state. And Andhra Pradesh has invested considerably in itself to attract multinational investments, with many positive results; illustrated by the fact that Andhra Pradesh has become the fourth-largest destination of private investment in the country.[167]

International Development Organizations

"Under Chief Minister N. Chandrababu Naidu, Andhra Pradesh has shown a strong commitment to reforms and has taken important steps to address pressing fiscal and sector difficulties."[168] As such, Andhra Pradesh continues to receive money from the World Bank.

Since the eGovernance initiatives have begun, the World Bank has invested each year. Some notable investments are listed below in Table 12[169, 170, 171].

PERIOD	AMOUNT	PROJECT
February 1999	$210 million – first in a series of loans totaling $1 billion	Power sector restructuring
April 2003	$150 million	Poverty reduction benefiting 20,000,000 households
May 2003	Target of $1 billion by 2004	Infrastructure, housing, micro-finance

Table 12

Department of International Development (DFID)

Since 1929, the United Kingdom formally recognized the responsibility for development of its former colonies by creating the Department of Technical Cooperation.[172] Although the organization's name changed many times over the years (in 1997 it was re-named the Department of International Development) its role did not: to work closely with Governments on issues such as trade, conflict prevention, debt, the environment and child labor.[173]

DFID wants to ensure the money it donates is used efficiently and effectively. Speaking to this, Andhra Pradesh did not start receiving DFID aid until 1998–when massive reform change began under Mr. Naidu. Interestingly enough, Andhra Pradesh is one of only four states in India to receive assistance from DFID and the only state in south India to do so.[174]

Impressed with what GoAP was doing in Andhra Pradesh, DFID established a local office in Hyderabad in 2000.

A noteworthy example of DFID's commitment to governance reform in Andhra Pradesh is the SCADA project, which was mentioned under the electricity section of the paper. DFID entirely funded the $6.4 million project.[175] Handheld digital systems, effective billing and remote meter reading are a

few of SCADA's functions.[176] These functions will lead to a steady electricity flow with no voltage fluctuations and cut transmission and distribution losses to 10% from the current 31%.[177]

Multinational Corporations and Institutions of Excellence

Equally as impressive as the rise in international aid, and maybe more so, is the exponential rise in the amount of MNCs that now have offices in Andhra Pradesh. This notable testament to the Impact Cycle for eGovernance is all the more striking since local Indian and international corporate investment was virtually non-existent in Andhra Pradesh prior to the eGovernance initiatives of GoAP. When making investment decisions, companies want to reduce their risk exposure as much as possible; good governance, facilitated by eGovernance, mitigates investment risk significantly for firms. Compare Andhra Pradesh with a Third World country that is riddled with corruption, has questionable law enforcement and makes no attempt to better the lives of its citizens and the level of risk mitigation provided by good governance is clear.

Multinational Corporations

The most publicized MNC in Andhra Pradesh is Microsoft. Microsoft's investment in the state has not been solely business related. The corporation feels a strong social responsibility toward the state and has pledged investments proving this. Table 13 outlines Microsoft's business and social investments in Andhra Pradesh.[178]

PERIOD	BUSINESS	SOCIAL
1997		$500,000 for computer education center
September 2000	$50 million in Microsoft Indian Development Center (Microsoft IDC)	$1 million per year for five years to promote rural IT education
November 2002	$400 million for product development $100 million for Microsoft IDC $1 million for Media Lab Asia	$200 million for AIDS research $25 million for Hepatitis B vaccine

TABLE 13

Outside Andhra Pradesh, Microsoft is donating another $20 million to increase computer literacy in India with hope of 80,000 teachers and 3.5 million computer-literate students in the next five yeaRs.Ten centers will be set up around the country to work with computer labs in 2,000 schools.[179]

An impressive list of Indian and non-Indian companies are calling Andhra Pradesh home and many are using office space in HiTec City. Table 14 lists a selected group of firms; the group below is by no means exhaustive.[180]

AMAZON.COM	DEUTSCHE BANK	FORD	UNITED AIRLINES
Phoenix-Global	Citibank	DuPont	State Farm
Daimler-Chrysler	Siemens	Singapore Airlines	AXA
Royal & Sun Alliance	Dell	Delphi	GE
e-funds	Aventis	TRW	Conseco
Abu-Amro	Fluor Daniel	Bay Systems	Bell Northern
asiaTV	Bechtel	Ansset Australia	HSBC
Sietel Corp.	Keane Inc.	Bose Corporation	Catalytic Software

Table 14

Improved Quality of Life

Perhaps quality of life in the Impact Cycle is the single most difficult aspect to define in a succinct and tangible manner You can't measure the satisfaction a poor construction worker feels when he receives the same level of service as an elite citizen, possibly for the first time in his life. You can't measure the humiliation a housewife no longer faces when she pays her utility bill. You can't measure the job security a young professional experiences because of the immense career potential in the state. You can't measure the pride a native feels when he returns home to find incredible changes. You can't measure the fulfillment of a family walking in a park and breathing clean, fresh air. You can't measure the contentment of a government employee when he knows that citizens respect his contribution to the state. You can't measure the thrill a political party experiences in knowing that citizens will re-elect it because it delivered results. You can't measure the amazement a first-time visitor from the developed world faces when he doesn't see what he quite expects in a developing country. You can't measure the exultation in a village for getting Internet connectivity. You can't measure the confidence in citizens when they know their state is marching ahead to the future. Quality of life is about these unending intangible feelings and experiences.

We are not implying that Andhra Pradesh has reached its goals yet. When we asked Dr. Jayaprakash Narayan about eGovernance he said, "eGovernance can only be successful if the following are done. One, process reengineering of the various government processes. Two, dramatic redeployment of personnel. The government needs to create more decision makers with a skeletal support system. Three, substantial vertical decentralization that will empower employees at the mandal level. In the absence of these three, eGovernance will merely be a layer over the old systems."[181] Though he admitted that GoAP was headed in the right direction to help its citizens, he said, "Change is not happening quickly enough, and replication of best practices is not happening fast enough."[182]

What we are trying to imply, however, is the spiraling of the Impact Cycle of eGovernance if the existing momentum in Andhra Pradesh continues. eGovernance, a necessary condition, but not sufficient alone, is clearly leading to good governance. Good governance has been the primary progenitor for state development and investment inflow, ultimately improving the quality of life for Andhra Pradesh's citizens. Improved quality of life feeds back into the Impact Cycle when citizens democratically vote for a results-oriented government. The re-elected government recognizes the importance of good governance and uses eGovernance to ceaselessly improve itself and offer better service to citizens, thus solidifying the Impact Cycle of eGovernance.

FUTURE

Andhra Pradesh is in the midst of a great social transformation as it attempts to fundamentally alter the way it governs its citizens. Legacy systems and organizational inertia in GoAP are working against new processes; however, the friction they create is diminishing every day. GoAP, not quite the uncomfortable burden it once was, is slowly beginning to build trust and credibility with the citizens it serves. The impact of eGovernance will be experienced internally by GoAP employees, be increasingly evident in citizen-government and business-government interfaces, and be a dominant motivator for change in outside governments. Today eGovernance in Andhra Pradesh is a molehill whose full impact is yet to be witnessed; this hill will quickly become a mountain that cannot be ignored. We cannot predict the future of eGovernance in Andhra Pradesh, but we can imagine it.[183]

eGovernance Driven Re-engineering

To facilitate employee buy-in, GoAP has decided to limit the amount of process reengineering done while deploying the various eGovernance initiatives. Soon, there will be no turning back for employees; technology will be used to do every possible function. In a typical business, to realize the efficiencies (both procedural and fiscal) technology provides, it would cut redundant and non-value-added processes and personnel. A project such as SMARTGOV, which automated file clearance in the Secretariat, does not lessen the required steps for clearance–21 approvals among seven bureaucrats. To fully grasp the advantages of eGovernance the government will be forced to re-engineer its processes. Limiting non-value-added steps will empower mid– and low-level bureaucrats making them more accountable.

Though GoAP can reduce processes, it cannot cut its workforce due to the guaranteed nature of government service. Hand-in-hand with process re-engineering will be a large-scale re-deployment of low-level workforce employees. Rather than performing meaningless jobs such as carrying files from office to office, these employees will be re-trained to deliver real value, facilitated by the education level of all permanent government employees. For example, Andhra Pradesh needs more teachers and healthcare workeRs. Demand-driven re-deployment will fill these necessary gaps.

Implications of Connectivity in Rural Andhra Pradesh

The fiber-optic cable laid throughout the state will enable Internet connectivity to every village. Further, the GoAP initiative to convert the thousands of Standard Telephone Dial (STD) booths to Internet-enabled kiosks will result in dramatic increases in Internet access. Among the obvious benefits of creating a computer-literate society, this level of access will facilitate communication among pockets of citizens as never before witnessed.

These 'cyber-communities' will hold the immeasurable power of information. Citizens in Naagampally village (Central Andhra Pradesh) will learn about the developments taking shape in the distant Machilipatnam (Eastern Central Andhra Pradesh). If, for instance, more bore wells are dug in Machilipatnam when Naagampally is suffering worse from a drought, people will demand justice. Consider what would happen if the villagers in Naagampally further learn their mandal either (1) has stated the needed bore wells have been dug and/or (2) sufficient funds are available and not being

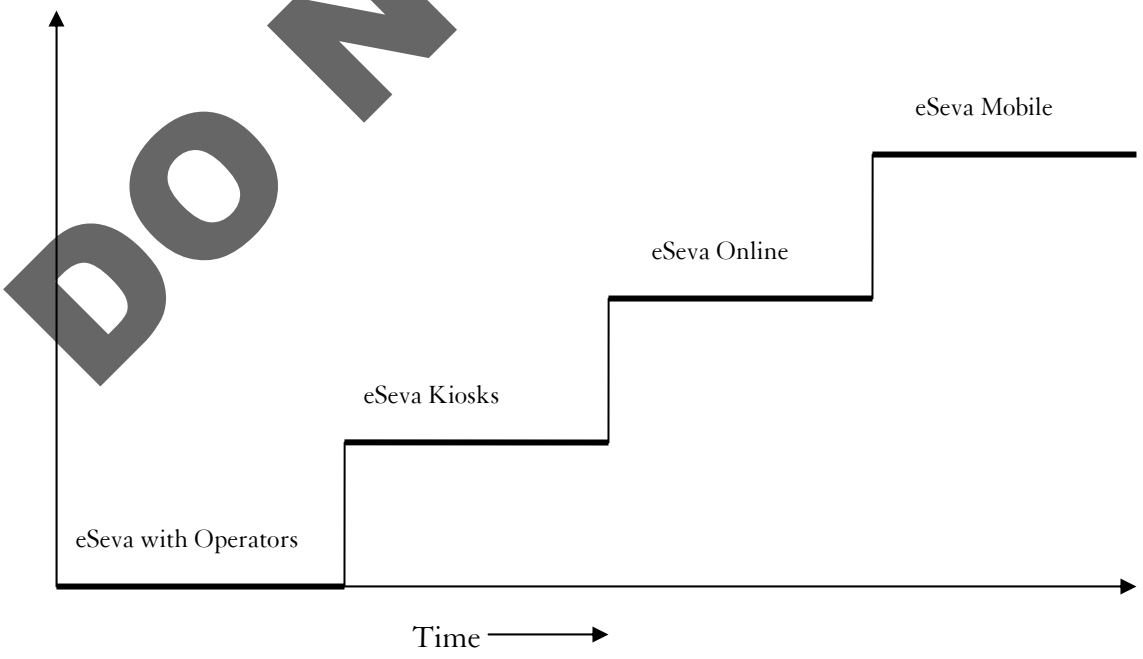
utilized and/or (3) is paying more attention to a neighboring village. Cyber-communities will create a powerful force that GoAP must heed to.

Spread and Demise of eSeva

Increased connectivity will considerably affect urban Andhra Pradesh as well. The eSeva timeline can be envisioned as a four-stage demise (Figure 15). eSeva kiosks will mushroom all over Andhra Pradesh: in banks, malls, grocery stores and gas stations. GoAP will reach its citizens wherever they are and whenever they want.

Initially, eSeva operators will be required to run the machine and help customers with transactions; down the road, these kiosks will be void of attendants. At this point, customers will not want to spend the time traveling to eSeva centers; they will be comfortable transacting over the Internet on their own. One example is citizens using bank ATMs to both withdraw cash and apply for a passport. Another driver that will make an eSeva center redundant is digital watermarking technology coupled with a suitable legal framework. The eSeva kiosk will print out legal documents such as caste certificates at the click of a button. Digital watermarking ensures the certificate is generated from an authorized government server. An upward swing in technology coupled with increased eSeva adaptability will result in mobile transactions over eSeva. All these four stages may take place simultaneously and in pockets, but Figure 15 suggests significant momentum in the method of eSeva usage at every stage.

Ultimately, the eSeva initiative will cease to exist by realizing what it hoped to achieve: to reduce the interface between the citizen and the government.



Outsourcing and Privatization of Government

Through PPP, GoAP is experiencing the efficiencies of private enterprise in its operations; eSeva is the quintessential example of how government and citizens can benefit from outsourcing. Citizens' refusal to use traditional government channels will drive rapid front-office outsourcing. In the near to medium term, one of two things will happen. Either GoAP will outsource non-critical citizen facing interfaces of the government, or every non-critical service that requires direct interface with a government employee will be offered through eSeva. Either way, traditional interfaces will cease to exist and citizens will not let a new political party erase the gains that have been achieved.

PPP creates opportunities for GoAP to generate revenue through royalties. As with SMARTGOV, GoAP can sell its eGovernance models to other state and international governments through the respective private partneRs. For example, the eSeva concept is directly geared toward developing countries whose situation in computer and Internet penetration is similar to that of India.[184]

eGovernance will allow GoAP to monitor its performance to the lowest level in various arenas once PMS is mature as a system. The government will notice wide discrepancies in the performance of its various departments and organizations. Over time, GoAP will realize its limited capacity to improve the under-performing entities and this will lead to privatization. In the future, the government will become a leaner organization focusing on its core competencies.

Networked Governance

At this time GoAP is attempting to connect its various departments through the Andhra Pradesh State Wide Area Network, APSWAN.[185] The system is fast becoming the backbone for statewide voice, data and video communication.[186] The use of Public Key Infrastructure (PKI) in APSWAN allows secure transfer of sensitive government information.[187] While APSWAN facilitates data exchange, it cannot force it. As eGovernance initiatives become ubiquitous intra- and inter-department data exchange is bound to happen.

Intra-department information-sharing grants increased exposure to customer accounts. For example, if the four discoms and TRANSCO were to share customer information about a particular citizen who migrates from Vishakhapatnam (Eastern Andhra Pradesh) to Hyderabad (Central Andhra Pradesh) they will know payment and default history.[188] This will help the discoms monitor poor customer behavior and direct the appropriate resources in preventing further loss in revenue.

Inter-department data exchange will extend this level of customer monitoring. Perhaps more striking, GoAP can generate payment histories for citizens. These histories will be especially useful for poor citizens. Typically, the poor are forced to deal with harassment and high interest rates when seeking a loan because they do not have valid proof of their payment capacity. Payment histories reduce the default risk financial institutions feel when loaning funds to poor citizens; lower interest rates and better payment options will transpire.

Future of Doing Business with Andhra Pradesh

As indicated in the Impact Cycle, citizens are not the only group to benefit from eGovernance. Local and global businesses will find transacting with GoAP less burdensome. Dealing with a SMART government quickens the time required to start in-state operations. Speed will be of the utmost importance to an MNC when you consider the race to expand in emerging global markets; never before has the term "time is money" taken on such importance. Driving the urgency is a limited amount of prime real estate and quality employees at an affordable wage. MNCs that establish back-end operations in Andhra Pradesh will be in a perfect position to exploit a largely untapped customer base. As in a developed market, brand loyalty is the key to increased sales and revenue.

Local businesses will greatly benefit from MNCs entering the state. Organizations such as AP First have the capacity to make MNCs aware of the unique capabilities and technologies of local companies. Local firms, who have yet to compete in the global market, will develop relationships with global playeRs. Increased demand for local services and products will spur a thriving business climate, creating a greater number of local MNCs. Technologies such as PKI and digital watermarking, which make secure contract approvals possible, will further facilitate the creation of local businesses.

Scalability of eGovernance

Currently, the eGovernance initiatives in Andhra Pradesh are receiving enormous amounts of media coverage. The buzz surrounding GoAP, as a leader in eGovernance, is pressurizing Karnataka, a neighboring state, to rapidly scale its own eGovernance operations. Citizens will drive their state governments to provide the same levels of service as those in Andhra Pradesh. If governments do not respond, they will witness the migration of their citizens to states that meet their demanding needs. Quite possibly, these governments will watch these migrations from the sidelines because they will have been voted out of office.

eGovernance in Andhra Pradesh will scale to certain countries in the developing world. These countries will possess political will and courage, urgency and willingness to change, and citizens who are tired of being harassed by their governments. What will shock other governments is how quickly Andhra Pradesh catches up with countries in the developed world through eGovernance.

Citizens in developed countries do not require their governments to act with the same sense of urgency as GoAP. The Internet will bridge the knowledge gap between citizens in developed and developing countries. For instance, a U.S. citizen will wonder why she cannot get her birth certificate online when someone in Naagampally can. Governments in the developed world will be forced to take notice of the revolutionary changes occurring in Andhra Pradesh.

Andhra Pradesh is on its way to be the model state for regions all over the world. In the future, when one looks back on how the state catapulted itself from a dull southern Indian region to a completely developed hub of global activity, it will be apparent the elements of the Impact Cycle of eGovernance drove this change.

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