

INFORMATION KERALA MISSION

**INFORMATION KERALA MISSION –
UNFOLDING OF A SILENT
REVOLUTION**

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1. Introduction

The Information Kerala Mission (IKM) has been set up by the State Government with the sole objective of computerising local bodies. A comprehensive programme for the project has already been prepared. This shall include

- (i). Linking up one thousand two hundred and fourteen local bodies with the District Planning Offices and the State Planning Board.
- (ii). Developing around eleven different applications for deployment at the local body level.
- (iii). Establishing twenty nine training centers in engineering colleges, polytechnics and other institutions and training around one and a half lakh people in various aspects of software and hardware.
- (iv). Establishing district level help desks at fourteen selected engineering colleges and polytechnics.
- (v). Positioning at least one hundred and sixty six selected professionals well versed in network management, system administration, and database administration for providing all round support in setting up and maintaining the wide area network.
- (vi). Deploying the applications at one thousand two hundred and fourteen local bodies, fourteen district planning offices and the State Planning Board.

In terms of both coverage and scope IKM has emerged as the biggest Information and Communication Technology (ICT) deployment programme taken up in the state so far¹.

The IKM has been initiated as a sequel to the peoples' plan campaign, which has already brought about sweeping changes in the functioning of the local bodies. With substantial devolution of financial resources, redeployment of personnel, transfer of functions and powers to local body institutions and the administrative reform measures initiated the peoples' plan campaign has become a historic initiative in participatory development. The IKM has tried to imbibe the spirit of the peoples' plan campaign and has come up with an innovative, holistic and participatory information communication technology deployment programme. The mission, if successfully implemented, can by itself create history in participative electronic governance (e-governance) as well as in human centered social informatics system building. IKM is aimed at creating information systems capable of strengthening the grass root level peoples' plan organisation covering grama sabhas and ward sabhas, making the local body institutions more responsive and efficient, and developing mechanisms for improving transparency and ensuring the right to information of the community at large. For this, the mission is banking upon a local social organisation which has demonstrated its maturity and inner strengths through pioneering initiatives like total literacy programme and the peoples' plan programme.

Realising the difficulties of implementing an ICT programme in a state with very small industry to back up, the IKM has taken adequate care to establish linkages and release synergies from various ICT establishments and

professional groups in the state. Further it is also planned to dovetail into an overall programme of government computerisation centered around the establishment of community ICT kiosks. Given the role of ICT in creating knowledge societies in the next millennium and the central role of the peoples' planning programme in overcoming the development embargo that has gripped the State in the last few years, the IKM experiment can turn out to be a major initiative in the State's development paradigm (Government of Kerala, 1999).

2. A model for participatory electronic governance in a local body

2.1 The genesis

The task force on electronic media², constituted by the State Planning Board had recommended two pioneering efforts for application of ICTs for the development of the State, viz.,

- i) An initiative for a total communication strategy for Kerala
- ii) A proposal to develop a comprehensive resource based information system for the State of Kerala

Under the initiative for a total communication strategy for Kerala, it was proposed to set up a state-wide video and computer network. The video channel shall be for educational television and for developmental communication. The computer network shall be for:

- a. Establishing an integrated database that can facilitate better decentralised planning by the local bodies.
- b. Implementing computerised citizen services to make local body administration more responsive and efficient.
- c. Providing internet and intranet services at the local body level with the specific purpose of empowering masses and ensuring transparency.

The programme for developing a comprehensive resource based information system for Kerala was aimed at setting up an integrated resource based database of various spatial variables relating to land, water and biomass, and non-spatial determinants like socio-economic variables. (State Planning Board, 1997)

Drawing inputs from the discussions initiated by the task force on electronic media and also from the intense developmental debate initiated in the State in the light of peoples' planning, the Centre for Development of Imaging Technology (C-DIT)³ had prepared 'A pilot project for a State Level Informatics system for strengthening peoples' planning process and DEcentralised planning (SLIDE)⁴. The project aimed at creating a State-level developmental information system nucleating from an integrated database at the local body level. (Unnikrishnan, P.V and Chattopadhyaya, Sreekumar 1997)

It was envisaged that a major initiative for computerising the administration of local bodies shall be also taken up as a part of the SLIDE project. Further, a geographic information system based rural and urban information system,

focusing on the natural resource endowment of each local body, shall be created, integrated at the State-level, and updated on a regular basis as a continuation of the computerisation programme.

The proposal for SLIDE project was presented at the National Workshop on Resource Information Systems held on 22.07.97 at Trivandrum and thereafter submitted for funding to the State Planning Board. The interactions at the workshop revealed that the initiative of C-DIT was in line with efforts of the Department of Science and Technology⁵ and Department of Electronics⁶, of the Government of India. However the scope of this project was much more massive and extensive compared to initiatives in other states and at the national level. Many of the participants at the workshop felt that the programme was ahead of time and was too ambitious. The State Planning Board had made only a token allocation of the funds for the programme for the financial year 1998-99. It was in this context that C-DIT decided to restrict the scope⁷ of SLIDE and initiate a programme for computerisation of office operations in one grama panchayat as a model. The Kumarakom Grama Panchayat⁸ in Kottayam District was selected for the project.

2.2 The design of the experiment

The experiment in participatory electronic governance⁹ draws input from a time-tested methodology of Participatory Technology Development and Application (PTDA) conceived and developed by Kerala Sastra Sahitya Parishad¹⁰, at the Integrated Rural Technology Centre. (Unnikrishnan, P.V. 1994), (Unnikrishnan, P.V. 1995), (Isaac, T.M.Thomas 1995), (George, Resy1994), (Integrated Rural Technology Centre 1994), (Integrated Rural Technology Centre 1995), (Integrated Rural

Technology Centre 1996). The generic model for participatory technology development involves seven stages as shown in Figure 1.

The process starts with an interaction of the 'solution provider action research group' with the local community. This would facilitate a rapid appraisal of the specificities of the project area and also help in defining the scope of the problem. This shall be followed by a process of detailed interactions with the community, where in a variety of technology options shall be examined and a technology model appropriate to the project area is arrived at with community participation. This stage might also require demonstrations of the technologies involved or sharing success stories as the case may be. The third stage shall be a detailed analysis of the problem with the participation of the local community. This shall be followed by the development of a prototype, i.e., a model based on the technology chosen in the step two above and specifically adapted to the project area. The prototype shall be field-tested and modified suitably. The outcome shall be a detailed product design, which would be implemented subsequently.

A user centered participative approach for developing application software was attempted by extending the PTDA methodology described above. The application of such methodologies in software development is not very common. However, extensive survey of literature reveals that such issues are matter of concern for at least a section of the software development community (1998), (Rossin, Mary Beth 1998), (Kappelman, Leon A. 1995), (Simonsen, Jesper and Kensing, Finn 1998).

A ten-stage experiment design was done as described below (Unnikrishnan P.V., 1998)

1. Initial interactions with the local community to expose them to the potential of applying ICT in solving some of their problems.
2. A proof of concept demonstration to establish the benefits of application of ICT in productivity enhancement and improvement of delivery systems.
3. Preliminary hands-on training and exposure to ICTs.
4. Initial documentation of panchayat level systems.
5. Participatory analysis of panchayat level systems - 1.
6. Second level hands on training and exposure to technology.
7. Detailed participatory system analysis - 2.
8. Fixing the priorities for computerisation at the end-user level.
9. System design.
10. Implementation.

Training was split into two stages since it was anticipated that given their age profile and the limited infrastructure facilities that could be made available at the local body level the skills acquired by the panchayat personnel would decline considerably with time. Therefore it was envisaged that the trainees would have to go through a remedial and refresher training programme. The analysis of the panchayat systems was sought to be done in two stages considering the substantial amount of work involved in the process of analysis. It was generally felt

that the application packages should be developed in a phased-out, sequential manner so that a continuous process of confidence building could happen and a sense of achievement be felt at the local level.

2.3 The Implementation

The detailed description of the implementation of the ten stage experiment design is as follows:

2.3.1 Initial interaction with local community

The pilot of the SLIDE project was launched in Kumarakom on 13th June 1998. The interaction of the C-DIT team with the community at Kumarakom started well in advance. A one-day workshop was held on 2nd February 1998 at Kumarakom in which fifty two representatives including the president of the block panchayat covering Kumarakom, the grama panchayat president, elected representatives, co-ordinators of Peoples' Plan Programme, development activists and a few other interested individuals participated. Brain storming sessions were also held with elected representatives, peoples' plan activists and panchayat personnel separately to identify their stakes as distinct user groups and also in bringing out specific inputs on system improvement.

2.3.2 Proof of concept demonstration

C-DIT had developed three selected application packages for concept demonstration. They involved the following

1. Application package for the issue of Birth and Death certificates.
2. Application package for reporting on Peoples' Plan projects.
3. Application package for recording and tracking inward mail.

Two stand-alone Pentium machines with a dot matrix printer and an inkjet printer were installed at the panchayat office in a newly arranged room set apart exclusively for computers. The applications developed were loaded onto these machines and their functionalities were demonstrated during the launching of the project itself.

The choice of the application packages indicated above was consciously made. It came out during the discussions with the local community that the distribution of birth and death certificate could be taken up as a flagship project, since its operation was simple and straight forward on the one hand, but it also involved a fairly massive public interface on the other. During the discussions it was also found that the system of grievance handling in the panchayat office was thoroughly inadequate. Quite often, the representations submitted by the public were misplaced. There had been occasions where the same representations had to be resubmitted several times with a court fee stamp of five rupees. The objective of taking up the inward mail computerisation was to track the movement of documents in order to identify the bottlenecks and come up with counter measures. The package for reporting on plan monitoring was the outcome of the interaction of C-DIT with the State Planning Cell¹¹.

2.3.3 Preliminary hands on training.

The first level training was organised at the panchayat office immediately after the launching of the project. (The training programme covered 28 persons in all, including panchayat members, members of staff and people's plan activists). The scope of the training included the following:

1. Familiarisation with personal computer and peripherals;
2. Fundamentals of MS Windows, MS Excel and MS Word.
3. Hands on training handling the application packages developed by C DIT. The training lasted five days.

2.3.4 Initial documentation of local body systems

A team from C- DIT was stationed at Kumarakom during 16th July 1998 to 26th July 1998 for a preliminary documentation of the system. The exercise facilitated the C-DIT team to get an overview of the various operations in the panchayat. The documentation was done with the help of the personnel in the panchayat office and covered a considerable portion of the day-to-day operations. Extracts of relevant rules and acts and copies of input-output forms, registers, reporting sheets for periodicals etc were also collected.

2.3.5 Participatory analysis of local body systems

The system documentation was followed by an intense participatory interaction. This was done through a five day workshop on system analysis at Kumarakom from 14th September

1998 to 18th September 1998. Six volumes of documentation in Malayalam were prepared by the C-DIT team. The topics covered in the documents are provided in the Table 1. Various process groups were identified in five process subsystems described in the table 1. Each process group was disaggregated into processes and further into components. Two thousand seven hundred and ninety three process components in one hundred and seventy six processes forming thirty eight process groups were identified in all. Process matrices were prepared for each process indicating the actual workflow in operations. Forms for input and output and their relations were identified and recorded. Attempt was made to understand the potential for improvement in operational efficiency as well as the limits imposed on it by time and volume, and an alternative workflow was proposed for consideration, wherever possible. Attempts to work out benchmarks and controls for each were also made. A team of sixty persons attended the workshop which included seventeen persons from Kumarakom, the rest being selected panchayat secretaries and presidents from different parts of the State as resource persons and peoples' plan activists.

A series of presentations were made at the workshop, followed by detailed interactions. All the documents prepared for the workshop contained detailed questionnaires, which were to be filled up as a part of group activities. These interactions were aimed at critically analysing the process flow descriptions in the report, vetting the particulars of input and output forms involved

in each one of the processes as described in the document and also coming up with improvements in existing processes on delivery of citizen services and efficiency in day-to-day operations. A 'role play' involving all the participants of the workshop was also organised which was meant to analyse the mindsets of the participants towards broader issues arising from the application of ICT, like ICT and employment, costs of ICT deployment, ICT and self reliance, etc. Aspects of local technical support for the project and tie up with local entrepreneur groups and technical institutions also figured during the workshop .

2.3.6 Second level hands-on training and exposure to technology

Interactions at the system analysis workshop indicated that the majority of the panchayat personnel and elected members who were trained as a part of the preliminary hands-on training were reluctant in handling computers since most of them had forgotten what they had learnt during the initial training. A residential three day training for selected panchayat personnel and seven elected representatives was organised from 30th September 1998 to 2nd October 1998. The training essentially was a refresher on fundamentals of computers, preliminaries of MS Word and MS Excel. An entrepreneur group organising computer training on a regular basis in Trivandrum was also involved in the second level hands-on training.

2.3.7 Detailed participatory analysis - 2

During this stage an effort was made to revise the document on system study prepared during stage 5 based on the deliberations at the workshop. The work was initiated on 26th and 27th August 1998. A handful of panchayat secretaries and presidents from selected panchayats in different parts of Kerala were involved in the exercise. The objective of the stage was to split the overall panchayat system into a series of independent functional sub-units which could facilitate creation of user requirement documents and software requirement specifications for development work. The work involved was substantial and required expansion of the technical team at C-DIT. This required increase in the plan allocations made to C-DIT under the SLIDE head of account. Further discussions had to be initiated at the State Planning Board about the possibility of taking up the design and implementation on a larger scale and in a networked environment which could have a bearing on the platform of choice as well. The State Planning Board advised C-DIT that the initial focus shall be on finalising the application package for reporting on peoples' plan projects (Plan Monitoring System) which has already been tried out at Kumarakom. The State Planning Board shall give inputs regarding the nature of the networking between the local bodies and the District Planning Offices, and also between the District Planning Office and the State Planning Board based on which the plan monitoring system could be finalised. Meanwhile a few other local bodies had approached C-DIT for computerising their offices

in the light of the initial successes at the Kumarakom¹². This gave C-DIT an opportunity for pooling resources from a few local bodies, expand their technical team and undertake development of a few application packages¹³. It was in this context that C-DIT decided to organise further interactions with functionaries at the local body level and with the Local Administration Department and the State Planning board to decide on the priorities for computerisation.

2.3.8 Fixing the priorities for computerisation at the end-user level.

In order to decide on the priorities for computerisation at the end-user level, a series of interactions were done with peoples' plan activists, panchayat level functionaries and with the State Planning Board. A one day workshop for finalising the priorities for computerisation was held on 26 February 1999. This workshop tried to formulate a broad plan of action for computerisation of local bodies centered around the plan monitoring sub system. The broad consensus that emerged from the discussions at the workshop was as follows:

1. An application for reporting on plan monitoring (PMS1) shall be developed. This could be a network version of the application developed earlier at Kumarakom for reporting on plan projects.
2. As an extension of the plan monitoring system a new application package for management of plan projects (PMS) which shall be integrated with the accounting operations at

the local level could be taken up. This shall cover continuous tracking of the projects right from the time they are conceived to the stage when they are implemented. (Unnikrishnan P.V., 1999)

3. An application Package for Responsive Administration of Welfare Network and Services (PRAWNS) shall be also developed. This could be an extension of the application package for the issue of birth and death certificates and shall cover disbursal of pensions, handling of social welfare schemes apart from issue of certificates.
4. An application package “Digitised Software Product for Information on local self governance (DIGEST)” which shall serve as an encyclopedic information repository on Panchayat Raj Act, Nagarapalika Act and Peoples’ Plan shall be also developed on CD-ROM.
5. An application package that shall serve as a tool for visual drawing and estimation of public projects shall be taken up (Application for works approval). This can ensure speedier handling for public work projects at the local body level and sanction at the Expert committee level. (Unnikrishnan, P.V.2000).

One of the main reasons for coming up with a priority as above, leaving out development of the application for finance and accounts, had been that the revised rules for accounting and purchases for the local bodies were not finalised, and for the same reason the application packages centered around them cannot be

taken up for implementation. The workshop also approved the user requirement document and software requirement specifications of PMS1. There were indications that the Kumarakom experience would be taken up for replication at the state level. The priority had to naturally shift from standalone applications at the local level to web based networked applications. There was a requirement to analyse the technology choices closely. It was therefore decided to go at a slow pace on application development in order to incorporate the various aspects arising from the new requirements.

2.3.9 System design

Based on the inputs from the stage 8 above system design was taken up for PMS1, PRAWNS and DIGEST. The progress of these activities are as follows:

1. The prototype for PMS1 was demonstrated for various sections of the user groups during September – October '99. The detailed design was completed incorporating the changes that came up at a workshop held on October 25th. The coding is complete and the product is being field tested presently.
2. The user requirement document for DIGEST was taken up for a detailed user appraisal at a one day workshop on 22nd September 1999. The work on the prototype is in progress.
3. The user requirement document for PRAWNS was taken up for discussion with panchayat level functionaries on 26th October 1999, and the first draft version approved. The

software requirement specifications and the design have been finalised. The coding is in an advanced stage presently.

4. A concept note on PMS2 was also approved at the workshop on 25th October.

2.3.10 Implementation

Implementation of the applications shall be taken up in all local bodies throughout the State simultaneously after completing the testing and training. The first phase of implementation is scheduled for completion by June 2000. A phased programme for development and implementation of other applications at the local body level is being envisaged. Training and support aspects started receiving considerable attention. Peoples' plan campaign cell had developed lot of insight regarding training and support through implementing a large number of training programmes targeting the thousand and odd local bodies and also evolving mechanisms for technical support for plan formulation, appraisal, implementation etc. Even though the nature of training and support handled by the peoples' plan cell were drastically different, the extent and diversity of programmes handled by them gave them immense opportunities to evolve guidelines and standards for training and support. It was also decided to undertake a study of the profile of the target group and the existing organizational mechanisms at the local level with which synergies be built in evolving the ICT programme.

2.4 Results and inferences

Very important insights for implementation of a panchayat level programme originated from the Kumarakom experiment. These are outlined below:

1. It is possible to have detailed interaction with users on information system development and draw valuable inputs from them if a serious effort is made to communicate the relevant issues to them in the language they can understand. Even the relevance of the issue communicated could be debated on.
2. Age and lower educational qualifications need not be serious constraints in ICT training so long as the trainee can physically handle keyboard and mouse. This would require a drawing out a very simple training programme in Malayalam with emphasis on demystification of technology and hands-on practice.
3. A training approach, which is learner-centered, activity-based and environment-related can be very effective. Learner participation increases significantly when exercises relating to their day-to-day work are included in their training so that they can immediately realise the advantages of the technology application in their regular job environment.
4. Perceptions on ICT application in society, emanating from the computer vs. employment controversies in the eighties, need not be a major mental blocks in accepting the potential of ICT, provided an informed consensus can be arrived on issues at the ICT-society interface, such as ICT and development, ICT and empowerment,

ICT and transparency, ICT and employment, ICT and self-reliance, ICT and social exclusion.

5. A human-centered social informatics perspective, which essentially promises that the knowledge of human users and the social context in which information systems operate gets integrated into the ICT solution provider's agenda right from the inception of the programme, can be extremely useful in an ICT dissemination initiative in a third world environment.

For the professionals at C-DIT the Kumarakom experiment was a real eye-opener. A few important experiences are outlined below.

1. During the preparation of the document on panchayat level systems for the system analysis workshop there were doubts in the C-DIT team whether the workflow of processes depicted in matrix form would be communicable to the participants from the panchayats at the workshop. As soon as the first presentation was over a clear picture emerged. The workflow was well communicated and the employees started relating every component in it to the operations they do regularly. High levels of participation could be achieved and inputs were obtained.
2. The first level training organized at Kumarakom panchayat office was not very effective. First of all the trainees got distracted by their day to day responsibilities. Secondly, continuous practice is essential to retain the skills. Only those who were committed to using the machines regularly could retain the skills. The most exciting part of the training was the involvement of Shri V.P. Kunju

Kunju, the panchayat president. Shri Kunju Kunju, a veteran political activist and agricultural worker, aged 70, stole the limelight in the second stage training with his commitment and will to master computer skills. His leadership brought about a total transformation in the training environment and was an immense source of inspiration for the trainees as well. He exploded the myths of barriers arising from age and formal educational qualifications in ICT training.

3. The training team from C-DIT had planned a curriculum with emphasis on MS Word. MS Excel was given lesser importance since it was felt that Excel is more difficult to learn. However to the surprise of the training team it was found that the panchayat personnel were keen on Excel training because they realised that Excel was a much better tool in improving their daily work environment that involved repetitive calculations.
4. The 'role play' exercise focused on the pros and cons of ICT implementation. The workshop participants got immensely involved in the role-play and forgot that it was a mock session. Many were in despair when they saw professionals from C-DIT divided on this issue. The session came to a close with an inspiring note from Shri V.P Kunju Kunju who declared that he, who had led the campaign against computerisation in banks years back, had no ideological inhibitions on ICT being applied for empowerment of the masses. He is committed to promotion of ICT for such applications because the common man in Kumarakom is longing to have such skills imparted to their kith and kin, in the new

generation. It is important for the panchayat to take the lead in ICT dissemination to the downtrodden and deprived since the gap between knows and know-nots is fast widening even in Kerala context.

3 From Kumarakom to the Information Kerala Mission

The implementation of the peoples' planning programme had brought in a sea of change in the nature of functioning of the local bodies. This brought tremendous pressure on the local bodies to improve their performance and transparency. (Isaac, Thomas, T.M. 1999) (Gulati I.S and Isaac, Thomas T.M. 1998) (Isaac, Thomas, T.M. and Harilal, K.N, 1997) (Franke, W. Richard and Chasin, H. Barbara 1997) (Bandopdhyay, D, 1997) (Ekbal, B, 1997). Application of Information and Communication Technologies was also thought of in this context.

First of all, with the extensive devolution of financial resources, a quantum of resources available to the local bodies increased substantially. The total receipts in a Grama Panchayat, which was around 14 lakhs, registered a jump of around five times to nearly 70 lakhs. A substantial component of the newly allocated plan funds was the grant-in-aid component which could be utilised by the local body based on a broad set of guidelines, according to the felt needs of the local community.

Secondly, along with the financial devolution, the local self-government institutions were given autonomy to formulate projects that could be taken up within their capabilities. The State Government departments were simultaneously persuaded to give up similar state-level departmental schemes implemented at the lower levels thereby preventing overlap and duplication.

As a result of this, the local bodies naturally emerged as major developmental agencies at the local level.

Thirdly, in order to undertake multifarious developmental activities at the local level and utilise the devolved funds, a number of local level institutions and staff were transferred to the local bodies. Majority of the staff deployed belonged to technical and professional category. Co-ordination of this professional manpower also became the responsibility of the local bodies.

Finally, a large chunk of volunteers identified by the local bodies were extensively trained as a part of the peoples' plan campaign in various aspects of micro level development. The local bodies had to draw inputs from professional manpower at their disposal and promote synergies of the voluntary work force available with them for implementing the people's plan projects.

All these factors posed severe challenges to the local bodies. The rapid pace at which peoples' plan was implemented had meanwhile shaken up the existing systems in operation at the local bodies. Steps for institutionalising the peoples' plan initiatives and the participatory mechanisms were gradually taking shape. Discussions on administrative reforms in local bodies were also ongoing. In this overall context the social pressure started mounting to make local governance more efficient and transparent.

3.1. The project-Kerala Information Network for local bodies

It was in this context that the State Planning Board prepared a project Kerala Information Network for local bodies and submitted it to the Planning Commission. The following were the objectives of the project:

1. To provide an information base for planning and development in local bodies accessible through a network.
2. To provide applications that tightly integrate the development programmes at the grass root level with the policies and programmes of the government and hence provide an effective mechanism for timely monitoring and evaluation of projects.
3. To provide state-of-the-art computer-based mailing and messaging facilities to all local bodies for contacting each other and exchanging messages for the effective planning and implementation of development programmes.
4. To provide limited Internet access to each local body and hence make information super highway outlets available in all villages in the State.
5. To provide a system which has built-in transparency and accountability features.

The project document does not elaborate on the methodology of achieving these objectives. However it outlines a technical programme for setting up of a TCP/IP¹⁴ - Wide Area Network linking District Planning Offices, Collectorates, district-level offices of the departments, State Planning Board, Local Administration and Rural Development departments, and Directorates of Rural Development and Local Administration (State Planning Board, 1998).

With the pressure mounting to make the administration of local bodies more efficient and responsive the State Planning Board took up a crucial initiative in October 1998. The Planning Board organised

interactions with various institutions and organizations engaged in developing ICT applications for Local Body computerisation which involved C-DIT, Keltron, National Informatic Centre (NIC) and a few private entrepreneurs participated in the deliberations. Discussions were held on how to integrate the infrastructure for Kerala Information Network for local bodies with the State Information Infrastructure and also on the methodology of local body computerisation. Based on the experience of the detailed study undertaken by C-DIT at Kumarakom, it proposed the following:

1. In order to have a fool-proof system for reporting plan formulation and implementation to fall in place it is necessary to have simultaneous automation of local body accounts and finance as well.
2. For automating various operations at the local body level the application would have to reside essentially on a local body server and the requirement for data communication between the local body and the officers of district-level and state-level is going to be absolutely minimal.
3. Setting up a state-level database based on primary data on economic activities at local body level is not going to be an easy task because very little meaningful data is available at that level and the quality and availability of data varies drastically from one local body to the another.
4. A user-centered participatory approach to local body computerisation would be an effective strategy for local body computerisation.

These suggestions were also placed before a committee headed by Shri. E.M. Sreedharan for suggesting methods of networking and applications for the “Kerala Information Network for local bodies.” The committee recommended that the focus of the project Kerala Information Network was to be local bodies’ computerisation and that the government shall suitably identify a single agency for design and development of these applications at earliest. Meanwhile the methodology of the SLIDE project at Kumarakom was receiving national attention at the conference on Electronic Governance held on 15th and 16th October 1998 at Hyderabad. (Sundararajan, Aruna and Abraham, K.M). The Advisory group on Information Technology also recommended a proposal to the Government of India that the SLIDE project may be recognized as a national level pilot project¹⁵.

3.2. The formation of the mission

The Planning Commission approved the project Kerala Information Network for local bodies submitted by State Planning Board for computerisation of local bodies and sanctioned an initial outlay of Rs. 10 crores for the year 1998-1999. Another Rs. 10 crore was allocated for the year 1999-2000 subsequently. In this context, the Government of Kerala decided to set up a mission group for the time bound implementation of the local body computerisation programme. The mission group to be set up at C-DIT, Thiruvananthapuram was to be formed by including experts drawn from various institutions involved in ICT activities. The preliminary activities of mission was to begin in

June 1999. A project implementation committee headed by the Honorable Minister of Local Administration and a technical committee headed by Vice Chairman of State Planning Board was to oversee various aspects of implementation of project. The mission formally came into existence by an order of the Government on 14-8-99¹⁶. It was decided that future activities of the SLIDE project shall be merged with the activities of the mission.

3.3 The objectives of the mission

The following are the objectives of the mission: -

1. To provide connectivity with the State Planning Board, the District Planning Office and 1214 local bodies within the State.
(Networking)
2. To develop a mechanism for regular monitoring of the plan targets achieved by the local bodies, over the network
(Plan Monitoring)
3. To establish a mechanism for automating the various operations at the local body level like accounting, finance, project management, public services, statutory functions and general administration using appropriately developed information systems at the local body level thereby making a quantum leap in accountability, transparency and efficiency in public services.
(Service Automation)
4. To develop an integrated micro-level resource based developmental information system which could facilitate meaningful decentralised planning at the local body level .
(Database development)

5. To provide trained man power for operationalising the hardware and software
(Training)
6. To provide continued technical support to ensure that the network applications are up and running throughout.
(Support)

4 The methodology of the Information Kerala Mission

4.1. The elements of the mission

The elements of the mission include the following

- i. Networking of the local bodies to the District Planning Offices and the State Planning Board.
- ii. Developing applications for the local body computerisation and plan monitoring.
- iii. Training of manpower in local bodies on the software and hardware.
- iv. Setting up a support network for deployment of hardware and software implementation support.
- v. Initiating efforts towards the design of a micro level resource based information system.

4.2. The methodology

4.2.1 Software development

Extending the methodology of participatory software development taken up as part of the Kumarakom exercise , the traditional phased design for application system development (Dennis, A.R, Burns, R.N and Gallupe, R.B 1987) has been adapted

as shown in the Figure 2. The participatory system study and system analysis in the development life cycle is followed by splitting up the entire system functionally into a set of independent logical subsystems. Based on a user-defined priority the subsystems would be chosen for prototyping. The prototyping stage helps the user to make sure that whatever had been agreed on in the user requirement document is reflected fully in the prototype and it is the first visual form of the system to come. After the prototype functionality is agreed upon by the user, the specifications are frozen and the subsystem design and coding processes are initiated leading to various levels of testing and subsystem level implementation. This phased implementation strategy takes the user through a gradually rising learning curve and the system grows along in a logical fashion. Once a subsystem has been approved or when the requested changes are cosmetic, the next subsystem of the application is started. Apart from seeking the user approval on each subsystem, the user is prompted to comment on the collective whole of the gradually emerging system, so that the risk of major changes in the final product design is avoided considerably.

4.2.2 Training

IKM is not a conventional software project. In traditional software project the software development is done without giving any consideration to the user profile and the social context in which the software should function. On the other hand IKM adopts a human

centered approach, which focuses on the user's central role right from the system study stage and advocates for a three way partnership of the user, the designer and the action researcher for the success of any information project. This puts the training component of the project at the central stage. A programme of continuous improvement action learning¹⁷ shall be initiated to have good retention levels. The training itself shall focus mostly on practical work and hands on activities. It would be administrated in Malayalam and special care would be taken to demystify the technology and to present concepts in a very simple manner. The training shall be learner and activity oriented with emphasis on activities which are life related or from the day-to-day job environment.

Training shall include the following components:

1. *Computer familiarisation*

These shall involve preliminary handling of the computer, uninterruptible power supply, and peripherals.

2. *Application training*

These shall involve training in applications developed by IKM. A detailed list of applications planned to be developed by IKM is provided in Table3.

3. *Support training*

These shall involve orientation inputs for the support team.

The target groups for the training along with the particulars of training is provided in Table 2. As could be seen from the table, the number of persondays of training involved is around 1.5 lakh persondays. Training shall be implemented in a decentralised manner with two training facilities in each district. Capabilities of existing training institutions both within the government and outside shall be drawn into the programme.

The content of the training will vary drastically across the user group and support group. A brief outline of the training content for the Information Kerala Mission has been provided in (Table 3). The support training would essentially focus on orienting skilled personnel in high-end technologies and is relatively straightforward. However the user training component which deals with the first generation learners in the forty plus age group can turn out to be more challenging. In order to meet this, the training approach has been made essentially hands-on, based on group activities and practical exercises. The training would also handle broader issues at the ICT-Society interface so that a change in mindset towards an ICT enabled process re-engineering shall emerge in the long run.

4.2.3 Support

The IKM project envisages setting up a dial up connectivity between the local bodies and the respective District planning offices. The District planning offices shall be linked initially through dial up lines to the State Planning Board and later on

through leased lines. See Figure 3. Maintaining this statewide computer network is by no means a simple task in terms of size, technology and coverage. A mechanism for monitoring the problems arising in the network and providing solutions to the problems arising then and there requires tremendous effort both in terms of co-ordination and expertise. Further, deployment of the applications across the State involves substantial effort. See Figure 4. As could be seen from the figure, for deploying an application at all the nodes throughout the State in about a week it is necessary to have at least one person per block. Further in projects of this sort, dealing with first generation computer learners, confidence building is a very crucial aspect. For addressing these issues in particular, support mechanisms consisting of voluntary resource groups at the district level are sought to be established. These resource groups shall activate help desks at the district and regional levels¹⁸. There shall be a full time mission co-ordinator in each district to run the support mechanism. The overall plan is that the block level resource groups would handle most of the problems relating to implementation support at the local body level. Problems requiring institutional support at the local body level shall be escalated to the district level, regional level and the state level help desks depending on the level of complexity.

Rapid deployment solutions cannot be worked out when network connectivity is over dial-up. Therefore a roll out plan which

involves independent installations at each local body machine has to be planned. The deployment plan involves

1. Training of district mission co-ordinators
2. Training of block co-ordinators
3. Implementation in local bodies in each district sequentially by a pooled team consisting of block co-ordinators in the district, completing the local bodies in each block, one after the other.

The implementation in local bodies in each block would involve approximately one to three days on an average depending on the size of the block assuming that the deployment of the application involves one skilled person day on an average.

5 Context of methodology

5.1. The experience of Government computerisation.

The perspective of the Information Kerala Mission has evolved from the experience of computerisation programmes taken up in the State so far. It is of interest to note the following observations made by the task force on IT implementation in government:

1. "Around 25 crores has already been invested across various Government departments for computerisation so far. Most of this amount has been spent on hardware and software.
2. Exposure of employees by way of organised training in computers is rather limited.
3. No department has taken computerisation to its logical conclusion and delivery of a citizen services still not computerised.

4. Even for items like pay bill preparation, formulation of departmental budgets and maintenance of personnel database where computers can be used for increasing productivity, ICT is not being effectively used.
5. Computers are being used as personal tools of a select few rather than as a tool to improve system performance.

There is an urgent need to undertake computerisation in a planned and co-ordinated manner with a strong citizen focus.”

(Government of Kerala, 1998)

An analysis of the computerisation efforts in government so far indicates that the sad state of affairs, reflecting not only the limitations in the vision and technical understanding of the officers who lead ICT projects but also the lack of capabilities of the implementing agencies.

All the institutions working in the area of Information Technology are in one way or the other are responsible for this unenviable state. These institutions, without exception, have failed in gaining the confidence of the people for obvious reasons.

Firstly, the Information Technology projects in the state have continuously failed to achieve targets in a time bound manner. They have also been failing in delivering tangible results. The main reasons for this is that majority of the products focus mostly on the reporting mechanism, generally vertical in nature. There is no attempt to improve the services available to the people. Most of the projects have not even succeeded in bettering the reporting mechanisms qualitatively.

Another lacuna lies in the fact that majority of the institutions are not interested in applying Information Communication Technology and its benefits for assessing and realising society's needs. Priorities in most of the projects are not decided based on society's aspirations and needs. None of them have focused on empowerment. Even in the projects that are already implemented, the agencies have failed in providing reliable and continuous technical support. This reflects a lack of vision and perspective on the part of the implementing institutions and agencies in ensuring such a technical support by encouraging local entrepreneurs.

For many people as well as institutions, computerisation means procurement of hardware. In majority of cases they do not go beyond using standard application software for simple applications. Time and resources are seldom spent to develop application packages for specific purposes, which are essential for any meaningful computerisation programme. The reason for this state of affairs is not a lack of capability or slackness but absence of understanding on application of Information Technology.

In order to cover up the inability to implement projects within a time frame producing tangible results, institutions attempt to monopolise within their area or operations. Not only do these institutions lack the perspective to promote local entrepreneurship; the latter is perceived as potential threat to the former's existence.

Training is not given its due place in government level computerisation projects. As a result the employees continue to be alienated from the technology, even after the computerisation programme is over. There are two reasons for this. The main reason is the absence of the training component in the project plan itself. The second reason is the lack of linkages between the government level computerisations projects and the institutions imparting training.

5.2 Towards participatory electronic governance

In the background of this sad state of affairs in Government computerisation so far, Information Kerala Mission is committed to opening up new vistas in electronic governance.

Firstly, Information Kerala Mission will use the participative software development model that was tested in Kumarakom Panchayat. The User Requirement Document shall be prepared based on the system study report with active involvement of the end users. The Software Requirement Specification shall be developed based on the User Requirement Document. The software modules developed based on these shall be subjected to extensive field tests. Conscious effort will be taken to consider the opinions of end users and other beneficiaries.

Secondly, identifying a set of local entrepreneurs, sharing the software requirement specifications with them, and using their capabilities and skills for developing various modules of the software will be part of the methodology adopted for Information Kerala Mission. This has an objective of strengthening local entrepreneurship in software

developments. The detailed design document in the second phase of the project shall be the output of the discussion local software developers.

Thirdly, the project also envisages to give a new direction to the existing computer training centers and to prepare them for a people oriented training programme. There was no pressure on these centers till now to design and implement training programmes appropriate to our State and its people. This needs to change. It is necessary to reorient the capabilities of training centers to benefit the society. This would be precisely the strategy of IKM in training.

Finally, a similar approach will be developed in making technical support available at the local level. There are numerous individuals and institutions working in the field of Information Technology across the State. It is important to utilize their technical skills in supporting the mechanisms developed as part of the IKM, and IKM is committed in doing so.

To recapitulate the efforts of IKM to open up new paths in participatory electronic governance is embodied in the following mission statement of IKM.

Setting up a dial up modem based WAN to be upgraded to a dedicated line based WAN with WLL/VSAT if required.

Developing application software actively involving the users comprising panchayat staff, peoples' planning organisation and elected

local body members with the involvement of identified local partners in industry.

Tapping local synergies in establishing proactive ICT support network comprising institutional structures, voluntary mechanisms and entrepreneur groups.

Training and orienting a critical mass of human ware at the local level to operationalise the software and hardware, to generate an environment conducive to e-governance based on peoples' involvement and to trigger micro ICT ventures at the local level through out the State banking upon the social activism component of the peoples' planning programme.

To promote creation of spatial and non-spatial development knowledge-base through horizontal and vertical integration of various development initiatives in the State, at the micro level and to initiate action research programmes centered around this knowledge base.

5.3 Problems of business process re-engineering

It has been widely accepted that ICT implementation in Government is the most difficult process and hence requires careful planning and formulation of strategies for effective implementation. Computerisation in Government has generally focused on computerisation of individual activities per se. This leads to mere automation of the existing manual work and could lead to a situation where 20 computers and 20 persons on implementing ICT would continue to do manual work done by 20 persons. Of late, the fallacy of such an approach is being realised. The

emphasis currently is on conducting system studies to understand the workflows involved in each of the activities and attempt computerisation of such work flows. This results in certain levels of simplification and rationalisation and even an improvement in productivity. However, here also the basic issues involved in delay and red tapism within Government are not adequately addressed. Even in computerisation of workflows, there will be a need to update the data periodically. In the event of each individual completing the work assigned to him, even in the present system, delays would not have occurred. It will be extremely naïve to assume that the updating of data would be regularly and periodically done just because the system is computerised. In fact, in the workflow computerisation model there is a very real danger of substantive investments being made in hardware, application software and even in training and still the issue of prompt and regular updating of data not being effectively addressed.

In the above context, it is clear that substantive administrative reforms would have to precede attempts at e-governance. In other words, the emphasis will have to be on simplifying procedures, rationalising processes, restructuring Government and then use ICT to institutionalise such changes. However, this is easier said than done. It is in these circumstances that attempts at e-governance based on creative and effective uses of relational databases needs to be attempted. In this approach, the data requirement for decision making are identified and emphasis is on structuring the relevant databases. ICT implementation would have to be planned in such a manner that

each transaction would automatically be derived from an integrated database and in turn would update the database. For this, apart from the creation of databases there is also a need to network individual service delivery or workflow processing points. A minimised structure of such a database would have to be first decided and an appropriate network first created. Subsequently, additional modules to databases and add-on networks would have to be created and integrated. What should be attempted is, mapping of physical resources as well as the voluminous data available across various government departments into a relational database structure and manipulating the same as required to different levels of Government machinery for their functions related to service rendering and planning. This is nothing less than the concept of ERP¹⁹ adapted in Government.

The IKM programme shall define appropriate databases at the panchayat level linking the various local body level operations, processes and workflows. Subsequently data available with the individual Government departments and offices shall be mapped on appropriate databases and linked with the above efforts. The overall perspective would be to appropriately define various databases and link-up the services and workflows being generated based on such databases. Since, almost all the services at the local level are individual specific, the key to this approach would be the formulation of unique citizen ID codes. It is proposed to link the creation of citizen code with the building tax assessment process. (M.Sivasankar, 1999)

6 The present status of the project

6.1 Application Software development and product integration

Three applications among the eleven listed in Table 3 have been completed by the mission. These include

1. Sulekha - The application for plan monitoring.
2. Sevana - The application package for responsive administration and welfare network and services.
3. Sanchitha - Digitised software product for information on local self governance

Sulekha is more or less the management information system²⁰ for the peoples' plan programme. It covers various aspects of formulation, appraisal, approval and implementation of peoples' plan projects in various local bodies in the state. However the documentation of the entire line up of the peoples' plan project life cycle has not been covered, purposefully, in order to maintain specific focus on reporting for monitoring. One of the weakness of the application package is that it has not been integrated with the accounting operations and the entire gamut of documentation is not included. The hindrance in integration with the accounting operations had been the delay in finalisation of account rules and budget rules for local bodies.

The application uses MS SQL Server and Internet Information Server as backend and Internet explorer as front end. The Malayalam interface has been provided by using CDAC's ISM. The application uses a client-server architecture with the clients at the LB level dialing into a web server at the district planning office level where a consolidated

district level report would be created. The reports at the district level in various districts would be mirrored on to the state level server.

Extensive consultation on the user requirement document, software requirement specifications and the prototype was made with practicing officers, activists and functionaries involved in the design and implementation of the peoples' plan programme etc. The interactions led to IKM spelling out a detailed outline of the processes related to the peoples' plan, with a logic for the evolution of the processes. The processes were structured, keeping in view the business process reengineering requirements, for participatory efficient and responsive administrative systems at the local level. The process document ended up as the training manual for the mainstream refresher training programme of peoples' plan. Documentation available in various local body office for recording the peoples' plan process and accounts showed drastic variations, and the mission team undertook an extensive effort on a pilot basis in Trivandrum District to strengthen and streamline the documentation for the entire peoples' plan period 1997-2001. For the rest of the districts the efforts for improving the documentation would be integrated with the IKM training programme.

The application Sevana covers agriculture labour pension, old age pension, cigar labour pension, pension for the physically handicapped, pension for the mentally handicapped, widow pension, unemployed wages, Balika Samridhi Yojana, Scheme for traveling allowance for SC/ST persons, Scheme for thatching of roof, medical assistance scheme for SC/ST persons, National maternal benefit scheme, Poor widow's daughters marriage scheme, assistance scheme for marriage of

daughters of SC/ST persons and registrations of birth, still birth, death, marriage, the corrections in registrations there of and the issue of certificates for different registrations. For improved delivery of the above services Sevana envisages creation of an integrated services database which would cover all the beneficiaries in the local body. The integrated services database has been designed by providing keys for linking the local body database with a variety of other departmental databases so that the concept of seamless integration of multiple departmental databases for delivery of public services and electronic governance can be realised at a later point of time. Using the data captured during the integrated services registration on a one time basis, Sevana, simplifies the citizen interface by requesting only the dynamically varying component of the information usually collected along with the applications for various pensions and social welfare schemes. By incorporating query, search and reporting tools Sevana expedites the issue of certificates apart from providing options for tracking the workflow.

Sanchitha has been visualised as an encyclopaedic information repository on the Kerala Panchayat Raj Act 1994, Municipalities Act, Kerala Panchayat Raj Rules 1996, all allied acts and rules, government orders and notifications on a compact disk. The product has facilities such as structured access, category wise search, key word based search, point to point link, reference indicator, numbered access, frequently asked questions and product tour. These facilities make the product extremely user friendly.

6.2 Handholding and training programme

Handholding and training are the most crucial components of the mission activities. The mission aims at tapping local synergies in establishing a proactive network for handholding and technical support comprising institutional structures, voluntary mechanisms and entrepreneur groups across the state. Training is sought to be implemented by orienting the existing computer training centres towards an activity-based, learner-centered pedagogy in the local language. The linkages at the local level are represented in figure - 5.

In order to establish the linkages an extensive interaction has been initiated with professionals in engineering colleges and polytechnic, professional bodies and with a computer entrepreneur groups. A comprehensive database of professionals and institutions has also been compiled. 29 institutions have been identified as training centres for delivering the mission's training programme covering over 6,000 local body functionaries for various durations summing up to one and half lakh computer training days. Detailed study material in the form of reference books, exercise books, computer based training CD's and educational videos have been prepared. A Team of 3 Regional Mission Co-ordinators, 28 Assistant Mission Co-ordinators, 152 Technical Assistants, 128 Master Trainers and 1214 Data mechanics is being set up and equipped with necessary skills for handling the handholding support and training activities for the mission. The operational design of the training programme is shown figure - 6

6.3 Handling the Malayalam interface

A variety of issues relating to the local language interface were encountered in the development of various application packages. These problems involved issues relating to standardisation and fixing of certain settings in ISM, so that replicability in installations could be ensured apart from various conflicts in multiple application environments like Crystal report, MS Word, Internet Explorer and SQL Server 7.0. C-DAC sorted out these by providing new API's and a new version of ISM fonts after changing the character mappings which created the conflicts. Facilities like sort, search routines which would also include strings with syntactic and semantic relations to a chosen string when the specific string is chosen and facilities for spell check in Malayalam have not been incorporated in the various applications since they are not relevant functionality. Introducing these features if necessary, would also involve significant programming overheads and can be resolved fully when the Malayalam is integrated into windows. IKM has extensively contributed for the standardisation of the Malayalam keyboard and is also closely interacting with Microsoft on issues relating to integration of Malayalam in Windows 2000.

6.4 The Pilot roll out

In order to test the models for training, handholding, support and implementation the applications Sulekha and Sevana have been rolled out on a pilot basis in five selected local bodies in Thiruvananthapuram District which include Amboori, Kattakada, Madavoor, Vellanadu, Vilavoorkal panchayat. All the steps involved in the actual rollout like compliance of standards of site readiness, preinstallation testing, post

commissioning testing, training, refresher training and evaluation of the rollout process etc., have been carried out. The pilot rollout has given in the IKM team the desired level of confidence required to organise the rollout at the state level. The documentation required for fault reporting and for tackling field level issues arising out of implementation are also being tried out in the pilot localities. Matters relating to entering of past data, taken up after the applications are operationalised using current data and problems involving integration of manual systems of documentation with electronic systems are also being covered.

7. Towards rollout and implementation

As described earlier, working towards impressive objectives, the mission has completed two software applications already, Sulekha – an application software for monitoring of peoples plan targets, and Sevana – an application for IT enabled services covering issue of certificates, handling of pensions and social welfare schemes and establishing an integrated citizens database for faster delivery systems. Three more applications –an application for establishment operations in the local body, a community portal for web enabled value added services and an application for a watershed based decision support system using a Geographic Information System technology are in advanced stages of development. Three data products – an encyclopedic repository on the Kerala Panchayat Raj Act Rules, Allied Act and Rules, Government Orders and notifications, a directory of small IT enterprises in the state and a compendium on the Panchayat-Nagar Palika elections 2000 are also in the final stages. Twenty-nine training centres have been

identified through out the state, which would collaborate proactively with the mission in implementing the massive training efforts being initiated. Textbooks, manuals, exercise books, videos and computer based training materials are being prepared for the extensive residential training programmes initiated already. The pilot roll out of the applications to be released state wide in five selected grama panchayats in Trivandrum district has also been completed. Around 1400 professionals have been identified to man the mission's activities in different parts of the state and a network of institutions and freelance professionals have been also identified for synergic interaction with the IKM activities. A day-by-day project schedule for the testing, deployment and training has been prepared and the mission is all set for implementation.

8. Appendices

8.1 Evolution and objectives of the SLIDE project

8.1.1. SLIDE Project : Evolution

The task force on Electronic Media for the ninth five-year plan (1997-2002) had recommended an ambitious scheme for setting up a Total Communication Network (TCN) for Kerala. The TCN has development of a computer network as one of its objectives. The network is expected to provide the broad frame work for integrating the data bases on natural resources with micro level information on various sectors of local economy, socio-economic status of the local community etc., which can facilitate meaningful planning by the local bodies. It also envisages implementation of computerised services and efficient. Providing Internet /intranet services to the panchayat level with the specific purpose of

fulfilling the right to information of the community at large was proposed.

The Panchayat Resource Mapping programme (PRM) jointly undertaken by the Integrated Rural Technology Centre (IRTC), the Centre for Earth Science Studies (CESS) and the Kerala State Land Use Board (KSLUB) was an innovative effort to address some of the major impediments of local level planning. The programme involved generation of a fairly comprehensive database on land and water resources and the pattern of their utilization in map format. The maps used were the cadastral maps (used by revenue authorities for entering the plot numbers), which can be easily comprehended by the villagers. Subsequently, IRTC took the initiative of moving from resource maps and the reports of quick appraisal to drawing up an integrated plan for the panchayat and implementing it with active involvement of the local people. Kalliassery in Kannur, one of the 25 panchayats, was selected for this experiment. A Panchayat Development Society (PDS) was registered in the panchayat that took the initiative in opening a series of discussions among the people. A number of preliminary technical studies were also conducted. The outcome was an intervention strategy for local level development of the panchayat covering productive sectors like agriculture, industry, animal husbandry and fishing, infrastructure and social sectors like education and health. Many of the components of the plan have already been implemented, using local resources and voluntary labour. The experience so far indicates that the exercise

at Kalliassery is a viable model for local level planning. The SLIDE project proposal seeks to build upon the above experience. Government of Kerala launched a 'People's Planning Movement' for formulation of the ninth five year plan by the masses on 17th August, 1996. The People's Planning Programme was implemented in several stages and is presently in its second year. Implementation of the plans prepared at the local level calls for a wide range of technical inputs, which shall include among others spatial data on the resource base in the locality, socio-economic status as well as detailed micro level information on specific sectors where development programmes shall be initiated on a priority basis. Availability of such data at the panchayat and municipality level would inevitably strengthen the presence of block level and district level local bodies, which can look into issues related to area planning and prioritization based on the area plan. A reliable information base is essential for successful management of a local body and strategic decision-making. Lack of information contributes to problems such as ineffective development programmes and activities; uneconomical and badly planned investment projects, poor functioning of tax and utility systems and disregard of environmental impact of development on the population.

The SLIDE project aims at building a mechanism for bridging the data gaps in local area planning. The demographic trends in urban centres in developing countries, especially Asia have been addressed widely during the recent years. The massive number of

people 'waiting in the wings of urbanization need to be properly fed, housed, clothed and provided with basic urban services and amenities. This is the biggest urban challenge facing mankind at the threshold of the 21st century. SLIDE project also addresses the urban issues in the context of decentralised planning in terms of urban productivity, infrastructure management, institutional capability and environment management.

8.1.2. SLIDE Project: Objectives

- 1 To demonstrate that it is possible to undertake participatory integrated resource based planning at the panchayat level, participative urban environment planning and management at the municipality and corporation level and participative, sustainable and environment based area planning at the block level.
- 2 To demonstrate that it is possible to use sophisticated information systems for developmental action.
- 3 To demonstrate that our panchayats, municipalities and blocks are capable of using computers to increase the quantum and efficiency of their work.
- 4 To use the capabilities of computers, remote sensing and geographical information systems for planning and management at the panchayat, municipality and block level.
- 5 To evolve a mechanism at the panchayat and block levels for continuously updating the resource information system to use it for integrated and sustainable resource based planning at the farm, watershed, panchayat and block levels.

- 6 To evolve a mechanism at the municipality level for continuously up sating the urban information system to use it for environmental planning and management at he afore mentioned level.
- 7 To demystify geo informatics and computer based information systems and to conscientise at least a section of people on the potential of using them as tools for developmental action.
- 8 To develop a mechanism to cross check and authenticate data collected by the departments at the Panchayat/ Municipality / Block level and integrate this data with the resource information system and urban information system on a regular basis.
- 9 To inculcate a new culture of collecting data, updating it, ensuring truthfulness and correctness of the data and utilising the data meaningfully for developmental work
- 10 To evolve a system of responsive and efficient administration at the local body level and to inculcate a culture of total transparency in all walks of administration.

8.1.3. SLIDE Project: Expected Output

- 1 A full-fledged information management mechanism in the hands of local personnel in one corporation, three municipalities and four block panchayats
- 2 A comprehensive database covering environmental, geographic, economic, social and cultural aspects of the

Panchayat/ Municipality / Block and a mechanism for its updating.

- 3 A comprehensive manual on the development and use of the Rural Information System for facilities planning, farm and watershed management and economic planning at the panchayat and block level
- 4 A comprehensive manual on the development and use of an Urban Information System for facilities planning infrastructure management, urban environment management and economic planning at the municipality level
- 5 A mechanism for bringing together data on all developmental projects in the local body and regularly updating it
- 6 A time bound complaint/query redressal system linking the local body and various line departments
- 7 A comprehensive manual on computerisation of administration, accounting and other operations at the panchayat, municipality and block level and new systems for responsive and efficient administration
- 8 A cadre of 15-20 trained computer personnel at the various line departments and the local body level capable of undertaking office automation and database operations
- 9 A cadre of around 15-20 trained developmental activists at the local body level familiar with data processing, cartography etc., and capable of utilising such data for developmental work.

8.2. A broad outline of topics for training

Training Programme

1. Awareness programme for local body members (1 day)
 - ICT and Society
 - The IKM programme
 - The computer
2. Orientation programme for President, Secretary and Activists (10 day)
 - ICT and Society.
 - The IKM programme.
 - The Computer.
 - PC and peripherals (Hands on Training).
 - Introduction to Word and ISFOC Script Manager.
 - Introduction to Excel.
 - Introduction to Internet Explorer.
 - MS Office practical (Hands on).
 - Orientation to modules.
 - Computers for decision-making.
 - Computer for personal productivity.
 - Discussion on IKM implementation .
3. BLEC co-ordinators, District convenors, DPO's, DPO's office staff and staff from People's campaign cell (12 days)
 - IT and Society.
 - IKM Programme.

- The Computer.
- PC and Peripherals (Hands on Training).
- Introduction to Word and ISFOC Script Manager.
- Introduction to Excel.
- Introduction to Internet Explorer.
- MS Office practicals (Hands on).
- Orientation to modules.
- Discussion on IKM implementation.
- Problems in ICT implementation.
- ICT as a tool for transparency and democratization.
- Organising for ICT.

4. Training of Data Mechanic (15 days)

- Peoples' Planning.
- ICT and Society.
- IKM Programme.
- Hands on training for Plan Monitoring Module.
- Orientation on MS office and Internet Explorer.
- Introduction to ISFOC Script Manager.
- Planning of local database.
- Discussion on IKM implementation.
- Windows NT server
- MS SQL server.
- IIS server.
- System administration.
- Data communication fundamentals.

- Facilities management.
 - Interaction with IKM support group.
5. Training of operators (25 days)
- IT and society.
 - IKM Programme.
 - The Computer.
 - PC and Peripherals (Hands on training).
 - Advanced WORD with ISFOC Script Manager.
 - Advanced EXCEL.
 - Introduction to Internet Explorer.
 - MS Office practicals (Hands on).
 - Detailed training on module.
 - Details on implementation.
 - Orientation on networking.
 - Data communication fundamentals.
6. District level functionaries
- Windows NT Server Administration and Management
 - SQL Server Administration and Management
 - IIS Administration and Management
 - LAN Administration and Management
 - WAN Administration and Management
 - Hardware management and maintenance
 - Facilities management
 - Exchange Server Administration and Management

- System Management Server Administration and Management.
- MS Office-Usage and Administration.
- Document Management.

7. Block-level functionaries

- Windows NT Server Administration and Management.
- SQL Server Administration and Management.
- IIS Administration and Management.
- LAN Administration and Management.
- WAN Administration and Management.
- Hardware management and maintenance.
- Facilities management.
- MS Office-Usage and Administration.
- Document Management.

TABLES

TABLE - 1

Topics covered in the “Study on a strategy for computerised operations and systems for transaction for local bodies”

Sl. No.	Volume	Name	Description
1	1	Introduction	Introduction to the project and objectives of computerisation.
2	2	Information sub system	(i) Knowledge base on Panchayat Raj Act Rules, Government Orders, circulars, notifications etc. (ii) Face-to-face with the public – an electronic bulletin board for posting news, grievances, suggestions, enquiries, clarifications etc.
3	3	Sub systems for Establishment and human resource development	Matters relating to communication, implementing systems procedures, management of records, maintenance of assets, training, remuneration of office personnel and implementation of welfare schemes

4	4	Sub systems for local self governance	Documentation management for meetings of the panchayat committee, standing committee, gramasabha, joint committee, sub committees etc.
5	5	Sub system for purchase and works	Matters relating to public works, matters relating to purchase.
6	6	Finance and accounts sub system	Systems relating to accounting, budgeting, revenue collection, financial management.

TABLE 2

Category-wise list of personnel to be trained before March 2001

Sl. No.	Category	No of days of trg	Total no. of persons to be trained	Total training days
1	District/ Block/Grama Panchayat Presidents	10	1156	11560
2	Corporation Mayors & Municipality Chairpersons	10	58	580
3	Local Body Members	1	14051	14051
4	District/ Block/Grama Panchayat Secretaries	10	1156	11560
5	Corporation & Municipality Secretaries	10	58	580

6	Selected District/ Block/Grama Panchayat Staff	25	1980	49500
7	Corporation & Municipality Staff	25	448	11200
8	Data Mechanic Trainees	12	1214	14568
9	Master trainers	7	120	840
10	District Mission Coordinators	7	14	98
11	Various level Co-ordinators of People's Plan programme.	12	200	2400
12	District/ Block/Grama Panchayats, Municipality & Corporation level activists	25	1214	30350
	TOTAL		21669	147287

TABLE 3

Brief outline of applications to be developed by IKM

Sl. No	Name of application	Brief description
1	Sulekha (Plan Monitoring System PMS .I)	It enables data capture at the local body level, transfer of data from local body level to the District level and from District to the state levels and reporting to each level on plan formulation and expenditure
2	PMS .II	It shall cover the entire system for plan formulation , Plan Approval, Project

		accounting, Plan Implementation monitoring, at the local level including the local level participatory structures like grama sabhas, beneficiary committees etc and also the integration of the offline PMS 1 reporting mechanism with the day today accounting systems at the local body level
3	Sevana (Package for Responsive Administration of welfare Network and Services)	It shall cover the various services offered by the local bodies such as distribution of welfare schemes and security measures, registration and distribution of certificates and creation of an integrated database
4	Finance and Accounts System	It shall cover all finance, accounts and revenue related aspects of panchayat as well as standard financial applications and other specialized functions.
5	Sanchitha Digitised Software product for Information on Local Self Governance	It is an encyclopedic information repository on Panchayat Raj and Nagarapalika Acts, the Peoples' Plan which shall develop itself into an interactive web-based multimedia product
6	Software for	It shall handle the local body

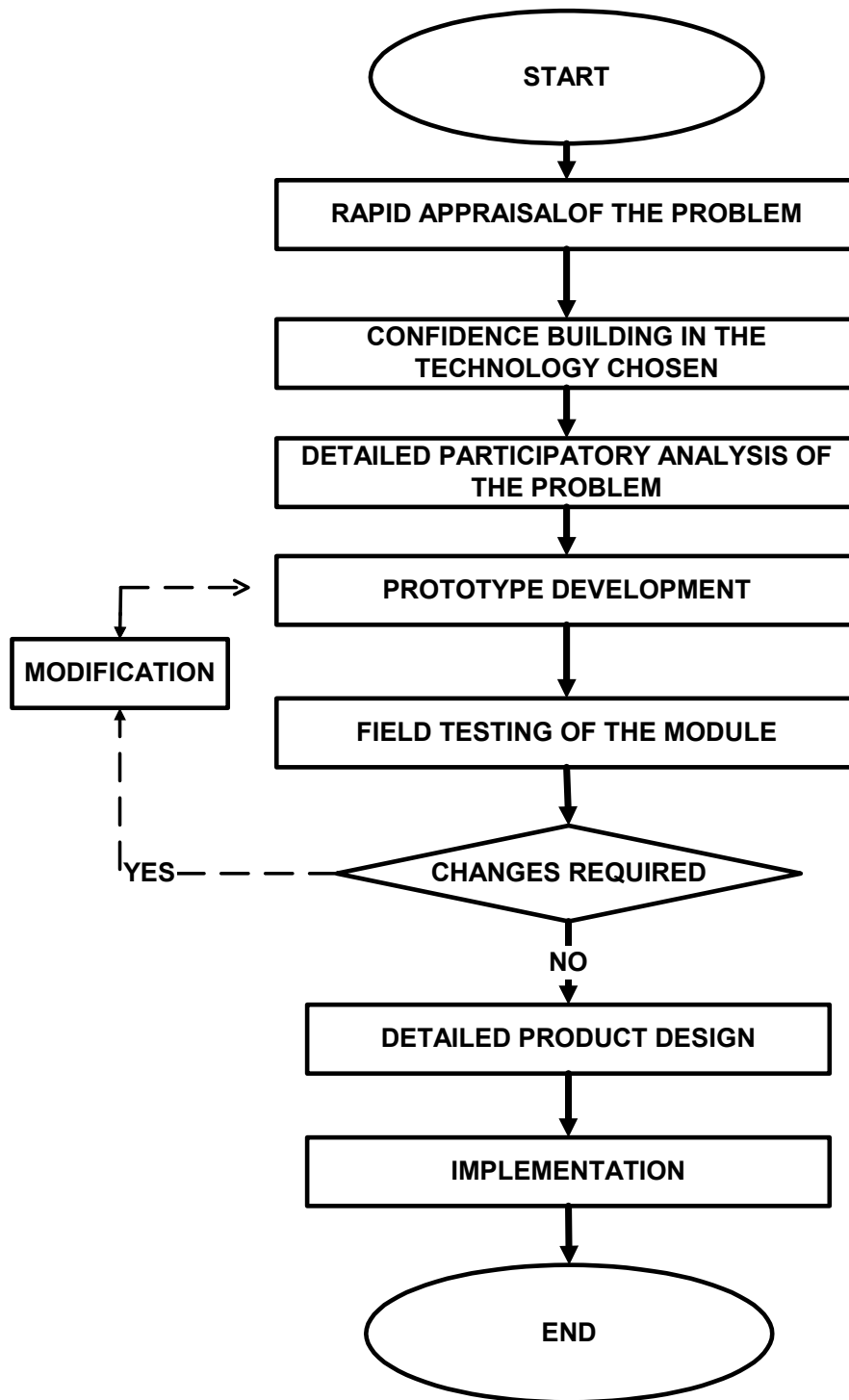
	Establishment Management	establishment –related functions such as salary disbursement, Travel Allowance payment, PF deductions etc.
7	Works Approval	It shall be a visual drawing and estimation tool for speedier handling of public works projects both at local body and sanctioning levels.
8	Purchase and Works System	It shall handle the recording, accounting, maintenance and reporting of purchase and works related records at the local body.
9	Mechanisms for Electronic Governance I	It shall cover the mechanisms relating to meeting of the local body, Standing committee, Grama Sabhas and Ward Sabhas etc.
10	Mechanisms for Electronic Governance II	It shall cover the various administrative functions of the local body including electronic document management and enhance the productivity of day-to-day operations of the local body.
11	Community Information Centres	It shall be the electronic interface of the Governance system at the local body for the public covering areas of public interest like results of public examinations, detailed information on job opportunities in Government and

		else where, facilities for citizen services like mail, transport services, tourist booking, entertainment services etc. along with information on development projects and other initiatives of the local body Source: (Jayaraj.N, Kurup, Rajesh.J and Sreehari, V.S)
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FIGURES

FIGURE - 1

PROCESS FLOW FOR PARTICIPATORY TECHNOLOGY DEVELOPMENT



Created with

FIGURE - 2

PARTICIPATORY METHODOLOGY FOR APPLICATION SYSTEM DEVELOPMENT

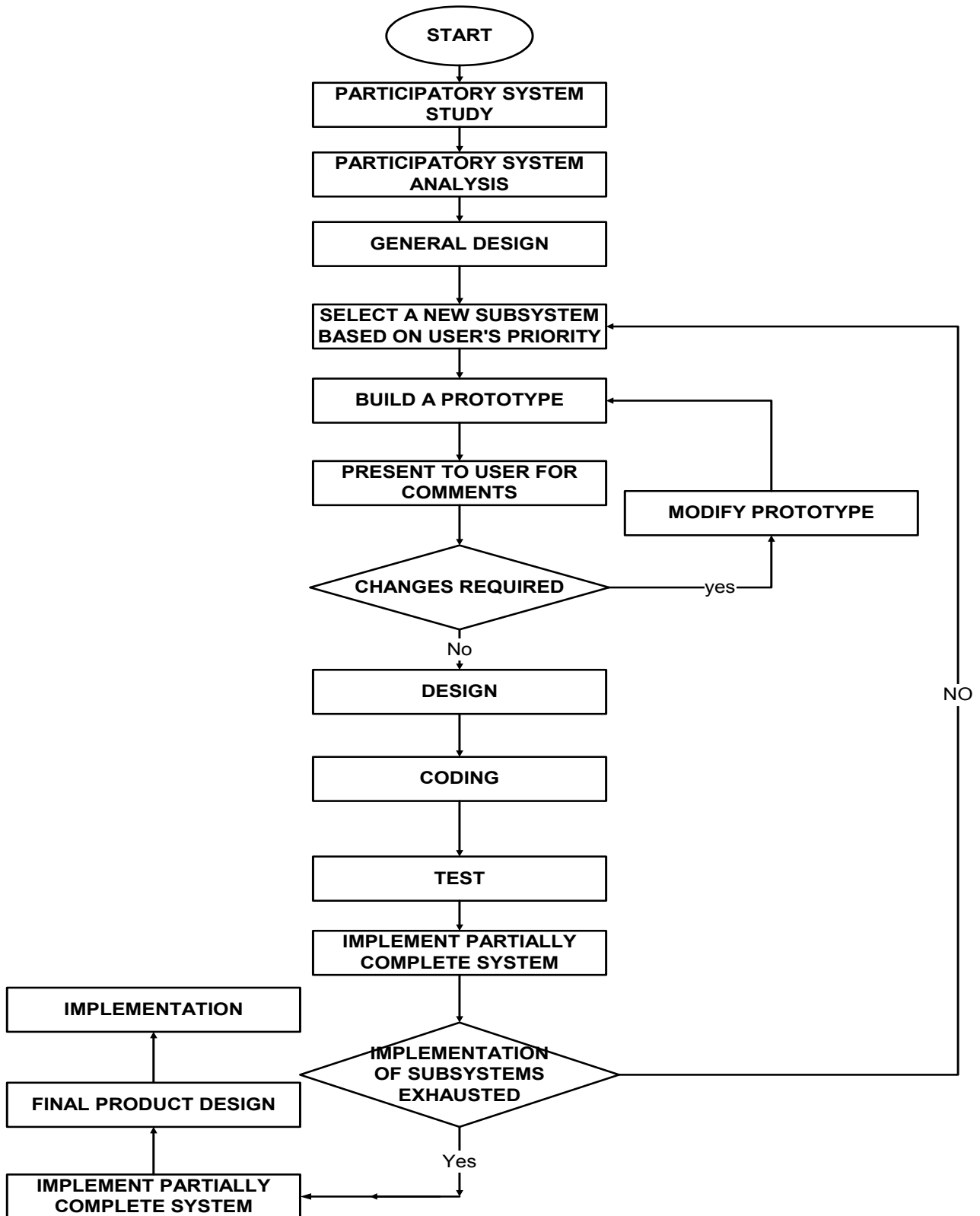


FIGURE - 5

TRAINING AND SUPPORT : CRITICAL LINKAGES

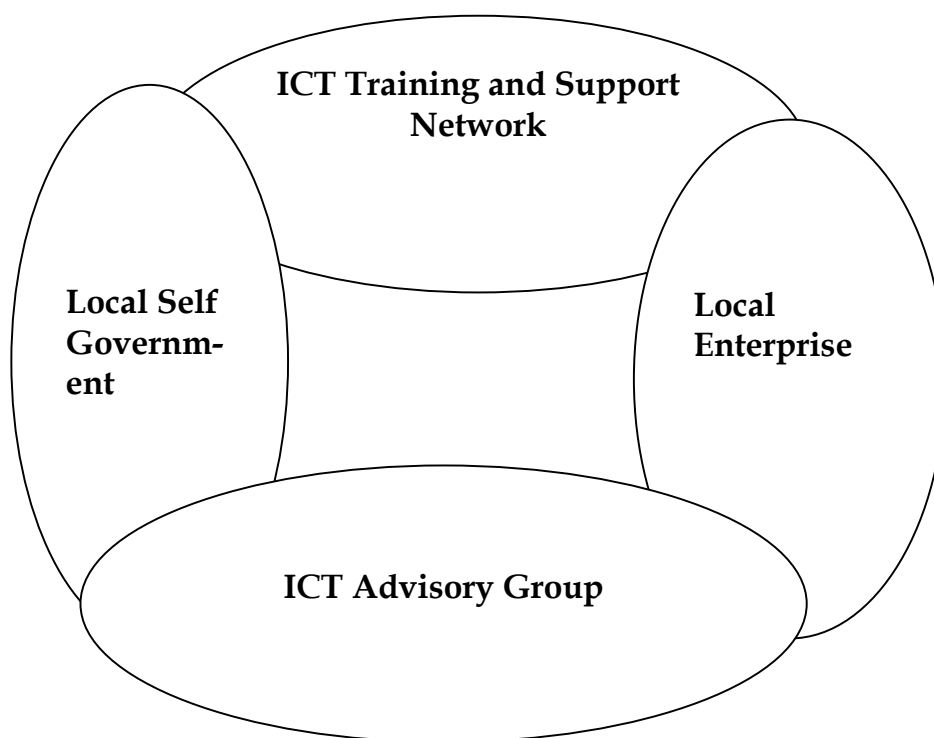
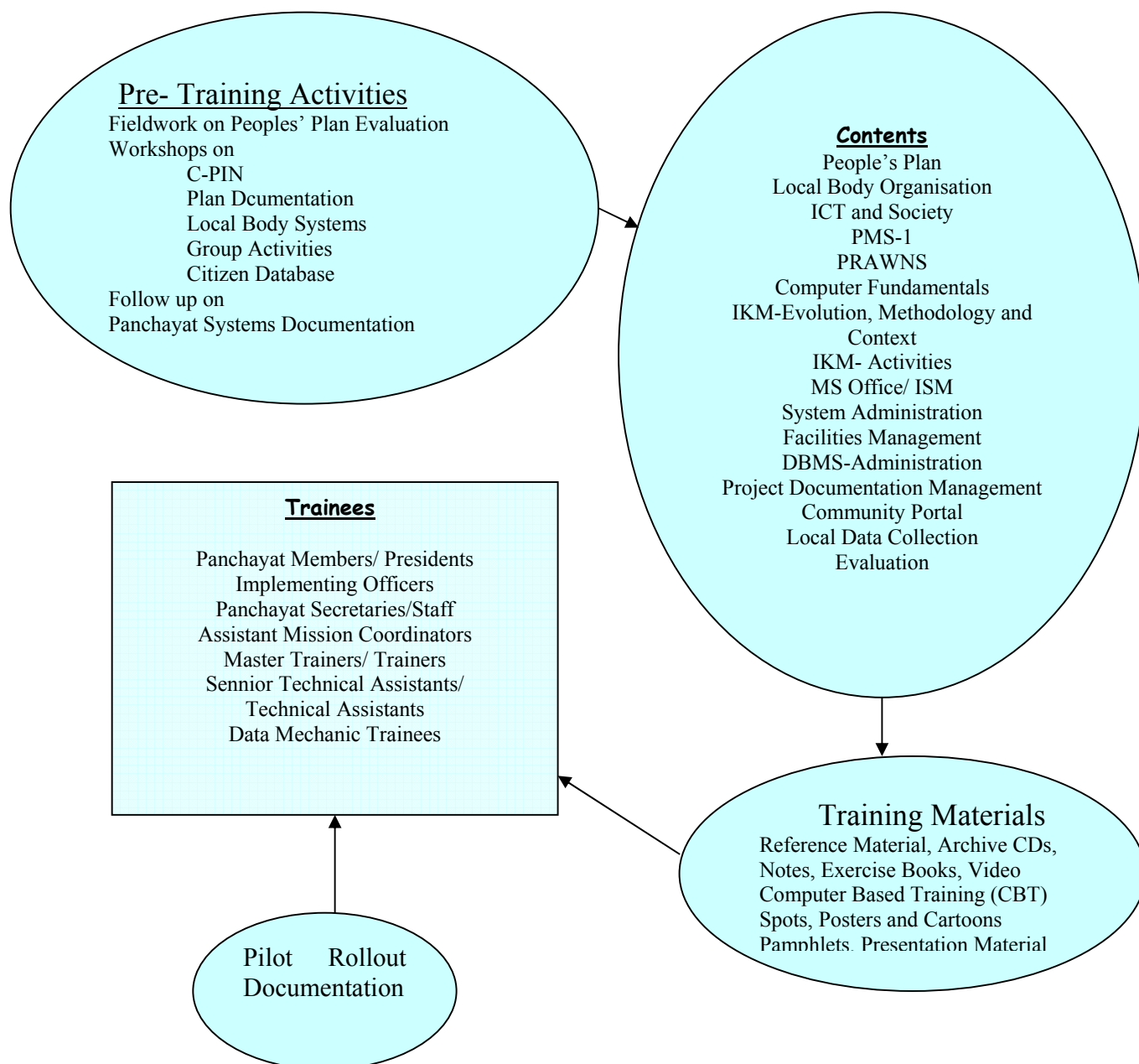


FIGURE - 6

OPERATIONAL DESIGN OF THE TRAINING PROGRAMME



BIBLIOGRAPHY

1. Bader , Gail and Nyce , James .M. " When only the self is real : Theory and practice in the community of developers", Journal of Computer Documentation , Volume 22, Number 1, February 1998
2. Bandyopadhyay, D. "People's participation in planning, Kerala Experiment", Economic and Political Weekly, September 27,1997.
3. Bowker , Geoffrey .C. "Ethnographic work can aid software development over time - A room with a view", Journal of Computer Documentation, Vol.22, No:1 Feb. 1998.
4. Dharmadhikari, Vinay "Rural need survey and electronics interventions vision .", Electronics and Information Planning, Volume 25, Number 3, December 1997.
5. Ekbal ,B. "Decentralised planning and Health sector" ,Paper presented at the one day workshop organised by the Calicut Press club in association with State Planning Board in Kozhikode on October 4,1997.
6. Franke, Richard.W and Chasin, Barbara.H, "Power to the Malayalee People", Economic and Political Weekly, November 29 , 1997.
7. George , Resy " An Action Programme for small Hydel development in Kerala", Paper presented at the International Conference on Kerala studies ,22-29 August ,1994 , at Thiruvananthapuram organised by the AKG Centre for Research Studies , Trivandrum.
8. George, Resy " A practical programme for panchayat level participatory land and water management", Chintha Republic special 1996.
9. Gulati,I.S and Isaac Thomas,T.M, "People's Campaign for decentralised Planning, An experiment in participatory development",paper presented at the workshop on poverty and Human Development-Analysis to action organised jointly by the UNDP,&World Bank,&Royal Netherlands Embassy workshop ,on 6-7 April 1998,New Delhi.

10. Government of Kerala (1998), "Report of the Task Force on IT Implementation in government", Trivandrum.
11. Government of Kerala (1999) "Initiatives of the department of Information Technology", Trivandrum.
12. Integrated Rural Technology Centre (1994) " Project Completion Report for the project - Integrated Development of Moriculture, Sericulture, reeling, weaving, garment making and by product utilization involving poor peasants and rural youth - a pilot project", Integrated Rural Technology Centre, Mundur, Palakkad.
13. Integrated Rural Technology Centre (1995) "Project Completion Report of the project Implementation of an integrated rural energy programme at the panchayat level with people's participation", Integrated Rural Technology Centre, Mundur, Palakkad.
14. Integrated Rural Technology Centre (1996) " Project Completion Report of the project - Developing a model for participatory integrated rural development of a rural village in Western ghat region through a small hydro programme", Integrated Rural Technology Centre, Mundur, Palakkad.
15. Isaac, Thomas T.M. " Decentralisation, Democracy and Development - People's Campaign for decentralised planning in Kerala", State Planning Board, January 1999.
16. Isaac ,Thomas TM, "The socio-Economic and political context of Peoples'Planning Campaign" presented at the National Workshop on decentralised governance, organised by the Kerala Institute of Local Administration (KILA) and the SWISS Agency for Development and Co-operation (SDC) on 13 August, 1999 at KILA,Thrissur.
17. Isaac, Thomas T.M. et.al., " Kalliassery Experiment in Local level planning", paper presented at the seminar for local level planning , Centre for Development Studies , Trivandrum.
18. Isaac, Thomas T.M., and Harilal. K.N. "Planning for Empowerment, People's Campaign for Decentralised Planning in Kerala", Economic and Political Weekly, January 4-11, 1997.

19. Jayaraj, N. Kurup, Rajesh .J. and Sreehari, V.S. "An outline of application packages for electronic governance in local bodies" IKM/PD-GENL-1/1999, Information Kerala Mission.
20. Kappelman, Leon.A. "Measuring user involvement: A diffusion of innovation perspective.", Database Advances , Volume 26, Number 2 and 3, May / August 1995
21. Rosson, Mary Beth, "The problem is technique, not fundamentals –synthesing diverse perspectives", Journal of Computer Documentation, Vol. 22 Number 1, February 1998.
22. Simonsen, Jesper and Kensing, Finn "Overlooked collaborative and educational prospects – Make room for ethnography in design", Journal of Computer Documentation, Volume 22, Number 1, February 1998.
23. Sivasankaran .M. " E-Governance – A note on issues involved" Personal note, December 1999.
24. .Sreedharan, E.M " Information Kerala Mission in the context of people's planning", Paper presented at the seminar, Information for People on May 31,1999 organised by the Information Technology Department at the University Senate Hall, Thiruvananthapuram.
25. State Planning Board, "The report of the task force on electronic media, ninth five year plan, 1997-2002, March 1997.
26. .Sundaraj,Aruna and Abraham, K.M. " Unfolding of a Silent Revolution – Application of Information Technology in People's Planning Programme and in decentralised planning", paper presented at the National Conference on Electronic Governance organised by the Confederation of Indian Industries held on 15th and 16th October at Hyderabad
27. .Unnikrishnan ,P.V et.al. " Kerala's Parishad Chula programme", Number 33 ,May 1994 Boiling Point , Intermediate Technology ,United Kingdom.
28. .Unnikrishnan ,P.V. " Strategies for Biomass Management : A case study", Paper presented at Bio Resources 94 International Conference ,3-7 October 1994 at Bangalore organised by Biomass User's Network , International

Energy Institute , Stockholm Environment Institute and Commonwealth Science Council .

29. Unnikrishnan, P.V. "Strengthening Plan Monitoring Systems (Malayalam)", Volume 3, Issue 12-13, Marxist Samvadam, April -September, 1999.
30. Unnikrishnan, P.V, "Participatory Development Technology in Kerala - A case study on Parishad Chulas", Paper presented at the International conference on Kerala studies, 22-29 August, 1994, at Thiruvananthapuram organised by the AKG Centre for Research Studies, Trivandrum.
31. Unnikrishnan, P.V. " Panchayat Level Total Energy Planning: Problems and Potential", Chintha journal, Panchayat Raj Special, 1995.
32. Unnikrishnan, P.V.and Chattopadhyay Sreekumar 1997 " A conceptual frame work for a Panchayat Level Information System" paper included in the report of the Task Force on Electronic Media for the Ninth Five Year Plan 1997-2002, March 1997.
33. Unnikrishnan, P.V. et.al., "Application of Information Technology for local self government -Experiences at the people-technology interface .", Paper presented at Conference on Road Map to an Intelligent Kerala 6-7 February 1999 at Technopark, Thiruvananthapuram.
34. Unnikrishnan, P.V. et.al., "Information Kerala Mission -Evolution, Methodology and Context" , Paper presented at the workshop on panchayat computerization -December 1999 at Parish Hall on 22nd and 23rd, Kumarakom.
35. Unnikrishnan, P.V. et.al., "Information Kerala Mission -Evolution, Methodology and Context", paper presented at the workshop on panchayat computerization -December 1999 at, Kumarakom.

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- 1 It is said that the IKM implementation involves the single largest server deployment taken up in the country so far. M/s.Microsoft claims that the project involves the single largest deployment of Microsoft SQL across the globe. Discussions with Centre for Development of Advanced Computing (C-DAC) indicate that this project involves the single most massive deployment of multilingual products undertaken in the country so far.
 - 2 As a part of the activities relating to the formulation of the Ninth Five Year Plan 1997 – 2002, the State Planning Board had constituted a task force on Electronic Media. Shri Sasikumar, Asianet was the chairman of the committee and Shri. P.V. Unnikrishnan the convenor. Dr. B. Ekbal member State Planning Board coordinated the efforts from the State Planning Board. The task force was expected to draw out a comprehensive programme for the application of Electronic Media in various sectors of State's development.
 - 3 The Centre for Development of Imaging Technology has since been renamed as the Center for Development of Information Technology. The renaming of the Centre was a natural consequence of the decision of the Governing Body of the centre to diversify its activities and focus on developing itself into a solution provider for government computerization.
 - 4 A detailed outline of the evolution and objectives of the SLIDE project is given in Section 7.
 - 5 The Natural Resources Development and Management Systems Division (NRDMS) of Department of Science and Technology had been taking the lead in creating spatial databases for planning . However such initiatives were confined largely at district levels. Creation of micro level databases was attempted in Kerala as a part of the Panchayat Resource Mapping programme by the Integrated Rural Technology Centre . However scientists from the Department of Science and Technology were not too sure on the replicability of the programme throughout the State on the one hand and further they were concerned about the capabilities of the local community in putting to use such sophisticated data bases on a regular basis for grass root level planning.
 - 6 The document "Rural Needs Survey and Electronics Intervention" (Dharmadhikari, Vinay, 1997) that talks about preparation of Village Development Plans and Strengthening the Village Panchayat Institutions, Intervention for making Village Plans and Intervention for Grama Sabha. recording and data capture etc. are exactly in line even though much smaller in scope when compared with SLIDE.
 - 7 The Government of Kerala had meanwhile constituted a high level committee to finalise the methodology of the State-level Informatic System with Dr. B. Ekbal as chairman and Shri. P.V.Unnikrishnan as convenor. Five working groups were constituted for this purpose.
 - i) To study the existing data bases with the Department of Economics and Statistics and other line departments at three-tier panchayat levels.
 - ii) To study the existing infrastructure and manpower for computerisation of the State.
 - iii) To study the existing infrastructure and manpower for resource based planning.

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- iv) To assess the data requirements for decentralised planning in local bodies.
 - v) To assess the requirements for responsive and efficient administration for decentralised planning.

The deliberations at the various working groups indicated clearly the lack of confidence of department heads and decision makers in taking up such extensive applications of information technology especially in areas like Geographic Information Systems and integrated state-level databases. Further agencies who already had stakes in handling governmental databases started feeling threatened in the light of new initiatives. It was therefore prudent and sensible to initiate a process of confidence building through a pilot project which is much smaller in scope. It was therefore decided that the integrated data base component linking the various state level departments shall be taken up at a later stage since this demanded wider consultation on the methodology and determining the niche roles for various partnering institutions

- 8 The Kumarakom Grama Panchayat is a picturesque strip of land adjoining the Vembanad Lake in Kottayam. The Panchayat forms the part of the Kuttanad ecological system and has a total area of 51.67sq km. It is bounded by the Kottayam Alleppey canal on the South and the Vembanad lake on the west. On the northern side of Kumarakom is Aymanam Grama Panchayat and on the east Thiruvapur Grama Panchayat. Faced with acute problems of environmental sanitation, serious shortage of drinking water and crisis in agriculture, the Panchayat has set a unique example of banking upon democratic movements for social provisioning of basic needs. With the launching of peoples' plan campaign by the State Planning Board, the Panchayat has taken the lead in establishing standards for neighborhood groups. Taking advantage of the clustering of agricultural workers, in the reclaimed strip of land the Panchayat has established a spirited and dynamic social organisation for spear heading peoples' plan campaign, and improving their living conditions. It was for precisely the same reasons that Kumarakom was identified by C-DIT as the project area for their pilot study.
- 9 Electronic Governance is a term used to broadly cover almost all applications of information and communication technologies in government . It includes providing automated services to organisations, businesses and the public as and when they are required and through a variety of delivery channels including the telephone, the internet and public information kiosks. Electronic governance aims to use IT in all aspects of governance to maximise efficiency, transparency, convenience and accessibility, thereby transforming government to a customer oriented public administration, the citizens being the customers.
- 10 Kerala Sastra Sahithya Parishad (KSSP) is the premier people science movement in the country. The organization is acclaimed for its leadership role in the campaigns for protecting the Silent Valley Bio-reserve, Total literacy programme and the Panchayat level resource mapping programme in Kerala. KSSP is a recipient of several national and international commendations including Vikram Sarabhai Memorial Award by Indian Council of Social Science Research for its work in science, Indira Pariyavaran Puraskar Award for its work in the field of environment, Global 500 Roll Of Honor of the UNEP for its work in the environment field and the King Sejong Literacy Prize for its work in science popularization and literacy.

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- 11 The State Planning Board had constituted a people's planning cell to co-ordinate the activities relating to the people's plan campaign.
 - 12 The local bodies which approached C-DIT to take up computerisation of their operations were the following
 - a. Quilon Municipality
 - b. Yeroor Grama Panchayat, Quilon
 - c. Kumbala Grama Panchayat, Kasargod
 - d. Edappal Grama Panchayat, Malappuram
 - 13 This was abandoned subsequently when the proposal for a state level programme under the auspices of the SPB was approved.
 - 14 TCP/IP is the acronym for Transmission Control Protocol/Internet Protocol which has become the defacto standard for data transmission over the Internet.
 - 15 Department of Electronics, Government of India (presently the Ministry of Information Technology) had been trying to identify a few projects implemented in different states that could be replicated at the national level subsequently.
 - 16 The Information Kerala Mission was constituted by a Government Order (G.O (MS) No: 38/99/Plg) dated 14-8-99.
 - 17 In action learning the users come together and carry out projects at work, discuss their activities with others, complete the activities, thereafter identifying what they learnt from the programme
 - 18 One or more regional help desks would have to be established based on requirements in various districts
 - 19 ERP is short for enterprise resource planning, a business management system that integrates all facets of the business, including planning, manufacturing, sales and marketing. As the ERP methodology has become more popular, software applications have emerged to help business managers implement ERP
 - 20 It does not cover reports on training, which is the most extensive aspect of peoples' plan. However the only measurable end product of the peoples' campaign would be the progress in implementation of the peoples' plan projects at the local level.