SAP-LAP Analysis: Gyan Ganga, E-Gram and Communication Information Centers (CIC)

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ABSTRACT

Gyan Ganga, e-Gram, and Communication Information Center (CIC) are the ambitious project of government of India related to e-governance, which is the application of ICT in government functioning to bring in SMART governance. The paper describes about all three projects by individual SAP-LAP analysis and SAP-LAP analysis of all together. They use different technologies for the implementation and result will show the change in things due to this rapid change of technology.

Keywords: SAP-LAP, Gyan Ganga, Community Information Centre, rural e-government

1. Introduction

In the recent years there have been several projects launched by the government(s), sometimes in association with private parties, to provide rural citizen with better mechanisms of governance with basic underlying spirit of providing the rural citizens with better mechanisms of governance using IT as a tool and leveraging the connectivity for the empowerment of rural community so as to ensure a greater and meaningful participation in the development process. With the advancement of technology, especially that in area of Wireless in Local Loop (WLL), it has become possible to provide Internet facility even in remote villages at affordable prices. This next section presents the three different schemes such as Gyan Ganga, e-Gram and CIS launched by Government of India to improve the functionality of government by providing better facilities to rural citizens.

2. Gyan Ganga

"Gyan Ganga" this is one of the most ambitious initiatives of the GoG (Government of Gujarat) to ensure wireless Internet connectivity to all 18,000 villages in Gujarat. At the heart of "Gyan Ganga" is corDECT-A technology based on Wireless in Local Loop (WLL) - specially developed by Indian Institute of Technology (IIT) Madras. Rural citizens access a host of on line services such as e-mail, Internet browsing, land records, rural job opportunities, status of various Government projects etc., and even consult specialists through video conferencing for their agricultural, veterinary, and health care queries. Gyan Ganga utilizes IT to increase the enterprise and productivity of the existing infrastructure and local enterprise by setting up a state-of-the-art computer communication networks and further it provides

- Agricultural, medical, and educational information to villagers at Kiosk centers villages
- Communication facilities at the booths to link villagers to the local intranet
- The world's knowledge at the doorstep of villagers through the Internet
- Distance education to both primary and higher educational institutes

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- Geographical Information System (GIS) of the surrounding villages leading to greater transparency in administration especially in matters related to land

Key Aspects of Gyan Ganga

- Project Structuring (Business Model adopted)
- Project Financing
- Commercial Viability
- Pricing Mechanisms (tariff structuring)
- Regulatory Framework and Guidelines for Effective Implementation of the Scheme
- Social Benefits and Improvement in Quality of Rural Life
- Comparison with similar projects implemented else where in the country.

The private party in this project is n-Logue which has been set up with the basic aim of bridging the digital divide between rural and urban areas. n-Logue was established to serve the information and communications needs of people living in small towns and rural areas of India. To rapidly scale its operations, the company employs a three-tiered business model based on the belief that delivery and management of Internet services should devolve to the level of the supply chain that comes closest to the user of the service. This decentralized model of operation draws, in large part, from the success of cable TV operations in India. At the top level is n-Logue, which provides equipment, training and support to the LSPs and kiosks, and also takes care of regulatory and connectivity issues. At the second level, n-Logue identifies and partners with a local entrepreneur (also called a Local Service Provider or LSP) in every area it wishes to operate. These LSPs find subscribers, provide services and collect payments. At the bottom level is the village kiosks, which provide services and information aimed at the rural market. With the help of n-Logue, the LSPs recruit the local entrepreneurs who set up the kiosks. Thus there are up to three business entities involved in the operation - n-Logue, the LSP and a kiosk operator. All three must thrive for the operation to succeed. The idea for the project was conceived in August 2003 and the implementation started by July 2004. Initially, the Department of Science and Technology on behalf of Government of Gujarat, and in coordination with n-Logue, finalized the 16 locations where the project is to be implemented. At each location it is planned to provide connectivity to 200 near by villages.

ICT facilities

- On line registration of various applications
- On line public grievance forum
- Information on Government programmes
- On line application forms
- Update Government information

Availability of power is major factor, which influences the success of an IT project. Government of Gujarat has taken an initiative in providing uninterrupted twenty hours power supply to all the 18000 villages of Gujarat. The project is named "Jyotirgram" and so far has been able to cover 9000 villages of the state to support Gyan Ganga.

Gyan Ganga is to build wealth by-

- Reducing farming costs
- Increasing crop yield
- Enabling effective post harvest management
- Reducing risks
- Providing expertise in animal husbandry and watershed management
- Enabling better credit options and facilities

Gyan Ganga further helps to plan the future through-

- Curriculum based education
- Adult education
- Career guidance
- Learning English
- Higher education possibilities
- Computer awareness
- Job and career opportunities
- Financial assistance opportunities

Gyan Ganga also supports a healthier life by having access-

- Health and sanitation
- Medical diagnostic plans
- Medical insurance
- Disease prevention communication
- Medical assistance

Services Offered by Gyan Ganga

- Computer education
- Blue book, Green book, Red book
- Online testing tutorial
- Online photoshop tutorial
- Health
- English education
- E-mail and web browsing
- E-governanace
- Bio data maker
- Astrology
- VoIP

Before implementing the Gyan Ganga first thing which should be answerable is whether rural India affords connections? The answer is yes, along with the following needs

- Technology
- Sustainable business model
- Organization which thinks and acts Rural

Technical Details of Gyan Ganga

The corDECT technology has been used in providing the last mile connectivity under the project. corDECT is India's very own Wireless Local Loop (WLL) technology, jointly developed by Analog Devices Inc., Midas Communication Technologies (P) Ltd. and TeNet group, IIT Madras. Based on the Digital Enhanced Cordless Telecommunications standards specified by European Telecommunications Standard Institute (ETSI), corDECT provides cost effective, simultaneous high quality voice and data connectivity in both urban and rural areas. This indigenous technology provides voice communication using 32 K bps ADPCM, and Internet connectivity at 35/70 K bps.

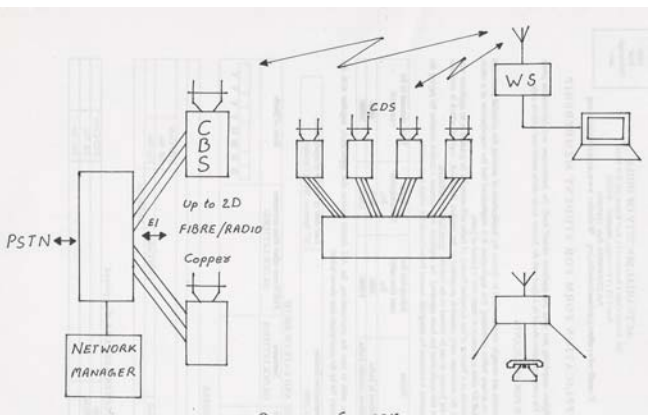

Figure 1: cor DECT Technology

Components of corDECT Technology

- The DECT Interface Unit (DIU)
- Wall Set with Internet Port (WS-IP)
- The iKON Remote Access Switch (RAS)
- Services Network Management
- The Compact Base Station (CBS)
- The Relay Base Station (RBS)
- Typical Kiosk Setup
- The Base Station Distributor (BSD)

The Wall Set can be connected to the DIU through:

- Compact Base Stations (CBS), for distances up to 10Km
- Relay Base Station (RBS), for distances up to 25Km
- Base Station Distributor (BSD), for distances beyond 35Km

Table 1: Services provided by Gyan Ganga at a Glance

Services offered	Before implementation	After implementation	Benefits
Information of Government Programs	On the paper, everything is manual report	No material, no infrastructure, no man power is required but only kiosk center	Cost effective from user part because only the charge of net access of kiosk center is there.
Education	Infrastructure, material and man power required	No material, no infrastructure, no man power is required but only kiosk center	Saving of material, money and man power
Health	Infrastructure, material and man power required	Kiosk center required	Saving of material, money and man power, support veterinary, quick advise in local language
Billing System	Hard Copies of Cash, Credit, Goods Transfer, Cash Voucher	Standardized On-line forms updated at one location.	Information Sharing Improvement of the cycle time
Report and Transaction statement	Manual generation, often cumbersome and erroneous	Generated out of the centralized Database. Monthly as well as Daily reports on transaction	Saving of Man –Hours Customization of the Reports as per need

SAP LAP Analysis Model

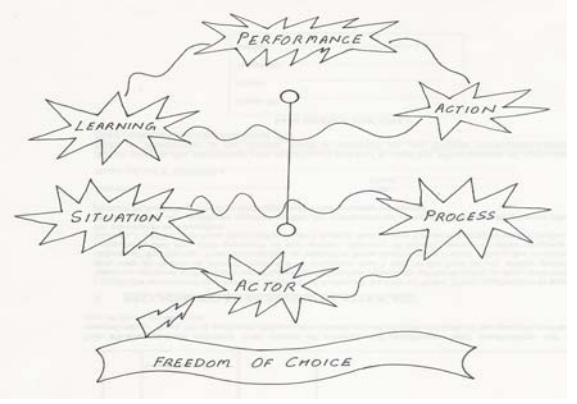

Figure 2: SAP LAP analysis framework (Sushil, 2001)

SAP (Situation-Actor-Process)

What is the present and past Situation?

The situation is understood by framing some questions and providing explanation for these.

Why was 'Gyan Ganga' required?

India has 600,000+ villages with 1000+ million people. In this large population the Gyan Ganga is to change the live of villagers by using

- Printing press,
- News papers,
- Radio,
- Telephones,
- Television, etc.

What is the achievement of Gyan Ganga?

The answer is Internet

- As access to top class services in a single click
- Market prices
- Solutions with an Agri-expert
- Veterinary services
- E-Government services
- Distance health care
- Distance learning
- Remote Eye Care
- e-Agriculture
- Crop disease
- Post treatment
- Veterinary on the Internet
- On line doctor
- Remote cardiac care

Why changes were needed?

- Creation of employment opportunities to village enterprising
- Building of knowledge societies at the grassroots level
- Role model for other states
- Public private partnership

What are the requirements to fulfill the project or to use the facility of Kiosks center?

The person who uses the Kiosk Center must have studied upto 12^{th} class; he/she does not require having any computer knowledge before and should be able to communicate to the villagers

Who are the Actors?

- Government of Gujarat (GoG) and Gujarat Informatics Ltd. (GIL)
- n-Logue
- Kiosk Operator
- Villagers

What are the Processes in evolution?

What is being done?

- 5 talukas commissioned (Vyara, Patan, Palitana, Mahemdabad. Visanagar)
- 3 talukas in the final stages (Dhoraji, Prantij, Waghodia)
- 70 kiosks connected and operational

- Computer education, photography, e-mail, video mail, video-conferencing services has been started

Why it is being done?

It is being done to cover

- 18000 villages
- 5 million people

LAP (Learning-Action-Performance)

What is the Learning?

What are the key issues related to the situation, actors and performance?
The key factors in the situation are the:

- Limitations of Gyan ganga
- Rate of change of technology
- Wrong prediction of the market

What are the Actions?
What is being done to improve the situation?

- Formulation of Gyan Ganga

What are the key Performance Parameters?

- Doubling Rural GDP
- Role model for other states
- Public private partnership
- Creation of employment

3. E-Gram

The basic objective of the e-Gram is total computerization of the Gram panchayats .The implementation of the computers at the gram panchayats was a very big step for modernization of the grams. This e- governance application entails computerization of the state machinery at the village level itself for instant processing of birth and death registration and issuance of certificate such as caste, income and electricity. The state government motivated by encouraging performance of existing ICT services in the state, planned to enlarge the use of ICT in rural areas through ambitious e-gram project, with initial coverage of 1400 villages across the state. As a pilot phase, Government decided to cover 100 villages of Patan and Mehsana district of North Gujarat. This was started as a pilot project in the Valukad village of bhavanagar, Gujrat. The e-Gram facilitates the villagers to have full information available through e-mails and government portals. The e-Gram is a very innovative and successful project of Govt. of Gujarat.

The objectives of the Panchayati Raj Institutions (PRI) is to provide

- Branch related details of functions, activities and Establishments locations, contact numbers, beneficiaries etc.
- Statistical Report
- Functioning of web Portals
- Bedsides displaying comprehensive information, it would provide vital database for planning, review and monitoring.
- It would further upgrade the citizen services provided through CIC and IT applications.
- Portals would be installed on kiosk
- Important software Modules like Zilla Panchayat Accounts, estimates, sanction of works, employees personal Information, citizens charter would be made on line through http link HTML pages and GSWAN Connectivity.

3.1 Services offered by e-Gram

The list of the some services where Information Technology is applied to support e-Gram:

- Birth Registration- It is to keep record of births, Issuance of birth certificates, list of Children due for vaccination, list of children due for registration in the primary school
- Death registration- It is to register deaths, death certificates, details of premature deaths
- Property Assessment- registration of property assessment, Certificate of property assessment
- Tax Collection - details of outstanding taxes, receipt of payment of the tax, Notice, issuance of individual land records
- Accounts of gram panchayats- cash book, classified register, monthly A/c and annual A/c
- Issuance of various certificates such as caste certificate, income certificate, farmer certificate

3.1 Technical Details of e-Gram

E-Gram is implemented by specially developed software system done by the Government of Gujarat. By retaining the intellectual property rights the GoG can easily roll out the implementation, without going through the learning course, these are the different technologies used for implementing IT in E-governance.

- Back end - MS-Office 2000, MS-Access 2000, SQL Server 2000, Front end - VisualBasic, ASP
- ODBC
- Operating System- Windows 2000
- Networking -GSWAN dial up connectivity.

Hardware

- Computer system
- Dot matrix Printer
- Modem
- Telephone
- Inverter

Software

- E-Gram panchayat software

E-Gram panchayat application is for atomizing the Panchayat Property Management such as Tax collection work. This application is multi user with user wise access rights. Multilingual support for the application, currently the application is in Gujarati/Hindi/English. Data language (such as Gujarati/Hindi/English) which is used to interact with the user can be selected at the application installation time. And at any point of time the caption language can be selected just by clicking the language menu. This application stores all the areas, society and property details with the year wise charged and total received tax amount balance. Rules can be defined for the multiple tax charges sq. feet/meter area wise or some percentage of valuation of the property or any fix amount.

3.1 Replicability

The development of the e-gram Software makes it easily replicable in all the villages or taluka level in Gujarat. Also it is in the local language thus making it easy training. Gram panchayat is the best of the panchayati raj Institutional set up. Basic civic services are provided by gram panchayat, basic fiscal activities like panchayat tax collection. Revenue tax collection, are undertaken by Gram panchayat.

Actual implementation of various rural development schemes takes place at village level. Therefore maximum public contact is at the level of Gram panchayat.

The basic functions that e- Gram performs.

- Survey conducted by district panchayats
- Enumeration of existing village amenities and infrastructure
- Important announcement and message of the department

- Details of tender copies issued
- Record of district and Taluka Panchayat is a sum total of records prepared at village level

Table 2. Services at A Glance of e-Gram

Service offered by e-Gram	Before implementation of e-Gram	After implementation of e-Gram	Effec of e-Gramt
Birth register	Manual record maintenance, which was crucial	computerized and easily handled	Easy handling and processing
Death register	Manual Death registration was needed to keep record of population and other purposes	Now it is computerized and easily handled	Easy handling and processing
Property Assessment	The recode of the land's and other properties used to be maintained on paper	Now all available in soft form.	Easily accessible to every one in need, and reproducibility
Tax collection	Taxes were announced in paper and submitted manually	Now it is declared on net and can be submitted online	Save money, time and effort. Printed bill are available and details of tax.
Accounts of gram Panchayat	Manual	computerized	Easily accessible. All details are available for public
Issue of certificate	It was difficult to verify and issue of certificate	Easy verification available and quick issue of various certificates	Easy and record is maintained

3.4 SAP LAP Analysis of e-Gram

What is the present and past Situation?
The situation is understood by framing some questions and providing explanation for these.

Why was 'e-Gram' required?
The main objectives of e-Gram is to make

- Gram Panchayat totally computerized
- Records online
- Villages capable of instant processing of birth and death registration
- issuance of certificate such as agriculture, caste, income and Electricity
- Implementation of e-Gram needs
- Technology
- Sustainable business model
- Money to implement the e-gram

What will be the achievements of e-Gram?

To improve the database of

- Birth register
- Death register
- Property Records
- BPL Register
- Tax collection

Account for Gram panchayat

- Cash book
- Cheque register
- Classified Register
- Monthly account and annual account

Who are the Actors?

- Government of Gujarat (GoG) and Gujarat Informatics Ltd. (GIL)
- Development commissioner
- Rural development Commissioner
- Villagers

What is being done?

- Computerization of the Panchayats
- To make available the hardware like computer and printers
- Development of the software for e-gram panchayat software
- Connecting the district panchayats with GSWAN connectivity

Why it is being done?

- To make the use of the IT for the welfare of Villagers.
- To cover 1000 village panchayats
- To computerized the village level services.
- Every villager is able to get the all information about gram panchayats

LAP (Learning-Action-Plan)

*What is the **learning**?*

What are the key issues related to the situation, actors, and performance?

The key factors in the situation is the

- Limitation of e-Gram
- The availability of fund and technology
- The dedication of the development commissioners
- The easy availability of the information

*What are the **actions**?*

What is being done to improve the situation?

- Computerization of the gram panchayats
- Implementation of the birth register, death register, and other online Facilities
- Providing facility of processing various facilities on village level

*What are the key **performances** parameters?*

What will be the impact on the situation?

- Will improve the income of Gram Panchayat as most the things are computerized which make processing faster and more accurate
- It will create role model for other states
- make villagers comfortable to get certificates and registration
- create the world class environment for useful data management
- creation of employment

4. Communication Information Centers (CIC)

The North Eastern states of India have always been backward due to its remoteness and difficult hilly terrain. In a region where strong communication is lacking, it was envisaged by government that satellite based links to such regions would boost up socio-economic development. Community Information Centers is recognized as a new structure of localized e-governance for establishing IT facilities at Block level in North-Eastern region including Sikkim. Department of Information Technology (DIT) has implemented a

scheme for setting up of 487 Community Information Centres (CICs) at Block Headquarters in the 8 North Eastern States of Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram, Nagaland, Tripura and Sikkim using Information and Communication Technology (ICT) to accelerate socio-economic development of the region with projected outlay of Rs 242 crores. Thereafter, setting up of 68 additional CICs in the newly created blocks of North East with projected outlay of Rs 8.42 crores was taken up. Project has been implemented by NIC/NICSI.

Each CIC is manned by the 2 trained CIC operators. Each CIC is equipped with 1 Server, 5 Client Systems, VSAT, Laser Printer, Dot Matrix Printer, Modem, LAN Hub, TV, Webcam, 2 UPS and Software. Established CICs including the CIC at Nathula Pass in Sikkim near the Indo-China border are providing Internet access and IT enabled services to facilitate citizen's interface with the Government. In order that CIC network established in the North East continues to provide services, a gap bridging scheme has been initiated with projected outlay of Rs 24.72 crores for managing and facilitating the merger of existing CICs into Common Service Centres (CSCs) being established in rural areas across the country through Public Private Partnerships under the National e-Governance Plan (NEGP). Under this arrangement, the financial assistance is available to State Governments agreeing for integration of CICs with CSC scheme and submitting the RFP for CSC scheme. The establishment of Community Information Centers (CICs) has been envisaged as a means to use the benefits of Information Technology (IT) to raise the socio-economic conditions of the people of India particularly those in the remote and hilly areas of the North Eastern.

Under this project, government has planned to establish Community Information Centers in 487 blocks of 8 north eastern states in India. These states are:

- Arunachal Pradesh
- Assam
- Manipur
- Meghalaya
- Mizoram
- Nagaland
- Sikkim
- Tripura

4.1 Objectives of CIC

The CIC project has following objectives:

- To enable citizens to use Infrastructure of ICT services at Block level
- To extend reach of Citizen Centric E-Governance services up to the Block level
- Provide IT Education and Training
- Information Dissemination
- Entertainment and News
- To provide worldwide connectivity

4.2 Services offered by CIC

There are sevral services provided by CIC such as

- ICT services such as Internet access, E-mail, printing, word processing, DTP at Block level.
- Market Access and Citizens Centric E-Governance services up to the Block level.
- Access to Socio -Economic Databases.
- E-learning (Computer Aided Learning Process) and E-education.
- E-medicine-consulting
- Citizen Centric Services.
- Weather Information
- IT awareness among local people
- Computer training programme
- Tender Notification

- E-employment Notification
- Entertainment

4.3 Technical Details of the CIC

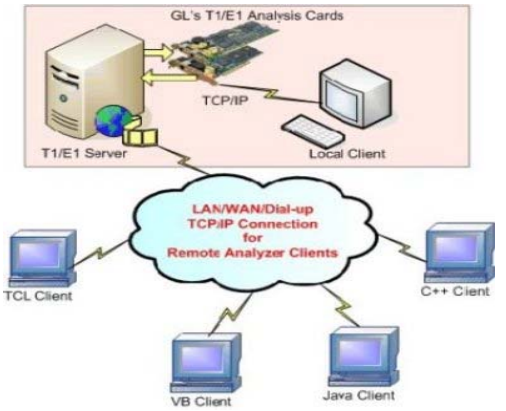

Figure 3: Client-Server model (*http://www.gl.com/images)*

The system is realized using client server technology.

Standards

- TCP/IP
- z39.50

Interface

- DM/DVB VSAT for Internet Access

Software (Web Technology)

Back end software packages used include

- SQL 7.4 (Back End)
- MySQL on Windows platforms
- MySQL on Linux platforms

Hardware

- SQL Server
- Client PC
- Disk drives
- TV Set
- Laser Printers
- Dot Matrix Printer
- IRD & IDU
- UPS

4.4 Replicability

It is possible to replicate the project in other geographical areas also along with some modification to suit the requirements there. The requirements will vary with the state where it is being implemented. It was initially implemented in North east of India. Based on the success of the CIC Project in the North East, it has already been extended to another remote and less developed part of the country such as Jammu and Kashmir.

4.4 SAP LAP Analysis of CIC

What is the present and past Situation?

The North Eastern region has been traditionally less developed due to its remoteness and difficult hilly

terrain. Due to remoteness, those parts of country are not closer to the national mainstream. The establishment of the CICs constitutes a challenging task because of the remoteness of the areas and the difficult mountainous terrain.

Who are the Actors?

- Department of Information Technology (DIT) under Ministry of Communications and Information Technology
- National Informatics Centre (NIC)
- The State Governments of the North Eastern states
- CIC operators as managers
- Employees
- End users

What is the process?

Computer and communication infrastructure have been set up in each block and are located in a Community and Rural Development building. In order to ensure uninterrupted communication, the Centers are connected through a satellite based computer communication network. 487 Community Information Centers (CICs) have been set up in all the eight States of the region. A course on Computer Literacy Programme (CLP) has been launched in almost all the CIC centers.

LAP (Learning-Action-Plan)

What is the learning?

What are the key issues related to the situation, actors, and performance?

The key factors in the situation is the

- Limitation of e-Gram
- The availability of fund and technology
- The dedication of the development commissioners
- The easy availability of the information

What are the actions?

- Centers are connected through a satellite based computer communication network
- Enhanced Networking
- Use of improved Technologies viz. TCP LAN 10MBps and TCP LAN 20MBps

Each CIC has its own web-site accessible through *http://www.cic.nic.in* and provides information on forms, rules and procedures, government tenders, notification for employment opportunities, information on tourism, culture, examination results, schemes, legal issues, guidelines for bank loans, weather information etc.

What are the key performances parameters?

What will be the impact on the situation?

- Growth in the density of visitors availing the CICs services
- Boost to all-round development of these backward region through ICT
- Increase in substantive revenue
- Time, money and effort saving

5. SAP LAP analysis of all the three cases

By this SAP-LAP analysis we conclude that the things have been changes rapidly due to the change in technology which is better known as cor-DECT technology. With the help of this technology scenario of

Gujarat changes rapidly by the implementation of Gyan Ganga. Due to the combined efforts of Government of Gujarat, n-louge, Kiosk center and villagers the scene changes quite fast. Due to this many things getting better like education, health, governance, billing system, etc. The computerization of the gram panchayat has made a positive effect on the working of the gram panchayat. It has facilitated the gram panchayat to explore different services and facilities for the villager for their comfort. It has made possible to make all the records accessible to persons in need of that due to internet connectivity. It has also given many sources of income to villagers. There are several limitations of the e-Gram project like the availability of fund and technology, the dedication of the development commissioners, easy availability of the information. This project has created the employment in the villages and world class environment for useful data management. Thus this was a great initiation of the government of Gujarat for improvement of the life of villager and provides the world class infrastructure in the Indian villages.

For CICs project, by this SAP-LAP analysis we conclude that with rapid change in technology, things have been improved a lot. The CICs Project use technology which is known as TCP/IP technology. With the help of this technology scenario of North Eastern states of India has changed. Due to the combined efforts of Government of North-east states, Department of Information Technology (DIT) and National Informatics Centre (NIC), the scene changes quite fast. Things which get better are education, health, governance, billing system, world wide connectivity, etc. and the revenue collected from this is given in the previous section also.

The paper already presented the SAP LAP analysis of three projects named as Gyan Ganga, e-Gram, CIC. This work can be extended to the SAP-LAP analysis of some other e-gov projects launched by Government of India such as Akshaya, Arunachal Pradesh Community Information Center, Bhoomi, Dairy Information System Kiosk, e-Seva, GramSampark etc. The further knowledge on these topics can be extracted from.

5. Concluding Remarks

In the recent years there have been several projects launched by the government(s), sometimes in association with private parties, to provide rural citizen with better mechanisms of governance. Gyan Ganga, e-Gram, and Communication Information Center (CIC) are the ambitious project of government of India related to e-governance, which is the application of ICT in government functioning to bring in SMART governance. The paper describes about all three projects by individual SAP-LAP analysis and SAP-LAP analysis of all together. With the advancement of technology, especially that in area of Wireless in Local Loop (WLL), it has become possible to provide Internet facility even in remote villages at affordable prices. They use different technologies for the implementation and result will show the change in things due to this rapid change of technology. The paper describes the analysis of all the three projects.

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