# Information and Communication Technology

## Guidelines

for

Urban Local Bodies, TamilNadu

F I N A L

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# Strategy for E-governance

## E-Governance:

E-Governance at Urban Local Bodies is aimed at providing on-line services to help the city's residents better and facilitate the administrators to closely monitor the performance of Urban Local Bodies (ULBs), with the guidance of Project Management Unit, Tamilnadu Urban Development Project-II, a World Bank Aided Project.

Introduction of this most modern method of administration facilitates timely and quicker intervention by administrators to redress the grievances of residents as the expectation of the people in ULBs are high. The Civic Agencies shoulder a greater responsibility in addressing the problems of the residents.

The Project Management Unit identified Tiruchirapalli City Corporation as a pilot site, to develop and implement the E-governance, utilizing the services of existing IT manpower itself. The IT team has successfully completed the task. It was a unique Project of its kind in the country and it was programmed in a way to facilitate replication of the same at all ULBs in Tamilnadu.

The advantages of having this facility are manifold. Payment of dues to the civic body, obtaining Certificates or seeking approval for construction of buildings or for running business will be simplified. What the residents need to do is to approach the bank near their residence for payment of dues to the ULBs or facilitation counter or collection center at respective ULBs.

Thanks to Computerization and E-governance, the entire process of collection by the ULBs will be faster. With the help of communication and information technology the database servers of the ULBs are connected with collection centers, information & facilitation counters and banks through the Local Area Network, Wide Area Network and Dynamic Website.

Anyone can use the dynamic website from any where in the world, to get the services of the ULBs. Similarly the project facilitates administrators in Government to monitor the performance of the Urban Local Bodies and use the data collected for quicker decision making.

**E-Governance Components :**

1. Computer Hardware, Software and Peripherals.
2. LAN Set-up
3. Creation of Database
4. Application software modules
5. Facilitation Counter, Collection Centre
6. Public and Private Partnership (banks)
7. E-governance Network (WAN)
8. Website

**Computer Hardware, Software and Peripherals :** To strengthen the e-governance, procurement of hardware, software and peripherals for all ULBs (5 corporations, 102 Municipalities, 7 RDMAs, CMA office, MA&WS department ) was made under TNUDP-II and put into operation successfully.

**LAN Set-up :** Local Area Network has been established at 5 Corporations, 7 RDMAs offices, CMA office and 102 Municipalities.

**Creation of Database:** For all revenue functionalities and other MIS functionalities, complete Database has been created from manual records for better citizen services.

**Application software modules :** Software modules have been developed and installed at all ULBs on the following subjects and functions. Birth and Death Registration, Building Plan Approval, Dangerous and Offensive & PFA, Trade Licenses, Financial Accounting system, Immovable property, Movable property, Non-Tax, Property Tax, Solid Waste Management, Water Charges, Grievances, Misc. collection, Revenue collection, Bankers application and Administrator software, Census, Electoral, Family enumeration, Hospitals, Inventory, Personal Management System, Profession Tax, Vehicles, Under Ground Drainage, Vacant Land Tax.

**Facilitation Counter, Collection Centre :** Facilitation counters have been opened at 5 Corporations and 102 Municipalities for better citizen services.

**Public and Private Partnership :** 45 bank branches have been connected to ULB network for the Citizen services in certain ULBs. The other ulbs are in the process of identifying the Bank branches for services.

**E-governance Network :** All the 102 Municipalities have been connected to the respective RDMA offices through WAN. All the 5 corporations and zonal offices are also connected to WAN. Internet has been facilitated to CMA office and Secretary's office to monitor the performance of the each local body.

**Website :** Suitable website for all 102 Municipalities and 5 corporations have been developed and hosted at NIC, Chennai.

**Distributed Database Server :**

A dedicated Database server at each local body, consisting of all the data related to the local body with Local Area Network has been created. The Regional Director Municipal Administration office is having a Database Server, consisting of all Municipalities data related to the particular region and connected to the Wide Area Network.

The public / administrator can access the individual database located at the local body.

**Usage of Computers in Urban Local Bodies**

Computers are playing a dominant role in the activities of each and every Organization. The state Governments have also woken up to this trend and are playing an active part in familiarizing computers in every aspects.

Tamilnadu Nadu has always been on the forefront of this Information technology boom and with the active participation from the State Government IT is the happening Sector in Tamil Nadu now. The State Government has planned and installed computers in all its departments to speed up the processes involved as well to have tight integration of all its activities.

In this connection the Corporations and Municipalities will play a very crucial role in the activities of the Government. Because it is through them a well integrated system will settle into place. On the face of this the usage of computers in Municipalities and Corporations will have different connotations.

- **Permanent Source for Data :** The computer primarily acts as important component for storing key data used by Municipalities & Corporations and also acts as a permanent source for these data. With latest techniques, data can last longer than any other conventional means.

- **Processing Data :** Computer helps the Municipalities & Corporations in processing the data faster and more accurately than doing it manually.

- **Retrieving Data :** The computer makes retrieval of the data stored more easier. Especially in local bodies where the volume of the data is very large computer becomes an essential tool for the easier and faster retrieval of data.

- **Faster Communication :** Computer also acts as a very efficient, faster communication channel for the local bodies to communicate with their counterparts or to their headquarters.

- **Accuracy :** The data retrieved or processed using computers are more accurate than through conventional methods.

- **Time saving :** With the advent of more new Technologies like Video Conferencing the computer will provide a cheaper and time saving means for holding conferences live.

- **Reduces Redundancy :** The computer with specific relevance to local bodies reduces data redundancy . It is very common when records are kept manually that the same data appears in one or more instances especially where large volumes are involved.

- **Less paper transaction :** The computer reduces the amount of paper work involved in Organizations like local bodies. Normally for all the transactions records are maintained and they consume lots of paper if they are maintained manually. But, using computers they can be automated.

- **Decision Support :** The computer act as an important tool in the decision support. This is of utmost importance to local bodies who can arrive at faster and efficient decisions by the analysis provided by the computers.

# Advantage and Benefits of E-governance and Connectivity

The implementation of E-governance in Tamilnadu Urban Local Bodies has yielded manifold benefits to all stake holders.

**Benefit to the Local Bodies:**

- Records , Registers and Books of Accounts are maintained upto date and accessed on-line.
- Accurate and Quality information helps better decision making
- Improved cost consciousness with better information and timely reporting
- Relief from time consuming report preparation for various authorities since the same is made available on-line
- On-line collection centers with easy access to the public are functioning to render service and collect Municipal revenue effectively.
- Revenue improvements

**Benefit to the Government :**

- Review, Monitoring and control become easy due to improvement in communication and reporting.
- Timely corrective action to address the deviations

**Benefit to the Elected Representatives:**

- Right information on the activities of local bodies , helps better participation in the administration
- Management Information System helps as a tool to convince the public in fixing / revising the user charges
- Transparency in the Administration

**Benefit to the Employees:**

- Saving in their working hours due to elimination of duplicate / repetitive work
- Personal claims and citizen dues unsettled for years together are settled then and there
- Attitude of Municipal Employees has changed.
- More Job satisfaction.

**Benefit to the Public :**

- Hassle free transactions – faster and easier
- Transparent Administration enables public participation
- Easy access to the services, complaints and suggestions.
- Dissemination of information

**Impact :**

- Given the demand from staff and citizens in terms of facilitation centers, local bodies on their own have invested in procurement of systems

- A 15- 30 % improvement in collections have been recorded as against manual systems. An issue especially in terms of closure of subsidiary revenue registers.

- Birth and death certificates are issued in 15 minutes with timely disposal of reports and documents.

- Birth and Death Databank has been appreciated by the Registrar General and Census Commissioner, New Delhi, Government of India.

- Collection of revenue by revenue official at Facilitation counters.

- Collection of revenue through banks. Bankers operate even in holidays.

- Issue of computerized Receipts , Notices and Demands by local bodies.

- Municipalities computerized the cashiers function , the impact was that closure of cash book was possible by 5.30-6 PM as against 7.30 –8 PM before automation.

- Trail Balance produced within a week of closure of monthly accounts in most of the local bodies. It has reduced the work load on auditors when it comes to finalization of accounts and audit man days reduced from70 to 50.

- Increase in use of computer systems by staff up to 60%.

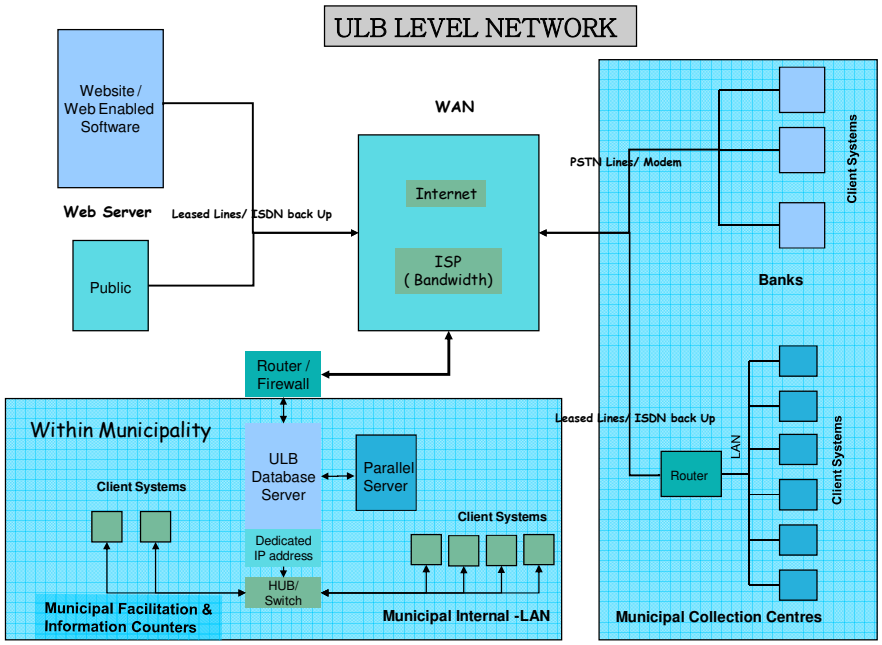
- Inter office communication largely by e-mail

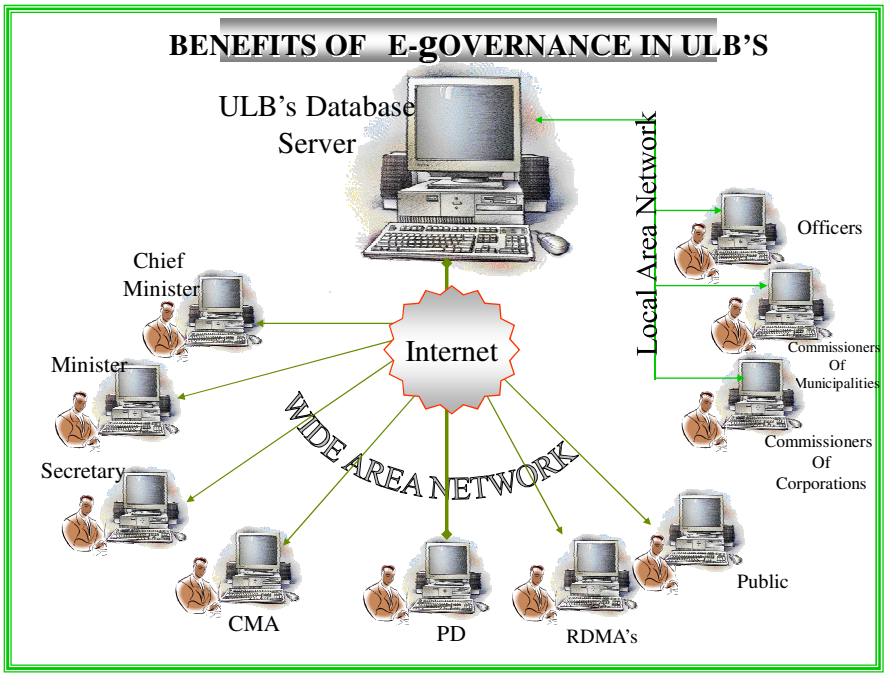
- Computer training motivated the local bodies staff , to prepare their own Power Point presentations.

- Chennai which is not part of the project under TNUDP-II has adopted Financial Management software and hospital related applications developed by the project.

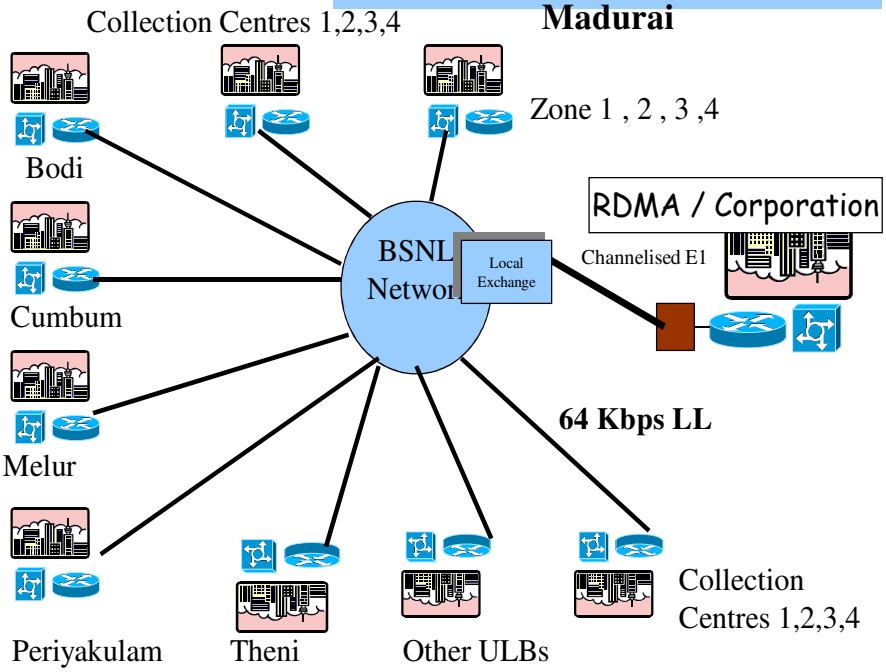
**The Benefits of computerization and the services offered :**

- Collection of revenue at facilitation counter located in ULB premises, Collection Centres and identified Banks.
- Issue of Birth Certificate
- Issue of Death Certificate
- Issue of Planning Permit
- Issue of Trade Licenses
- Registration of on-line grievances and complaints
- Facility for downloading requisite applications
- Registration of on-line complaints/suggestions thro' email

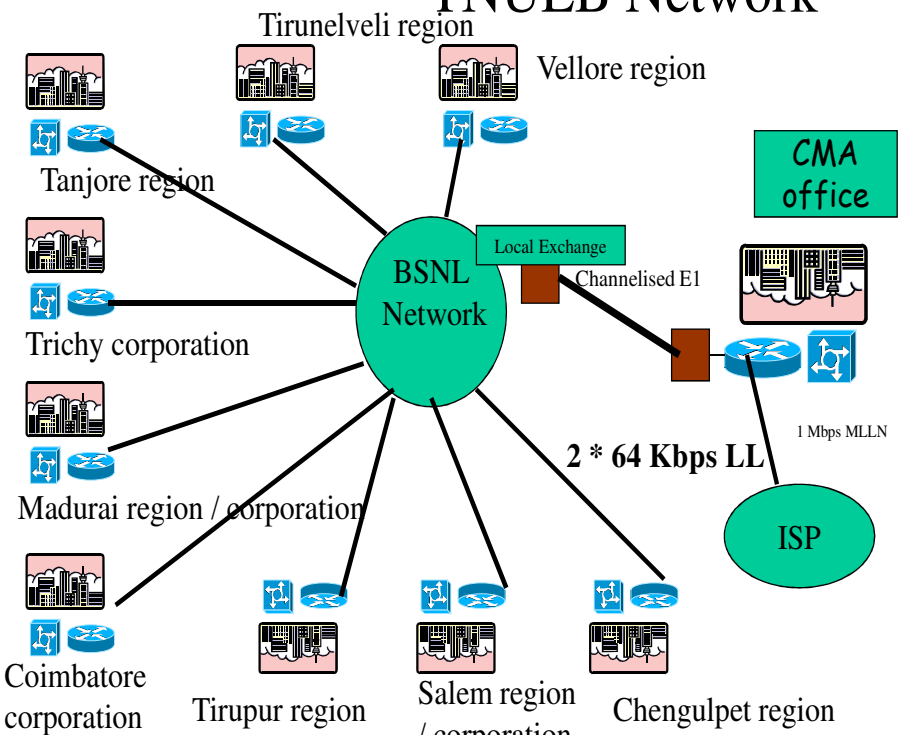

ULB LEVEL NETWORK
Website / Web Enabled Software
Web Server
Public
Leased Lines/ ISDN back Up
WAN
Internet
ISP ( Bandwidth)
PSTN Lines/ Modem
Client Systems
Banks
Router / Firewall
Within Municipality
ULB Database Server
Parallel Server
Client Systems
Dedicated IP address
HUB/ Switch
Municipal Facilitation & Information Counters
Municipal Internal -LAN
Leased Lines/ ISDN back Up
Router
LAN
Client Systems
Municipal Collection Centres


BENEFITS OF E-GOVERNANCE IN ULB'S
ULB's Database Server
Local Area Network
Officers
Chief Minister
Minister
Secretary
Internet
WIDE AREA NETWORK
Commissioners Of Municipalities
Commissioners Of Corporations
CMA
PD
RDMA's
Public

## Typical Arrangement in a Region : Madurai




## TNULB Network



**Technical Support Team**

The E-governance activities consists of the following major components:

- Hardware, software and peripherals support
- UPS support
- LAN administration
- Application software modules support
- WAN support
- Website Support

To run the E-governance activities at each local bodies, the components are to be made available for day to day activities, which are interlinked each other.

**Hardware , software and peripherals support :**

The Computer hardware software and peripherals have been procured through M/s. HCL Infosystem Ltd., The warranty period is three year from the date of successful installation and commissioning. If any technical problem in the Hardware, Software and peripherals , please contact

Thiru. Ramesh / S. Mohan
HCL Infosystem Ltd.,
67, Creams Road, II Floor,
Chennai – 600 006.

Ph: (o) 044- 28295527, 28295529, 28290605
Cell : 098414-01788 and 098403-57510.
Email : smohan@hclinsys.com, paramesh@hclinsys.com

**UPS support:**

The UPS have been procured through M/s. Aargee Equipments (P) Ltd., , The warranty period three year from the date of successful installation and commissioning. If any technical problem in the UPS , please contact

Thiru. Rajkumar,
Aargee Equipments (P) Ltd.,
L8/12, Electronic Industrial Estate,
Hosur – 635 109.

Ph: (o) 04344- 242398, 241948
Cell : 094440-10061, 094432 21948
Email : ups@aargee.com

Thiru. Rajkumar,

## OVERVIEW OF IT SECURITY

Networks stand at the center of today's organizations, transmitting vital and often highly sensitive information while connecting users to essential resources. Organizations are connecting to the Public Networks to establish business presence and to access information rapidly. When your organization's networks are connected to the public networks without adequate security measures in place, you become vulnerable to attacks from external adversaries. And as networks grow in size and complexity, protecting them from threats becomes increasingly difficult. Threats could be

- Loss of confidentiality of business information (e.g., financial records, strategic planning data, engineering models and prototypes, marketing plans, medical records, as well as inability to guarantee the integrity of such information)
- Loss of availability of mission-critical services such as EDI (electronic data interchange), ERP (enterprise resource planning), just-in-time inventory controls, and electronic mail
- Exposure of critical data about your information infrastructure that can be used by your adversaries in planning their attacks
- Legal liability, regulatory liability, or public loss of confidence when your adversaries use one of your computers to carry out attacks against other organizations
- Vandalism of public information services (such as your public Web site)

**The simulated setups of IT security solutions as detailed below:**

IT Security Solution Phase wise

***Phase 1:***

Access Control - Firewall, Anti-Virus at Gateway to public network

Data confidentiality – Virtual Private Networks (VPN) & IPSEC Encryption, Secure Socket Layer (SSL)

Data Integrity – VPN, Content Inspection

***Phase 2:***

Others- Intrusion Detection System (IDS), URL filtering, Reporters and analyzer

## Security Guidelines

**General Guidelines :**

1. Effective physical security procedures should be in place to deny access to unauthorized persons to PCs in Urban Local Bodies.

2. Use of pirated and unauthorized software should be strictly prohibited. Only original software purchased from authorized vendors should be used.

3. Wherever necessary, hardware / software security locks should be procured and installed on PCs as a protection against unauthorized access.

4. Suitable encryption packages has to be procured that facilitate storing of sensitive data on Primary and secondary storage media ( Ex: floppies / CDs / Hard disks, etc)

5. Back up of data / Programs should be taken periodically and kept in safe custody under lock and key for avoiding loss of data / programs due to virus attacks etc.

6. The Backup media should not be used for any other purpose except either for updating the backup or for restoring the data. Drivers available for taking backups / restoration should be enabled only at the time of taking / restoring backups by authorized officers only. These must be disabled immediately after the backup / restoration operation is complete.

7. If classified data / programs are stored in the hard disk of the PC, the System Administrator should ensure adequate safeguard against unauthorized access to the computer system.

8. Top secret and Secret information should not be stored on computers permanently. If Necessary information should be stored only on Secondary storage devices.

# Firewall and its Security

## What is Firewall?

A system designed to prevent unauthorized access to or from a private network. Firewalls can be implemented in both hardware and software or combination of both. Firewalls are frequently used to prevent unauthorized Internet users from accessing private networks connected to the Internet, especially Intranets. All messages entering or leaving the intranet pass through the firewall, which examines each message and blocks those that do not meet the specified security criteria.

## Firewall techniques:

**Packet Filter :** Looks at each packet entering or leaving the network and accepts or rejects it based on user- defined rules. Packets filtering is fairly effective and transparent to users, but it is difficult to configure.

**Application Gateway :** Applies security mechanisms to specific applications, such as FTP and Telnet servers. This is very effective, but can impose a performance degradation.

**Circuit level gateway:** Applies security mechanisms when a TCP or UDP connection is established. Once the connection has been made, packets can flow between the hosts without further checking.

**Proxy Server :** Intercepts all messages entering and leaving the network. The proxy server effectively hides the true network addresses.

In practice, many firewalls use two or more of these techniques. A firewall is considered a first line of defense in protecting private information. For greater security, data can be encrypted.

A Firewall is a set of related programs, located at a network gateway server, that protects the resources of a private network from users from other networks. Basically, a firewall, working closely with a router program, filters all network packets to determine whether to forward them toward their destination. A firewall is often installed away from the rest of the network so that no incoming request can get directly at private network resources. There are a number of firewalls

# BACKUP & RESTORE MECHANISM

**Overview:**

One of the Database Administrator's (DBA) major responsibilities is to keep the database available for use. If there is a failure on the system of any sort, the DBA's job is to get the database running again as soon as possible with no or minimal data loss. To protect the data from all the various types of failures that can occur, the DBA must make regular backups of the database. Without a backup, it is impossible for the DBA to get the database up and running if there is a file loss, without losing data. Backups are critical for recovering from different types of failures.

**Backup and Recovery Strategy:**

It includes the following,

- Management Concurrence
- Business requirements
- Technical requirements
- Operational requirements.

**Management Concurrence**: Whatever backup approach you, choose, it is important to obtain agreement from all appropriate levels of management.

**Business Requirements**: It is important to realize the impact that downtime will have on upon the business. In this case, management must quantify the cost of downtime and the loss of data and compare this with the cost of reducing down time and minimizing the data loss.

Database availability is a key issue for a DBA. In the event of a failure the DBA should strive to reduce the Mean-Time -To-Recover(MTTR). This ensures that the database is unavailable for the shortest possible amount of time. Anticipating the types of failures that can occur and using effective recovery strategies, the DBA can ultimately reduce the MTTR.

**Responsibilities of the Database Administrator (DBA)**

**( Assistant Programmer )**

The following are the basic responsibility of DBA :

- Planning the Database
- System Configuration
- Creating Database
- Space Management
- Application Planning and Installation
- Security Administration
- Database Backup and Recovery
- Performance Monitoring
- Dividing Administrator Responsibilities.

***Planning the Database :*** One key to a successful client / server system design is planning. Always start the planning of a computer system by clearly identifying the goals and requirements of your application. Remember to include both current and future goals in your requirements list so you pick a system design that can grow with your business in the near future. Planning also includes Hardware (Servers and Clients), Operating system and Network Components.

***System Configuration :***System configuration includes, the system installation (hardware & software), Wiring the network, integrating all the components and configuration.

***Creating Database :*** As a database administrator, you are responsible for planning and creating databases. When you plan your system and applications, you must decide whether all applications will use a single database or whether it is better to use multiple physical databases. If several applications need to use the same or related sets of data, it is much simpler to always organize your information in a single database.

***Space Management :*** An ongoing database administrator job is managing the space that is available to database system. Space Management encompasses many different related tasks:

**Responsibilities / instructions to the End-User**

The end-users are the back-bone of the local bodies , who implement computerization of all the activities. The End-users are completely responsible for bringing Change Management Process in Local bodies.

- End-users should update their previous manual records without any omission before computerization.

- The respective end-users should operate their respective functional modules.

- It is end-user complete responsibility to bring the functional module on-line / up-to-date updation of data.

- A dedicated login/passwd will be assigned to the end-users by the System Administrator related to their respective functional module, after getting approval from the admin head of the local body.

- The end-user is strictly use / follow his / her login and passwd.

- Authentication has been assigned to module-wise / function-wise within the modules.

- The periodic computer reports / printouts should be authorized by the competent authority before issue to the public / kept in the records.

- End-users should not entertain outsiders within the premises of the computer cell / center. (room) to avoid tampering of the records / data.

- End-users should not use any personal media in the computer center / cell (room).

- End-user should create proper file hierarchy for easy identification.

## Change Management Process

Before computerization, all the functionalities are being done in manually by maintaining registers. After introducing e-governance at local bodies, major functionalities are being replaced with computer(s) software.

- Change Management to be introduced at all local bodies, by issuing orders from the competent authority.

- To bring complete computerization, all the staffs and officers required training on

    I. basis of computers and
    II. computer applications.

        - As most of the functions are computerized, the respective application software modules to be implemented strictly and bring E-governance fully.

        - To run the computer activities smoothly, a **nodal officer to be identified** at each ULB's in addition to the Computer professionals (Programmer, Assistant Programmer and Data Entry Operator ), incase of Computer professional is an leave / absent, to provide better services to the public.

        - Computer professionals to be reported directly to the commissioner / RDMA's, to speed-up the IT activities.

        - The respective end-user (all staffs and supervisory officers) needs trainings on functionalities.

        - The Technical / Database / System administration training is required for computer professionals.