

ADMINISTRATIVE REFORMS COMMISSION GOVERNMENT OF KERALA

ELEVENTH REPORT

PART - I

e-Governance for Better Governance

PART - II

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Towards Digital Kerala

JANUARY 2021

Foreword

Kerala is a forerunner in reforms in education, socio-cultural and governance aspects, in the country. The state pioneered implementation of people centered e-Governance projects to improve performance, efficiency and quality of service delivery. Literacy, education, socio economic aspects and people centric development created strong foundation for people to use and adopt Information Technology. Telecom and internet infrastructure, along with digital literacy facilitated communication and transaction through internet and mobile phones. Internet and mobile usage in state increased multifold and people across social strata moved to digital transactions during Covid-19 pandemic. It is reported that Kerala secured first rank, with the greatest number of e-transactions for state and civic body services during the lockdown, followed by Gujarat.

e-Governance assist government in better implementation of major features of good governance - rule of law, participation, transparency, efficiency, equity, accountability, responsiveness, consensus, inclusivity, people friendliness and accessibility, by building trust between government and the people through internet based strategies to involve people in policy process and ensuring transparency and accountability of government.

e-Governance in India came to centre stage with introduction of National e-Governance Plan (NeGP) in 2006. However, even before introduction of NeGP Government of Kerala implemented many people centered e-Governance projects that served to improve performance, efficiency, quality of public service delivery and better utilisation of limited resources. Akshaya project, set up in 2002 to address backwardness of Malappuram District in Kerala is the first e-Governance project in India and was instrumental in transforming the district into India's first e-Literate district. Kerala also has to its credit the setting up of the first technology park in the country- Techno Park in 1990.

However, despite the initiatives and investments made in this sector the state could not sustain the initial momentum it achieved in e-Governance. In this report the Commission has studied existing IT infrastructure, effectiveness of implementation e-Governance projects, issues in delivery of services, along with the eco system that drives e-Governance in the state. Based on the study, recommendations for improving delivery of people centric services and bring e-Governance closer to people are included in the report.

Wide spread adoption of internet and mobile phones has led to increase in crimes involving financial transactions, personal data and privacy, defamatory attacks- especially to women and children, even after initiatives by police, RBI and the banks to address the issues. Government and the civil society need to take more proactive measures for safe guarding the vulnerable sections during the roll out of ICT solutions.

Effective and successful implementation of e-Governance/ICT projects in departments/ institutions is the responsibility of all officials from top to bottom and not to be seen as a project implemented by one section / wing. e-Governance brings in paradigm shift in governance systems. It is a continuous process and requires many changes in centuries old government processes and legal framework. Acts and Rules needs to be amended / reformed based on prevailing socio economic conditions, change in technology, present requirements and expectations of the people. The spirit that 'e-Governance is a journey and not a destination' needs to be engrained in the psyche.

In the 11th report of second ARC, Government of India - 'Promoting e-governance: The smart way Forward', the need for re-engineering administrative processes and reorganisation of information ownership are cited as important steps for implementing e-Governance applications. The report goes on to add " Government entities would be required to implement substantive reforms in organisational structures, initiate a change in culture and mindsets, train and improve skills of its people and put in place appropriate supporting ICT infrastructure to enable online processes that are timely and efficient for both the government entity and the entities it interacts with".

Government needs to adopt emerging technologies like Artificial Intelligence, Internet of Things, Blockchain, Data Analytics etc. for transforming governance systems. Government also needs to take suitable measures to ensure inclusion of the vulnerable and marginalised sections of the society while adopting ICT technologies. Introduction of ICT shall not lead to further marginalisation of these groups. I also request government to promote use of 'open source software' in all e-Governance, related applications.

I take this opportunity to thank all persons and organisations that assisted in the study and requests government to study the report and implement the recommendations to bring administration/governance closer to people.

V.S. Achuthanandan M.L.A. 25.01.2021 Thiruvananthapuram

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PART - I

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e-Governance for Better Governance

Abbreviations

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AePDS	Aadhaar enabled Public Distribution System
AMC	Annual Maintenance Contract
API	Application Programming Interface
AI	Artificial Intelligence
BHQ	Block Head Quarters
C-DAC	Centre for Development of Advanced Computing
C-DIT	Centre for Development of Imaging Technology
CSC	
СТ	Computed Tomography
DPR	Detailed Project Report
e-Governance	
EHR	Electronic Health Record
E&ITD	Electronics & Information Technology Department
EoI	Expression of Interest
FMS	Facility Management System
FHC	
FRIENDS	
FRS	Functional Requirement specification
GoI	Government of India
GPR	Government Process Reengineering
G2B	Government to Business
G2C	Government to Citizen
G2E	
G2G	Government to Government
HMS	Hospital Management System
CERT-In	Indian Computer Emergency Response Team
ICT	Information and Communication Technology
IKM	Information Kerala Mission
ICCC	Integrated Citizen Call Centers
IDSP	Integrated Disease Surveillance Programme
IFMS	Integrated Financial Management System
IPR	Intellectual Property Rights
KFON	Kerala Fibre Optics Network
KSITM	Kerala State Information Technology Mission

KSWAN	Kerala State Wide Area Network
LAN	Local Area Network
LSGIs	Local Self Government Institutions
MRI	
MCH	
MoU	
MeitY	Ministry of Electronics and Information Technology
MVD	
NDC	
NeGP	National e-Governance Programme
NIC	
NLEP	National Leprosy Eradication Programme
NPCB	National Programme for Control of Blindness
NPCDCS.National P	Programme for Prevention and Control of Cancer, Diabetes, Cardiovascular Diseases & Stroke
NTEP	National Tuberculosis Elimination Programme
NVBDCP	National Vector Borne Disease Control Programme
NDA	Non-Disclosure Agreement
P&ARD	Personnel & Administrative Reforms Department
PII	Personally Identifiable Information
PACS	Picture Archival and Communications System
PHCs	Primary Health Centers
RFP	
RTI	
SPARK	Service and Payroll Administrative Repository for Kerala
SLA	
SMART	Simple, Moral, Accountable, Responsive and Transparent
SOP	Standard Operating Procedure
SDCs	State Data Centres
SeMT	State e-Governance Mission Team
SSDG	State Service Delivery Gateway
SAN	Storage Area Network
TRAI	
TSP	
UMANG	Unified Mobile Application for New-Age Governance
UHID	

Executive Summary

Electronic Governance (e-Governance), for delivering government services through online mechanisms in a transparent, equitable, efficient manner to various stakeholders have gained considerable significance over the last decade. Emergence of e-Governance in public service delivery has resulted in improving transparency and accountability in delivery of services along with reduction in cost of delivery of services and increase in revenue. Kerala has been in the forefront of implementing e-Governance programs even before introduction of National e-Governance Programme (NeGP), and State Mission Mode Projects by Government of India . The state is one of the earliest movers in setting up own Data Centre, before institution of State Data Centre scheme under NeGP. Mobile phone and internet penetration in the state is higher than that of many other states. Akshaya citizen service center project started by Kerala as part of digital literacy program is replicated by many other states in the country and internationally.

Availability of IT infrastructure facilitated achievements of Kerala in the field of e-Governance. But the state could not build on the initial advantage and keep up the momentum.

Departments of the State exhibit apparent variations in both the extent of implementation of e-services and in efficiency of running the system. Services of most of the departments which provide services directly to the people are available online. Some departments have extended their services to mobile platforms while others have been lethargic in migrating to e-platform. Several lacunae are recognised in the existing e-Governance system and needs to be addressed for improving efficiency of the system and enhance convenience of the people in availing the services.

e-Governance generates enormous amount of data, most of which are personal, sensitive and critical. Privacy and security form an integral part of collecting, generating and management of data related to people, businesses and government. Success of e-Governance services depends mostly on the value attached to it by the public, and include peoples' perceptions, attitude and awareness about the system, along with the rate of digital literacy, access to internet, mobile penetration etc. Common Service Centres (CSC) like Akshaya Centers have significant impact in the success of the schemes. Any e-governance system needs to be designed keeping people as its focal point and how they will be benefitted by implementation of this system. The issue of design-reality gaps needs to be addressed through better understanding of end-users' requirement. The Commission studied efficiency of delivery of online services through e-district project, and e-Health project to understand various aspects of e-governance, and study issues and constraints faced by people in availing benefits of e-Governance. Process evaluation of both projects was conducted through qualitative semi-structured interviews. e-District is chosen for the study as it is used by most of the people who seek government services and is facilitated by the CSCs. e-Health project does not have direct interface with people, as in the case of e-District but is intended to enhance quality of health services provided. Under this project required changes in the nature of service delivery are to be initiated by the Medical Officers and other staff of the health centre.

Intended as an evaluative report for reform recommendations, the report focusses mainly on improvements essential for ensuring robustness and ability to adapt/ change, of e-Governance system in the state. ARC identified few impediments in smooth implementation and ensuring user friendliness of e-Governance solutions from interactions with the departments and field surveys. Recommendations are formed based on these findings. Some of the concerns, like risks due to data integration need to be addressed at a broader level as ethical questions. Many of the issues could be sorted out through changes in technological front and administrative procedures. Public value for e-Governance is quite high in the State and by addressing the challenges the State can achieve the goal of ensuring efficient, transparent, cost-effective, and reliable services to the stakeholders.

Part II of the report is on digital transformation of the state. It includes recommendations for ushering in fundamental changes in design of future projects for enabling people centered service delivery.

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Introduction

Kerala is a pioneer among the Indian states in implementation of e-Governance. The state remains a success in retaining essential features of good governance rule of law, participation of people, transparency, efficiency, equity, accountability, responsiveness, consensus, people friendliness and accessibility, even when it switched over to e-Governance. To achieve a people friendly, just and transparent civil service and to ensure accountability, speed and accuracy, it is essential to use ICT and aligned technologies efficiently. The merits of e-Governance are - providing various government services with transparency, effective interaction between the government and the public, people empowerment by enabling information dissemination, alleviation of corruption, reduced expenditure on governance and, overcoming delay in providing various government services.

Kerala State IT Mission, Information Kerala Mission, FRIENDs Janasevana Kendras, Akshaya Centres etc. are milestones in the state e-Governance mission. e-Governance has journeyed and evolved through many phases and has reached the threshold of m-Governance, but it has to be evaluated whether benefits of e-Governance has reached all. The commission has studied whether inclusion of all people is assured when governance shifts to e-Governance.

The era of e-Governance started in the State of Kerala during the year 1999 with the establishment of Kerala State IT Mission (KSITM) and Information Kerala Mission (IKM). The Electronics & IT Department is the Nodal Department for taking decisions in e-Governance and ICT. Kerala State IT Mission is the nodal agency under Electronics & IT Department for facilitating and implementing e-Governance projects in all departments. Information Kerala Mission act as a nodal agency under Local Self Government Department (LSGD) for implementing e-Governance projects in Local Self Government Institutions (LSGIs). e-Governance comprises of the following services by government:

- 1. Government to Citizen (G2C)
- 2. Government to Business (G2B)
- 3. Government to Employee (G2E)
- 4. Government to Government (G2G)

Better and transparent delivery of government services to the public, efficient and fruitful interaction between government and the people, better dissemination of information, curbing corruption through increased transparency and accountability, savings through reduction in costs, increased revenue collection and faster service delivery are major and apparent advantages of e-Governance.

However, lack of interoperability between various Government agencies, design flaws, lack of awareness among people, fear of cyber-crimes and data privacy are major reasons for limited acceptance of e-Governance. Apart from these common problems, developing countries face more obstacles in implementing an efficient e-Governance system. Number of studies have indicated that a major share of the e-Governance projects in developing countries have not achieved the desired results. It often seen that project designs chosen for schemes sometimes fail during field level implementation leading to design - reality gap. Better understanding of design-reality gap and causes for the same will enable rectification of defects and assist in developing more efficient designs to cater to the needs of users. Few examples of design-reality gap that defeated the purpose of e-Governance are:

MVD Application: After applying online for a service through the MVD application the applicant needs to visit the office of Motor Vehicles Department with print out of the application submitted online and wait in long queues to avail the service. Many times, people have to depend on middle men to get the service on time due to necessity of multiple visits, lack of clarity in procedures, complexities in availing services.

e-District: There is provision in the e-District portal for a person to apply directly for certificates. But it is seen that only less than 5 percent of Certificates are availed directly due to complexities in the e-District portal. Lack of user friendliness in the design of e-District portal including complex process associated with submission of supporting documents, compels people to apply through Akshaya Centres.

OPEN PEARL Application: Registration of land in Kerala is done through 'Open PEARL' application of Registration Department. There is provision in the application to prepare document directly by a person and apply for e - registration of deeds. But it can be seen that so far less than 2 percent of registrations are done utilising this provision. This is due to complexities in the 'Open PEARL 'application. Effort has not been taken so far to address issues faced by of people for registering documents directly.

The Kerala State Right to Service Act (2012) stipulates efficient and time-bound delivery of services and redress of grievances by government. Provisions of the Act also make government servants liable in case of deficiency in service. Effective and efficient e-Governance systems are essential to achieve/ implement provisions of the Act. Timeframe specified in the Act is based mainly on manual workflow / file flow and needs to be amended based on delivery of services electronically. Awareness among people and use of provisions in this Act is exceptionally low compared to RTI Act.

This report evaluates e-Governance system in the state through two angles: i) functioning at the state department level and ii) from people' perspective. The former can be broadly seen as service providers and the later includes both people and facilitators like Common Service Centres.

Objectives

- 1. To review the role and the functioning of Electronics & IT Department, Kerala State IT Mission, Information Kerala Mission and Total Solution Providers.
- 2. Examine the process efficiency of e-Services provided by various departments.
- 3. Assess the extent of accessibility of e-Governance services and study whether some groups of individuals are further marginalised due to complexities in availing e-Governance services due to lack of required education and skills.
- 4. Evaluate the impact of e-Governance services in terms of improving accountability and transparency in the system.
- 5. Recognize impediments in the system and recommend possible solutions for improvement of the system.

Methodology

- 1. Interview and data collection from the Nodal Agencies, Departments, Total Solution Providers, People, Employees and other stakeholders. (List is at Annexure-I)
- 2. Exploratory Study
- 3. Field survey
- 4. Opinion from the expert groups
- 5. Conducting workshops etc. (Executive summary of the National Seminar conducted by the Commission is at Annexure-II)

Structure of the report

Part I of the report includes Executive Summary, Introduction, four chapters and a concluding chapter. First chapter analyses departmental and institutional framework of e-Governance in the state. Second chapter is on issues of e-governance infrastructure. Concerns about data security and privacy related to e-Governance is dealt in the third chapter and fourth chapter is on perception of people and facilitators on e-governance, focussing on e-District and e-Health projects.

ICT has penetrated into our lives in various ways during this pandemic period. It is sure that in the post pandemic world it will play a much greater role in our lives, provide a variety of services and open before us a world of infinite possibilities of e-Governance and m-Governance. Our e-governance systems should be modernised to leverage the use of ICT in a big way to improve the standard of life of the people. Annexure III shows the recommendations in previous reports of the Commission which are related to e-Governance.

Part II of the report includes an introduction to need for transforming Kerala into a digital state, reiteration of existing situation and policy recommendations.

Part II is written after Hon'ble Chairman of the Commission, Sri.V.S.Achuthanandan MLA resigned from the post citing ill health. It is prepared based on suggestions by Smt.Neela Gangadharan for inclusion of policy/strategy recommendations in the report and is taken up with the approval of the members of the Commission.

e-Governance Framework and Present Status

CHAPTER 1

Adoption of e-Governance is resorted to make governance easier than in the conventional systems and is to be implemented by all Departments in the state. Existing institutional framework needs an overhaul, and roles of the organisations need to be redefined. Some of the issues in the institutional framework of e-Governance in the state are discussed here.

1.1 Role and Functioning of Nodal Agencies

1.1.1. Kerala State IT Mission

Kerala State IT Mission (KSITM) is an autonomous Agency functioning under Department of Electronics & Information Technology, Government of Kerala. It was established in the year 1999 as per GO (Ms) No. 43/1999/ITD dated 23.03.1999. Vision of KSITM is to make Kerala a digitally inclusive state in India through robust and effective governance frame work. KSITM aims to promote digital innovations and make Kerala knowledge driven and knowledge powered digital state.

Objectives of KSITM are:

- 1. Transform relationship between citizens and the State giving more power in the hands of citizens and being more responsive to their needs.
- 2. A robust and effective governance framework in place to ensure that our values, people, systems, processes and resources are aligned to secure the best possible outcomes for ICT.
- 3. High-impact services that improve citizens' quality of life in a digitally Smart State.
- 4. Deliver services that comply with all major attributes of e-Governance viz. Simple, Moral, Accountable, Responsive and Transparent (SMART).

- 5. A comprehensive framework covering service delivery, open government and ICT operations.
- 6. To improve public sector productivity through the effective management of ICT.
- 7. Aspires to develop and flourish through innovation and constant development of ICT in the pursuit of a progressive, socially inclusive, safe and secured Kerala.

1.1.2 Information Kerala Mission

Information Kerala Mission (IKM) is a pioneering e-Governance project set up by Government of Kerala for computerisation of Local Self Government Institutions of Kerala in 1999 as per GO(Ms) No. 38/1999/Plg dated 12.08.1999. IKM was registered as an autonomous body under the Travancore - Cochin Literary, Scientific and Charitable Societies Registration Act, 1955 as per G.O(Rt) No. 343/2012/LSGD dated 22/12/2012, on 10th February 2014. e-Governance programs of the Mission include developing software for efficient and responsive systems for smart governance and improving public service delivery with comprehensive citizen interface covering various activities of Local Self Governments.

Objectives of Information Kerala Mission are:

- 1. Transform local bodies into effective institutions of self-governance by providing transparent, efficient and responsive mechanisms for governance and citizen service delivery at local bodies in a time bound manner.
- 2. Develop synergies with local ICT institutions to involve them in strengthening such e-governance initiatives.
- 3. To establish a mechanism for automating and monitoring various operations at the local body level like plan monitoring and management, accounting, finance, public services, purchase, works and other e-Governance related tasks, thereby making a quantum leap in accountability, transparency and efficiency in public service and considerably strengthening the social security network.
- 4. Improve revenue generation, resource identification and utilization capabilities of local bodies and provide inputs to bring about substantial administrative reforms and modernization of government through re-engineering of business processes.

5. To provide continued technical support to ensure network applications are up and running throughout, through district / state level help desk.

The Commission reviewed roles, responsibilities, functioning etc. of the above two organisations. At the initial stages of formation both the organisations achieved remarkable achievements in e-Governance. But later on, performance of these organisations could not meet expectations of government and people and led to stagnation in conceptualisation, development and implementation of e-Governance projects in the state.

1.1.3 Issues

- 1. Majority of staff working in both the organisations are not selected based on professional excellence and they are not provided opportunities to update their skills in recent technological advancements. Absence of an incentives structure for employees is another issue. For example, there has been no hike in emoluments of employees of KSITM since 2016 making it difficult to retain skilled persons.
- 2. Officials of Nodal Agencies who are responsible to drive innovations in e-Governance are often unable to do so and falls short of meeting expectations of government and the people. Professional training and technology upgrades of the officials is not in tune with fast paced technological advances in ICT domains.
- 3. Lack of timely review of performance of the organisations, its officials and projects by Government leads to inefficiencies in their functioning. Both organisations are deficient in conceptualising, developing and implementing new e-Governance projects. International and National best practices are not analysed for customisation and adoption in the state. Last few years have not seen any new innovative e-Governance applications launched by these organisations.
- 4. Local Self Government Institutions (LSGIs) are still using obsolete technology and applications like Sankhya, Sanchaya, Sulekha, Sevana, Sanchitha, Sthapana, Soochika etc. developed in the 90's. They are standalone applications and IKM has not succeeded in integrating them or developing new comprehensive application integrating all requirements of all the LSGIs. IKM has developed and implemented an Integrated Local Governance Management System recently to deliver online more than 200 services of LSGD, to people. But as of now it is implemented only in 150 LSGIs. Feedback on integration requirements, user friendliness, adaptability, etc. of the system is yet to be analysed.

- 5. Applications designed years back like e-District, SPARK, e-Procurement etc. are still being used in government departments and are facing obsolesce. KSITM is yet to take any earnest efforts to develop state of the art applications to replace/retire these obsolete applications to meet present requirements of the departments and expectations of the people. People face constraints/difficulties in submitting applications directly through e-District portal, without the support of Akshaya Centres. This is primarily due to lack of user friendliness of the application. This is evident from the percentage of applications submitted directly by persons as compared with the applications submitted through Akshaya centers.
- 6. Institutions like C-DIT has less than 100 software developers in a staff strength of about 600 showing skewed policy in recruitment to technical institutions.
- 7. Organisations like NIC which developed e-Office, e-District, e-Procurement etc., has not developed competency to deal with emerging technologies like Blockchain necessitating availing services from start ups and organisations like K-DISC, CDAC etc.
- 8. Dissatisfaction of departments with competency of resource persons assigned to them for supporting e-Governance projects is also an issue at times.

1.1.4 Departmental issues in execution of e-Governance projects

The Commission held several rounds of discussions with all major Departments who are frontrunners in implementation of e-Governance initiatives; Some of the Department level issues in implementation of e-Governance are:

- 1. The departments exhibit extreme variations on the extent to which they have shifted their services to online modes.
- 2. Some of the departments have done better than others in this aspect and provide efficient and faster service to the people. These 'progressive' departments have made access to services easy for the end user by making available most of their services online, accessible through the web, and some of them even extending access to a large array of their services through mobile applications.
- 3. On the other side some of the departments have taken very little efforts to make their services online. From a study of the services provided by these departments, it can be seen that many of the services can be easily made available online.

- 4. Progress of State Mission Mode Projects under NeGP in Agriculture, Employment, Health, Land Records etc. is years behind the original date of completion. Land Records project has not made any significant achievement in the state and people still face many issues related to Land Records. The agency entrusted with implementation of the Land Records Project in the State is still experimenting with various models and pilots for many years, bringing almost to standstill the project for digitisation of Land Records which was started in early 2000s as part of Modernisation of Government Programme. Meanwhile many states have made remarkable progress in Land Records modernisation and have achieved the objective of providing conclusive land title. The Commission has included issues related to management of Land Records and made recommendations in its 5th Report "Towards People Centric Service Delivery".
- 5. In some of the departments like the Motor Vehicles Department, though a large number of services are available online, after doing all the necessary procedures online the end user still has to visit the office thus negating the purpose of e-Governance. With the implementation of 'Vahan Sarathi' by Government of India there are improvements in online services, but still there is a long way to go. These issues are a direct result of rules not being in sync with IT innovations and is common in the case of departments where e-Services are introduced without amendment to rules.
- 6. Lack of user friendliness of most of the applications developed by the departments make it extremely hard for people to use and understand them. Some of the departments are not concerned about this and no notable effort is seen taken by them to make the applications more user friendly. For example, while applying for an online service, most of the applications specify file size, type and image resolution for attachments that has to be uploaded along with the application and the system validates thereafter. If there is any mismatch in the documents uploaded, the person will not be able to proceed with submission of the application and have to depend on Akshaya centre or other facilitation services. There are tools available which could be integrated to the applications to address these issues. There is provision in the e-District Portal to apply directly for a certificate, by people. But the percentage of such applications submitted, and certificates issued are less than 5. This is due to the complexities in the obsolete e-District Portal.

- 7. These flaws can be attributed to lack of interest or technical competency of the departments and service providers. But there is a class of services which cannot be made 100% online as manual inspections and interventions are essential. For example: to ensure fitness of a vehicle the vehicle needs to be produced before the Motor Vehicle Inspector until automated vehicle testing systems are in place. For registration of land, the buyer and seller have to be present before the Sub Registrar and has to sign the document in the presence of the Sub Registrar.
- 8. The Departments of the state thus show wide variations in the e-readiness index with respect to implementation of their services online.

1.1.5 Dependency of Departments on Total Solution Providers

The Commission has also observed following points during interaction with the departments and Total Solution Providers (TSPs):

- 1. One of the major constraints noted during discussions by ARC is the lack of technical competency of the departments. Only a few departments have qualified technical persons who can function as business analysts and has awareness of technology, technical solution process and management of e-Governance applications to provide services online to the people.
- 2. Majority of e-Governance projects are implemented with the support of National Informatics Centre (NIC). During interaction of the Commission departments raised the issue of rigid attitude and approach of some of the project heads of NIC which is hindering departmental initiatives. An organisation like NIC needs to provide agility and innovative approaches for development of e-governance projects, but many times are found to be more rigid in their attitude over the software development life cycle of the project. At the same time, it is not feasible to plan a transformation journey without involvement of organisations like NIC.
- 3. Due to the lack of technically qualified in-house personnel, the departments are compelled to depend on TSPs or private enterprises for development of software applications and its management. Most of the departments identified one or more of the TSPs listed by the government to develop and manage their applications. It is highlighted by most of the departments that deliverables of the TSPs is not in line with actual requirement of the departments. It is observed that many times departmental initiatives in e-Governance are handicapped by lack of competency and sluggish attitude of the TSPs.

- 4. Departments prefer to award e-Governance projects to TSPs as procedures for entering into contracts with TSPs empanelled by the State Government are simpler than that for private service providers. This has negative impact on efficiency of the departments to deliver optimum services at competitive cost to the people.
- 5. State Mission Projects where KSITM used to get funds from Government of India have almost come to an end and departments now get funds directly from budget heads or through special projects. Hence, they prefer to bypass KSITM in the selection of TSPs except to get mandatory remarks/approvals.
- 6. There are always gaps in communication between departments and TSPs. The main reason for this is lack of technical knowledge of the department and domain knowledge of TSPs. This reduces the success rate of e-Governance applications. IT Nodal Officer (if there is no other qualified resource person) maybe trained on SDLC, UI/UX, Business Analysis, Technology Awareness. Government Staff trained in PGDeG needs to be mandatorily positioned as Nodal Officers irrespective of their rank and position in the department.
- 7. TSPs outsource a part or whole of the application development to external agencies / developers in most of the cases. Actual requirement of the departments is not reflected in the deliverables due to this outsourcing. This requires frequent request for modifications / updating by the end user. Since the TSPs outsource the project to third parties / contract employees and most of them leave after development of the software there is a lack of business continuity planning. Project management repository or a proper version control system for the software projects are not seen implemented in any of the projects implemented and as a result TSPs struggle to modify / update the application as per the requirement of department. Some of the departments have abandoned projects because of this.
- 8. There are scenarios in which TSPs piggyback private vendors to market their third party solutions to departments. This negates the concept of TSPs, and departments end up with products and solutions not as per their requirements and ultimately adversely affecting service delivery to people/ stakeholders.
- 9. In most cases there is no Service Level Agreement (SLA) and penalties covering deliverables, time frames, and performance of applications delivered by TSPs are not clearly defined, thereby departments end up in a disadvantageous situation after spending considerable amount of money and time.

10. Annual Maintenance Contract (AMC) is not entered with TSPs for products and services at the time of purchase, many times. So, after the warranty period, maintenance and services are sometimes not available and departments are not getting optimum value for the money they have spent, in extending the serviceable life.

1.1.6 Data sharing

In most of the cases state-owned applications are developed and implemented by the TSPS like NIC, C-DIT, Keltron etc. Intellectual Property Rights (IPR) of the application and ownership of data is to be vested with the concerned department. But in reality, this is not being done in most of the cases. Even though the departments pay substantial amount to the TSPs for development of an application, the TSPs do not share source code to the Department for accessing data. This creates issues related to sharing of data with other Government departments for providing integrated services. The commission has noticed following issues regarding data management and sharing:

- 1. The departments are at the mercy of Solution Providers for data management. Data owned by majority of departments are practically administered by the Solution Providers or their employees.
- 2. The same set of data collected from individuals / households can be used by a number of departments. At present the scope of sharing the data collected by one department with another department is difficult, even when there are government directions to share data with other Departments for delivering integrated services to people. There are two reasons for that:
 - a. TSPs especially NIC is not ready to share the data with other Departments even after specific written direction from the department concerned. The Motor Vehicle Department illustrated their experience in sharing data for the integration of two applications developed by NIC and C-DAC.
 - b. Lack of coordination between the Departments who needs data and who owns data. Many times, departments are also reluctant to share data even with other departments.
 - c. Lack of API driven architecture, the legacy departmental applications which are developed over various time periods does not have API interfaces, nor the State has come up with API sharing policy.
- 3. Some of the departments are unaware that IPR of the developed application and data collected belongs to government.

1.1.7 Duplication of Software Application and ownership of source code

As per GO (P) No. 24/2009/ITD dated 29.09.2009, IPR of software applications are vested with government and if similar requirement arises from any other department the same application needs to be shared with that department. The commission observed following issues regarding duplication of software applications and ownership of source code.

- 1. Even though source code of applications developed are to be transferred / handed over to the department concerned, it is not happening in most of the cases. In the case of most of the applications, developers / TSPs have not handed over source code along with documentation to the departments. This makes it difficult for another solution provider to update / upgrade and do maintenance of the applications as required by departments. In such cases, the Department has to approach the same developer for any modifications and updating, even if their services are not satisfactory.
- 2. Technical inadequacies and lack of interest shown by owner department in receiving the source code and absence of secured infrastructure facilities for maintaining the same are other reasons for not transferring source code.
- 3. At present, there is no mechanism to monitor development/procurement of similar applications by different departments. Some departments bypass concurrence of Electronics & IT Department and advice of Kerala State IT Mission for development of applications. Departments end up developing separate software even when similar software is available with other government departments. This can be due to following reasons:
 - a. Lack of availability of data regarding inventory of applications used by various departments in a centralised repository.
 - b. Constraints in retrieving source code and permissions from owner departments and support from the TSPs associated with the development of the applications.
 - c. Deficiencies in monitoring and support from KSITM, the nodal supervising agency. Failure by KSITM to take stock of applications across departments and communicate to the client departments availability of similar/adaptable applications in government domain.
- 4. These reasons have led to duplication of a large number of applications in the public domain, and lack of proper access to the source code have resulted in development of large number of stand-alone applications that cannot be integrated with requirements of other departments.

5. Some of the TSPs sell same applications developed for a specific department to multiple departments with peripheral modifications and collect exorbitant amount from each department. This is an avoidable leakage from public exchequer. Software reuse policy is clearly laid down by MeiTY and has established 'Open Forge' for its implementation. In practice there is no reuse of software in the state. It is observed that some start ups sell the same products to many departments after building necessary wrappers.

1.1.8 Technical constraints related to Infrastructure

At present, there are two Data Centres in the State (SDCs) and there are more than 1500 websites / web applications hosted in these two SDCs. In terms of connectivity the state has Kerala State Wide Area Network (KSWAN) connecting up to Taluk and Block level. Remote offices are connected through leased lines, wireless and LAN connectivity etc. The present infrastructure at SDCs and KSWAN is not sufficient to cater to the needs of e-governance requirements of the State. The issue will be dealt in a great detail in Chapter 2.

1.1.9 Bandwidth and Network related constraints

The issue of frequent loss of connectivity and unavailability of required bandwidth affects e-Governance services in the State. The issue is severe in the case of offices located in remote areas. This issue cannot be solved by a particular department alone. Launching of KFON Project in the state may resolve bandwidth issues and lack of connectivity to a great extent.

1.1.10 Limitations of State Data Centres

Commission noticed following limitations / inadequacies in the State Data Centres:

- 1. Lack of adequate computing power and storage space provided in the SDC hampers efficiency and performance of the applications and is a grave concern faced by almost all departments. The departments, even when they are willing to pay for the service are not able to get enough storage in SDC. This affects performance of the applications run by the departments during peak hours of demand when a particular service rendered by the Department is sought by many.
- 2. Capacity of SDC 1 and SDC2 are almost exhausted and the E & IT Department and Kerala State IT Mission are yet to take a considerate view in consolidating the data centres nor take any action to upgrade the infrastructure and to procure sufficient servers / SAN storage.

- 3. Underutilisation of SDC Infrastructure in certain cases, TSPs and System Integratorswhile suggesting specifications for hardware to departments over rate server specifications to compensate for software related inefficiencies. There are guidelines from MeitY for calculating server specifications. But many times, these are not calculated scientifically, or higher parameters are taken than what is actually required. Even though the rack space in SDCs is full, actual utilisation of servers, especially in the co-located mode are low compared to their capacity. Similarly, there is difference between allocation of storage and actual utilisation by departments thereby limiting space required by other departments for hosting.
- 4. The two Data Centres: Capacity of SDC 1 and SDC2 is almost exhausted and the E & IT Department and Kerala State IT Mission are yet to take action to upgrade the infrastructure and procure sufficient servers / SAN storage.

1.1.11 Human resource constraints

Smooth and efficient functioning of e-Governance applications need constant support from technically competent officials. Shortage of human resources with required technical competence in TSPs, departments and agencies like KSTIM has negative impact on adoption/implementation of e-Governance. It is reported by some of departments that the TSPs, especially NIC use human resources hired for and paid by one department for projects of other departments, leading to delay in providing services to the department who originally entrusted work to the TSP. This creates a scenario where Departments do not get the required service on time even though they are paying for the service.

1.2 Recommendations

- 1. ARC recommends that government needs to merge Kerala State IT Mission and Information Kerala Mission into a single organisation. Organogram of the merged organisation shall be finalised based on proper scientific study of actual requirement and present IT environment. However, before any decision is taken in this regard government needs to study possible issues that may arise from the merger as there can be multiple resistance to change when the organisations are merged.
- 2. Performance of each official of the amalgamated organisation needs to be evaluated annually and continuance of each official needs to be based on appraisal of their performance, emphasizing on skill, knowledge updating, and delivery. Performance review needs to consider delivery, skills and knowledge updating. Government, after objective study of the new entity by a competent agency needs

to consider yearly replacement of 20 percent of the officials with new recruits. In any case, maximum tenure of officials shall not be extended beyond 5 years. It also needs to be considered that quality of human resources depends on suggested qualification and pay and service conditions offered. Government needs to consider paying qualified persons on par with IT industry standards.

- An alternative suggestion is to evolve KSITM into a governing organisation for e - Governance eco system in the state. Decisions taken by KSITM needs to be implemented by all TSPs including IKM. KSITM and IKM (preferably C – DIT too) may be headed by the same person to ensure implementation of decisions taken by KSITM.
- 4. A web portal may be developed by the Electronics & IT Department for managing the entire process of approval from design to hosting of web / mobile applications of departments. A high-level committee (team) headed by Director, KSITM, as suggested in the transformation plan submitted by KSITM may be constituted to consider requests for development of web / mobile applications of departments. Persons with expertise in technology, government process reengineering, programme management and related domains along with persons with hands on implementation experience in e-Governance projects, needs to be included in the committee. The committee shall ensure architecture, compliance to standards and guidelines, interoperability, deduplication with existing applications in the state and common applications proposed or available in e-Gov App store of Govt. of India. The projects shall also be evaluated for Government Process Reengineering (GPR), incorporation of best practices, optimisation of infrastructure requirements and value for money. The committee needs to meet at least once in a month or more frequently as required, and pending requests for development of applications cleared in each month. If any department develop applications without approval of the above committee, neither domain name to be allocated nor hosting be permitted in the State Data Centre. Stringent action may also be taken against the Head of the Department/ office who developed the application without approval of the above committee.
- 5. IT Mission Director needs to be an administrator with technical knowledge or aptitude and capability to learn technology.
- 6. Audit by an Expert Committee may be done for analysing the extent of incorporation of GPR and best practices in current major projects and proper GPR needs to be included in next version of applications in a time bound manner with preference to departments with higher people interaction.

- 7. At present, TSPs are selected by departments for design and development of their applications. But performance of all TSPs is not up to the mark. Hence, Government may revise TSP norms as the norms were fixed almost 20 years back based on the requirements of that period. Open tender may be encouraged for selecting vendors / TSPs to design and develop applications of departments. The current system of giving work order directly to TSPs may be revisited. Till revision of TSP norms government may initiate Limited Tender among TSPs. Department needs to sign Service Level Agreement (SLA) with the vendor / TSP selected for developing application. All terms and conditions including penalty clause shall be incorporated in the SLA. E & IT Department need to approve and publish model SLAs duly vetted by Law Department for the use of departments implementing e-Governance projects through TSPs, private System Integrators and vendors and communicate to all departments and agencies for adoption. Stringent action may be taken against the Heads of the Departments who entrust developing their applications to vendors/TSPs without following tender formalities and execution of SLAs.
- 8. Government may explore the possibility of using agile methodologies in software development projects of departments.
- 9. The nodal agency KSITM and SeMT needs to provide support for developing critical project documents such as DPR, EOI, RFP for departments. These agencies also need to provide technical / consultancy services for departments and agencies for the selection of vendors for implementation of e-Governance projects as per the guidelines prescribed by MeitY, GoI and the State Government.
- 10. NIC, a critical partner in the transformation journey of e-Governance, needs to undergo fundamental transformation in outlook, standards of solution development etc. Human Resources policy of NIC needs to be overhauled to attract quality development resources to the organisation. KSITM needs to have a role in this transformation.
- 11. The development of applications should start only after finalising specifications for system, software, user requirement etc. Government Process Reengineering shall be an integral part of the process and the To-Be and FRS document needs to be prepared with the assistance/support of KSITM / SeMT / government approved agencies and approved by the committee as detailed above. Once developed, the application shall be accepted by the department only after User Acceptance Test. Lack of communication and understanding between client departments and TSPs / developers needs to be resolved as it could affect development / maintenance and modification of the application.

- 12. Owner of source code and data of the application developed by a vendor / TSP for a client department shall be the State Government and the department concerned. The vendor / TSP needs to hand over the source code along with design documents and User Manual to Electronics & IT Department / KSITM for keeping it in safe repository. Electronics & IT Department / KSITM should make necessary arrangements in the State Data Centre to keep such source code and documentation. The Vendor / TSP also needs to hand over the source code of further updates and upgrades of the application to Electronics & IT Department / KSITM with proper version control. If a request from a department is received for using the same application, the Electronics & IT department needs to take necessary action to share/implement the application in that department also.
- 13. A functional 'Inter Departmental Data Sharing Framework' and an 'Open Data Policy framework' governed by IT Mission clearly laying out the rights of departments, organisations and people, and systems to implement the same needs to be implemented. Many countries like Estonia have such systems in place and government may need only to adopt the same.
- 14. A grid of Government TSPs governed by KSITM Digital Team needs to be formed and the code which can be reused should be made available for all. KSITM also needs to develop a portal in which departments shall publish SRS documents for time bound concurrence of IT Mission. Digital Team can review and suggest the reuse that is possible.
- 15. KSITM, in coordination with departments and implementation agencies needs to ensure proper software change management process and version control. KSITM shall develop and maintain Standard Operating Procedure (SOP) for the same.
- 16. Efficiency and competency of the vendors and TSPs needs to be evaluated annually by the above Committee (Team) and entrusting work with agencies in future needs to be decided based on their performance. A performance ranking system needs to be developed based on the projects successfully implemented, satisfaction level of departments and end users, adoption of standards, in house technical competency, adoption of industry best practices, user friendliness of applications developed, and so on.
- 17. Applications hosted in SDC needs to be reviewed periodically and unused and idle applications that consume large amount of space and power should be moved to archives to allow other applications in operation to use more resources, thereby enhancing their performance. Government shall audit functioning of SDCs and its officials dealing with critical applications and data.
- 18. Departments needs to work along with the developers to simplify user interface and ensure user friendliness. User Experience Study and Design of UI according to it needs to be an integral part of SRS preparation. All TSPs should ensure this. This has to be monitored by KSITM. Many of the departments whose services are availed by a large proportion of the population have adopted e-Governance for providing most of their services. Based on field level studies ARC conclude that around 95 percent of the population depended on Akshaya centers to avail the services offered by these departments. e-Governance aims to provide government services to people without the need for them to visit offices. Existing system of e-Governance has not succeeded in achieving this objective. Instead of visiting government offices people now depend on the facilitator, which can be Akshaya Centres or agents like driving school to get required service. Hence, there is need for the departments to develop solutions to ensure that people can access services without approaching third parties. The method adopted by Delhi State Government may be followed for delivering services at door steps, till end-to-end solutions are in place.
- 19. Akshaya Centres facilitate more than 90 percent of e-Governance services available for the public. There is a tendency among the public to approach the Akshaya Centre even if they have access to computers and internet connection. Even though Akshaya Centres play a huge and commendable role in making e-Governance service available to all categories of people in the State, overdependence on these Centres hold back people from learning how to avail the services by themselves, which is a basic aim of e-Governance. Giving proper awareness to the public along with making the UIs of the applications more user friendly, easy to comprehend and enhancing the user experience may help to solve this issue.
- 20. User Experience needs to be an important consideration in front end design for development of new applications. KSITM should develop uniform standards for front end designs and departments, with the help of E & ITD and redesign their user interface based on these standards. Priority needs to be given to departments and projects with higher people interface like e-District, LSGI, Registration, PDS, Agriculture etc.
- 21. Virtual meetings conducted during the COVID-19 pandemic period proved to be successful and effective. Hence, ARC recommends that government may continue with holding virtual meetings in the post pandemic period also and hold actual meetings only when it is imperative to do so.

- 22. Government needs to ensure that sufficient number of personnel with required skills and qualifications are available in all areas related to e-Governance. Electronics & IT Department should be entrusted with the responsibility to empanel and make available technically qualified human resources to departments based on their need/requirement.
- 23. IT Cells / Divisions needs to be constituted in all departments. In the case of departments who have already established IT Cell / Divisions, it needs to be strengthened with dynamic and technically qualified staff. Virtual IT Cadre needs to be constituted in every departments following guidelines to be issued by E & IT Department. Departments needs to have a plan for deploying and utilising services of officials who have successfully completed the Post Graduate Diploma in e-Governance and members of the Virtual IT Cadre. Department Nodal Officers needs to be trained in UI/UX which is easily doable.
- 24. Government needs to take necessary steps to enhance skills of officials working in IT Cell / Divisions, officials managing e-Governance projects, Every department needs to identify techno savvy, highly motivated IT skilled employees in their cadre and designate them as e-governance champions. They shall be trained and provided leadership position during the development of e-governance solution and its roll out. They shall be provided training on the latest tools, processes and technologies and opportunities provided to them for acquiring higher qualifications and certifications. Moreover, they should not be transferred for at least 5 years from that department to ensure that the software solution developed is stablised by that time.
- 25. Government needs to develop a plan/programme to provide training to all government employees for faster adoption of new technologies. This needs to be a priority of government and is unavoidable for the success of e-Governance.
- 26. All employees need to be encouraged to take up long and short term courses related to IT on the model adopted by Rajasthan Government as part of Capacity Building exercises for deployment of e-Governance in the state. As per the scheme of the Rajasthan Government fees for approved IT courses are reimbursed to employees along with an incentive of 25 percent in case the examination is cleared in first attempt. Government of Kerala may adopt this model for the State and may fully or partially reimburse course fee on successful completion of relevant/approved courses.
- 27. 'Kerala LMS' of IT Mission needs to be effectively used to run online courses and employees shall be encouraged to complete these courses. State Government

institutions like IMG, IIITMK needs to take the initiative to conduct relevant courses of good quality using this LMS.

- 28. Correlation between success of e-Governance projects and commitment of political and policy level leadership in driving the projects are discussed and documented many times. Government needs to take suitable measures like sensitisation workshops, leadership training etc. for political and policy level executives for conceptualisation and successful implementation of e-Governance projects in the State.
- 29. Influential groups with vested interest could derail and/or delay e-Governance projects and hamper larger interests of the society. This needs to be identified and proper mechanism for prevention needs to be put in place.
- 30. Process re-engineering and resultant changes in the day-to-day business of departments are corollaries to implementation of e-Governance projects. While framing methodology for work study government needs to consider the above aspects. Present conventional methodology adopted by Personal & Administrative Reforms Department (P&ARD) for conducting work study needs to be reinvented and the possibility of adopting appropriate IT tools for making work study more scientific needs to be explored/evolved. An inhouse technical team may be constituted and necessary training may be imparted for the team to conduct the work study.
- 31. State Portal and SSDG under NeGP are envisaged by Govt. of India as single point access for people for informational and transactional services. Service of participating departments will be available to people in single sign-on. Though the project was conceptualised more than 10 years back ,its concept is still valid. The underlying technology stack for State Service Delivery Gateway, which provides seamless interoperability and exchange of data across multiple government departments at back end may need technology refresh.
- 32. Implementation of SSDG project in the state is not successful as envisaged. E&ITD needs to study the possibility of revamping SSDG project for achieving the intent of single point access for e-Governance services. Single point access will be a landmark in e-Governance as it eliminates the need for persons to remember multiple URLs, create profile in all applications and remember login details. Data entry, verification and authentication of persons can happen in one place/ system and applications of all participating departments shall access core master data enabling the person who requires the service to fill only data specific to the selected service.

- 28 e-Governance
 - 33. Considering popularity and wide spread use of mobile phones, all possible services need to be extended to m-Governance.
 - 34. Unified Mobile Application for New-age Governance (UMANG), a Government of India all-in-one single unified secure multi-channel multi-platform multilingual multi-service freeware mobile app makes available services of Ministries and Departments of Government of India and more than 19 State Governments in a single mobile application. People can avail all the services through single registration and sign in. Consistent user experience, short learning curve, integration of many supporting platforms like Aadhaar, Digi Locker, payment gateway and backend integration with other government applications gives people a seamless experience. Adoption of latest technologies like Artificial Intelligence (AI) enabled voice access, Analytics etc., which will help people to interact with government in their own language, is also expected. For State government departments, it supports federal structure and cost associated is nil / minimal as the project is funded by MeitY, GoI. Departments can also link/offer their services without going through the proceedures for launching new applications including DPR, procurement process, on demand scalable cloud infrastructure, built in GPR, sharing of best practices etc. Promotion of App based services is also undertaken through various media by GoI. Government needs to consider adopting UMANG Platform for the State.

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CHAPTER 2

On-demand availability of IT infrastructure is one of the critical factors in success of e-Governance implementation. Major constraints and limitations noted while considering existing infrastructure deployed for implementation of e-Governance are:

2.1 Issues

- 1. The state has invested huge amount of money for development of IT infrastructure for the State. It is observed that capacity utilisation is quite low in most of the colocated servers in SDC. Often hardware sizing is not carried out scientifically by the departments and their solution providers, resulting in over sizing and wastage of resources. Considering factors like capital expenditure, usable life, technology refresh, power consumption etc., these are ideal to move into cloud platforms.
- 2. Kerala State Wide Area Network (KSWAN) is the primary network used for e-Governance in the state. Last mile connectivity from Block headquarters (BHQ) to department offices is affected many times due to low bandwidth and lack of redundancy in KSWAN. Service quality, operational and maintenance issues in KSWAN affect delivery of e-Governance services from offices.
- 3. Other issues concerning infrastructure are:
 - i. Every department has their own hardware and software requirements. At present each department quotes their requirements and makes purchases for themselves. Even though there is an approval system and standing government order to make most efficient use of existing infrastructure without resorting to new purchase, it is not often put into practice.
 - ii. Two major types of operation, viz; co-hosting (where State Data Center provides both infrastructure and is in charge of management) and colocated hosting (where the infrastructure is purchased and owned by the department) are prevalent at present. Most of the co-located servers are due for technology refresh.

4. It is noted that large sums of public money are used for buying hardware with exceedingly high specification than what is actually required for applications of the departments concerned.

2.2 Recommendations

- ARC recommends that government needs to put in place strict measures to prevent unnecessary purchase of hardware and software by individual departments. Existing cloud infrastructure at State Data Centre (SDC) shall be used optimally. 'Cloud First' should be the principle. All the applications need to be mandatorily moved to the cloud and hence all should be made cloud ready in a time bound manner and the migration completed in an year. There is need to encourage private cloud usage, empaneled by MeitY to reduce cost and increase efficiency of data centres.
- 2. Electronics & IT Department needs to initiate the process of migrating applications of departments running on co-located servers to cloud / virtualised platforms at SDC. Dedicated infrastructure may be allowed only if the application is critical and extra security needed. For this Departments shall take specific approval of E & IT Department with valid reasons substantiating why the application cannot be hosted in cloud platform. Without specific approval of E & ITD, co-located servers shall not be permitted in SDCs.
- 3. At present, there is no disaster recovery mechanism for majority of applications. Data replication of certain applications are carried out from SDC to NDC. Hence, establishment of 'Far and Near' recovery centre is needed for ensuring data security and service continuity in the advent of a disaster. Electronics & IT Department needs to prepare Business Continuity Plan and Disaster Recovery infrastructure needs to be built for all critical applications at the earliest.
- 4. All offices and institutions of the government needs to be well connected for smooth and efficient functioning of e-Governance services. It is expected that the issue of connectivity will be resolved with the introduction of KFON. KSWAN services needs to be extended to those offices that require redundant connectivity.
- 5. SDC cloud/virtualised infrastructure needs to have capability to dynamically allocate resources (scale out on demand) based on usage. This will ensure performance and reduce wastage of resources. SDC needs to provide adequate resources at all times to ensure performance and availability of applications.
- 6. KSITM through SDC operator needs to ensure usage of all cloud management features of the system as envisaged, not limiting to virtualisation alone.

- 7. The state needs to explore the use of public clouds suggested by Government of India. Some of the applications can be hosted on public cloud platforms. A technical committee needs to be constituted to evaluate nature of the application and confidentiality of data handled for recommending use of public cloud platform.
- 8. Integrated Citizen Call Centers (CCC) will assist people to avail information on e-Services provided by the government. Audit of the functioning of Citizen Call Centres needs to be done to assess effectiveness/management of the entire life cycle of a service request / grievance including action taken by participating departments. Government needs to explore the possibility of delivering services of various departments through CCC when a person calls and request for the same. The call shall be converted to a request / application which is processed in appropriate / current systems and services delivered.

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Data Security and Privacy

CHAPTER 3

e-Governance processes generate enormous amount of data, most of which are sensitive and critical. The level and scope of data generation as part of gathering information, and data mismanagement make *data security* and *privacy* an integral and vital part of e-Governance administration. There are examples from around the world where uncertainty over these issues led to conflicts between civil society and government. However, on the other hand better e-Governance needs more and more data regarding people and other entities necessitating security and privacy in e-Governance process.

Government of Kerala has automated reasonable portion of its process using various e-Governance application systems. File flow management software - e-Office, Payroll management software (SPARK), Aadhaar enabled Public Distribution System (AePDS), Integrated Financial Management System (IFMS) etc. are some examples. Wide use of e-Governance applications has resulted in gathering lot of personally identifiable information (PII) and has made the following tasks essential - ensuring confidentiality, integrity and controlled availability of data.

Confidentiality refers to the prevention of unauthorised accessing of data stored and transmitted. Compromising confidentiality is not affordable in e-Governance systems, as it shall lead to serious consequential issues. Integrity refers to the prevention of unauthorised modification of data stored and transmitted. Integrity if compromised in an e-Governance system leads to denial of services and other related issues. Most people centric e-Governance services offered by Government are based on data stored in the systems. Therefore, any issue regarding compromising of data quality can lead to denial of service.

The essence of democracy and the shift of power 'to the people' is a process wherein a person is elevated from being a 'subject' to being a 'person/citizen'. A person or a citizen is the most integral and important entity in a democracy. The rights of a person need to remain inviolable, more so the fundamental rights. There are extreme cases where these rights could be deprived to a person, but that is based on fair trial and opportunity to

present their case. e-Governance provides a platform where a person can avail optimal services from the government and become an important stakeholder in the governance of the country. Governments often, collects huge amount of personal data for providing online services. The data is also shared across multiple agencies for ensuring optimum delivery of government services. Government needs to put in place robust systems to ensure data security and privacy so that citizens do not suffer due to data breaches affecting their "Right of Privacy"

3.1 Issues

ARC while interacting with various stakeholders have identified the following concerns related to privacy and security.

3.1.1 Privacy violation

Data collected for e-Governance include sensitive information, like financial data, data on health, biometrics, religious or political beliefs and caste etc. Collecting some of this data/information is necessary for implementation of e-Governance projects. Any laxity in security systems and processes can lead to accessing the collected information/data by entities outside government and may lead to violation of the right to privacy.

3.1.2 Data as a controlling force

In an information society, where every information is increasingly digitised individuals have to provide a lot of data for accessing various services thus putting their trust on the reliability on robust systems for data protection and privacy. However, the threat of using data collected for purposes of governance or generated otherwise, for undemocratic surveillance would always remain. Thus, data accumulation may even end up in the demolition of values of human dignity and privacy. The Central Government has introduced "The Personal Data Protection Bill (2019)" in the parliament which is envisioned as a check on privacy violation through collection and use of personal data by the Government

3.1.3 Failure of the system

Once the entire system or a major portion of service delivery structure transforms into electronic platforms, there is an inherent threat of breakdown of the entire system due to failure of electronic platforms. Even though the system is not entirely dependent on e-Platforms at present, the state is targeting to migrate to an entire e-governance platform so as to make service delivery efficient and transparent. Therefore, the quality of implementing infrastructure for transformation needs to be ensured in the early stages. Proper back-up plans and Disaster Recovery sites needs to be in place to manage any unforeseen challenges arising from failures in the system.

3.2 Recommendations

- 1. Personal data captured for e-Governance applications shall not be used for purposes other than the intended ones without consent of the person concerned. Government needs to ensure that personal data is collected and processed only after obtaining consent of the individual, even when data is captured for a specific purpose/ delivery of service. Government needs to put in place suitable data governance mechanisms without delay.
- 2. In case data is to be used for research, scientific study or for analysis by the government, data on 'Personally Identifiable Information' (PII) needs to be masked by data management and de-identification procedures like anonymisation, pseudonymisation etc., to ensure data protection.
- 3. Considering the enormity of potential threats, e-Governance systems need to be designed efficiently to ensure data security and minimise / eliminate threats to data security and privacy. Proper legal frameworks need to be formulated and implemented.

3.3 Recommendations for ensuring Security and Privacy

A set of recommendations for ensuring security and privacy are given below:

3.3.1 Ensure Data Confidentiality

Personal data needs to be handled with utmost care as privacy is a fundamental right of the people. Sensitive personal data shall not be disclosed to anyone without informed consent of the person. Sensitive data shall never be handed over to third parties without anonymising 'Personally Identifiable Information' (PII).

The following measures are suggested to ensure confidentiality:

- 1. Use reliable security model which captures right set of roles and privileges to control access to data.
- 2. Implement required authentication and audit mechanisms which conform to the security model.
- 3. Identify critical data and encrypt them before transmission and storage, wherever possible. Data retention or the period in which personal and private information of a person is retained in a department shall be the minimum necessary period required to deliver the service. In cases where recurring service or interaction is required with the person, data shall be secured in the server in the State Data Centre in encrypted format. Authentication details like username, password etc., needs to be stored and transmitted only in encrypted form.

- 4. Leakage/sharing of authentication details: Domain users are provided controlled access to data through authentication mechanism (user ID and password). In Government systems, there are cases where authentication details are shared among government employees. This may cause serious issues like leakage of authentication details and violation of access privileges. The following measures may be taken in this regard:
 - a. Each e-Governance software shall implement role-based access to data.
 - b. To prevent incidents of sharing authentication details government needs to issue guidelines and ensure its enforcement.
 - c. Government needs to issue guidelines and ensure its enforcement to ensure that the authentication (or role) given to an employee is deleted (or taken away) when the employee is transferred (or moved out of a given role).
 - d. Application Programming Interface (API) to access data needs to be made secure enough to ensure that only pre-decided part of the code gets access to data.
 - e. Software shall include feature to notify the department and SDC administrator when unauthorised access is attempted/made.
 - f. Government needs to issue guidelines and ensure its enforcement to ensure that roles assigned to users of software is verified by a competent authority at regular intervals. To enable this, software should provide option to the department administrator to generate reports showing roles assigned to different users. If data breach occurs from a government department, there needs to be provision for departmental inquiry and appropriate action shall be taken against employees and the affected person (s) shall be intimated. Reporting officers needs to ensure proper revocation of privileges in applications/systems before transfers, postings to other sections, retirement etc. in employee life cycle.
 - g. Ensure data protection at run time.
 - h. While it is important to emphasise 'privacy of people' and Data Security, it is also important to recognise the need for seamless sharing of data across departments in secured environment. Government needs to enforce data security standards and protocols to take up 'One Government Approach' in handling data provided to departments by people.

3.3.2 Ensure Data Integrity

Government needs to take steps to prevent unauthorised users from getting privileges regarding modification access to data or to the application software. Policy or process to control data access, particularly for sensitive data like medical data needs to be implemented and properly monitored. Encryption is not enough to prevent unauthorised data modification.

The following measures are suggested to ensure data integrity:

- 1. Mechanisms like hash value checking needs to be incorporated to periodically check preservation of data integrity.
- 2. Data integrity issues can arise when personnel from private organisations and contract staff are to be given access to data stored in the server. Government needs to implement measures like background verification of persons having access to data, Non-Disclosure Agreement (NDA) between the government department, private organisation and its employees in case the data is handled by a private organisation during the implementation / operation of any project. Government may also use appropriate information security processes and tools to monitor activities of the organisations and its employees.
- 3. API to access data must be made secure to ensure that only pre-decided part of the code gets access to data.
- 4. Software shall have feature to notify the department administrator when unauthorised data access is attempted.

3.3.3 Ensure Data Availability

Lack of timely access to required data can cause denial of service from e-Governance systems. Hence, it is essential to ensure availability of data to authorised users for intended purposes. Following recommendations are made to ensure data availability:

3.3.3.1 Prevent Data Loss:

Data may be lost or corrupted due to malicious attack, server crash, unintentional deletion by software, catastrophic events like earthquake and fire, loss of encryption keys etc. To prevent data loss, the following practices may be adopted:

a. Ensure required backup and recovery mechanism.

- b. Suitable Business Continuity Plan needs to be implemented for mission critical applications.
- c. API shall be made strong enough to allow only authenticated access to data.

3.3.3.2 Ensure required IT Infrastructure.

Lack of sufficient IT infrastructure leads to denial of service. The following measures are recommended.

- a. Resources of the State Data centers shall be commensurate with increase in resource requirements.
- b. Client Department needs to bear expenses for enhancing resources as and when required by the client system. Government needs to ensure that departments are provided necessary budget provision to maintain IT infrastructure including cost for software updating, increasing hardware infrastructure etc. required by the e-Governance system. Procurement of servers shall be done by E & ITD and enhance cloud infrastructure. Only Virtual Machines need to be allocated to departments other than for exemptions detailed in the Infrastructure section.
- c. Large number of dormant software dumped at the Data Centre by different Departments needs to be removed to avoid wastage of resources.

3.4 General Recommendations

- 1. All new applications and software developed by any department needs to be scrutinised for application security. Each time an application software is added/ modified, the software needs to be certified by a CERT-In empaneled security auditing agency. SDC rules needs to be strengthened, if required to ensure that only security audited software is hosted. It is also advisable to security audit a running application within a required interval. The State Government need to have a regular mechanism in place for security auditing of critical ICT infrastructure Like SDC and WANs.
- 2. Presently different departments maintain separately the same data. This has the impact of multiplying data collection cost and more seriously shall lead to data consistency issues where changes in actual data is not made by all the departments. ARC recommends that it is advisable to keep single data repository under government control for all departments with necessary backup and recovery mechanism, provided systems are in place to ensure confidentiality, integrity and availability.

- 3. Government departments need to communicate with each other and be interoperable. This would reduce inconvenience caused to a person to produce 'certificates' and 'attested certificates' of data from other departments to get services from a department and enable faster service delivery. This would also avoid redundant data being stored in different departments. But along with this, restricted and authorised access both within and between departments is equally or even more important. Officials who handle such data needs to be accountable and sign Non-Disclosure Agreement.
- 4. Laws and guidelines on data collection, storage, handling and backup need to be framed without any further delay.
- 5. Proper mechanisms need to be developed to audit third-party access to data, including by researchers.
- 6. Data privacy and protection policy needs to be introduced if Central Bill on data privacy do not become law soon.
- 7. Onus of data security including physical and network security as well as ensuring non-disclosure by its employers shall lie with the State.

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Field Study on Selected e-Governance Applications

One of the significant objectives of e-Governance is enhancing efficiency and transparency in delivery of services to the people. Procedures for availing government services manually, from getting a certificate from local administration, to obtaining passes for transport of minerals or paying bills are lengthy and require physical presence of the applicant. By the introduction of e-Governance systems it is now possible for people to access/avail a broad spectrum of services provided by governments, remotely. This ranges from services of Local Self Governments (LSG) to the Central Government.

The systems should be designed to provide end-to-end service delivery, but a significant issue prevalent in most of the States in India to which Kerala is not an exception is the lack of digital literacy of its people.

Kerala has many advantages in implementation of e-Governance. It is one of the most e-literate states in the country where more than 4 lakh students come out of government schools after class 10 with knowledge on use of ICT. IT is part of the curriculum or an additional subject for most of the students enrolling for higher studies. It is evident that at least one person from almost every family, even in rural areas is digitally literate. With respect to connectivity, most of the telecom and internet service providers in the country operate in Kerala. As per the Indian Telecom Services Performance Indicators Report by TRAI published in January 2020, Kerala has 46.71 Million wired and wireless subscribers out of which 46.42 percent are in rural areas resulting in a tele-density of more than 128.25. At present majority of the population use internet and avail services through smart phones – a situation accelerated by COVID-19 protocols.

In spite of all these facilitating factors, adoption of e-Governance services, especially in self-service mode is much lower than expected.

To draw more profound insights into various aspects of e-Governance, and to chalk out the issues and constraints faced by the people and facilitators about e-Governance, ARC analysed two schemes - e-Certificate, and e-Health. Process evaluation of both programs was conducted through qualitative semi-structured interviews.

e-Certificate is chosen for analysis for its widespread use by people. It is used by most of the people for availing government services and is facilitated mostly by the CSCs.

e-Health is a project intended to enhance quality of health services provided. Changes in the nature of service delivery are to be handled by the Medical Officers, Health Centre and other medical staff, and when implemented in a comprehensive manner people will be beneficiaries of the system.

4.1 e-Certificate

Six Villages, two from three different districts of Kerala are selected for the survey. Each Village is chosen on the basis of distinct features to make the sample representative. Villages selected and reason for selecting the villages are:

- 1. Padavayal Low literacy rate and higher proportion of ST population
- 2. Kuzhalmannam Higher concentration of SC population
- 3. Valappad Higher proportion of Fisherfolks and nearness to the sea coast
- 4. Panancherry Nearness to urban centre and better infrastructure facilities
- 5. Thannithode Semi-remote area with moderate infrastructure
- 6. Gavi Remote location, lack of accessibility and lack of well-developed infrastructure.

Data collection included personal interviews and focus group discussions. Details of sample villages are given in Appendix I.

Majority of the respondents stated that they have derived benefits from e-Governance, and that they consider administration through e-Governance as efficient and faster than that of the conventional system. In the traditional system even simple procedures like issuing a certificate took more time and unexpected delays were often associated with it. With the introduction of e-Governance the procedures are simplified and delays minimised. It also provides option to get updates about status of any application/ request submitted by them through SMS. People avail benefits of e-Governance from services delivered by various departments. Many of the respondents said that it was easier for them to approach a CSC than to visit office of a government department during office hours. Aided by the service of Akshaya centers, e-Governance has gained wide acceptability among the public.

4.1.1 Issues

Objective of this study is to understand whether benefits from implementation of e-Governance has reached the marginalised people, understand constraints faced by them in accessing e-Services etc. Some of the major issues common to all the regions are.

- 1. Infrastructure - lack of facilities for power backup, frequent failure of internet connectivity and outdated hardware, are common issues with the CSCs. In places like Gavi and Padavayal, where people have less access to conveyances to reach the Akshaya Centers, unexpected power failures have substantial negative impact. Other regions surveyed also reported similar issues where functioning of the CSC comes to standstill during prolonged power failures. A farmer of Kuzhalmannam village said that they faced difficulties in processing applications online when Kerala State Electricity Board was doing maintenance works. He also added that similar problems are encountered during mustering for social welfare pension, which led to dissatisfaction and caused inconvenience to a large number of senior citizens. Disruption in Internet services is reported to be more frequent than power failures. At present, the CSCs depend on service providers to sort out connectivity issues. Implementation of Kerala Fiber Optics Network (KFON) across Kerala, which declares internet as a fundamental right may change the situation and provide faster and stable connections across the State. Disruption in connectivity is frequent and more prolonged in remote locations like Padavayal where the respondents reported connectivity failures that sometimes lasted for days. In places close to cities and developed areas loss of connectivity occurred at lesser frequency and downtime is also less. One student from Padavayal Village mentioned that the problem of loss of internet connectivity was remarkably high in the region and that the period of loss of connectivity was also more. She said it lasted even up to two days and the issue is more severe during monsoon. People of Gavi reported instances where they had to travel more than 60 kilometers to the Seethathode Akshaya Centre and are not able to complete intended procedures because of internet-related issues in the Akshaya Centre.
- 2. Another observation from the survey is that attitude of employees in CSCs/Akshaya Centres also has an impact on service delivery. Where the employees are cordial and approachable people found it easy to get their work done/access services. In places where employees in the CSC are less friendly there is an increasing reluctance for people to visit the CSC. This

stymies performance of service delivery through e-Governance in the area and creates discontent among the people. This an issue that needs to be attended and resolved through training and guidelines/instructions to employees in CSC/ Akshaya Centres. This is a common issue and backwardness, or development of selected area has nothing to do with this. People of Gavi reported that they are happy visiting Seethathode Akshaya Centre as the employees are polite and give special consideration to people from the Gavi region since they travel 60 kms to reach the Centre.

- 3. People of Padavayal, Gavi, and parts of Thannithode, have minimal means of transport to reach the nearest Akshaya Centres. People of these areas often have to forgo one day's work to visit the CSCs. People of Gavi suggested that setting up temporary facilities and operating them once in a month would be of great help to them, especially during periods like School / College admission, renewal of Life Certificate and Health Card, mustering etc., when majority of the residents have to cover long distances to reach the Akshaya Centres. A resident of Gavi said, "We have to travel at least sixty kilometers to reach the Seethathode Akshaya center. If the purpose of our visit is not completed before the last bus from Pathanamthitta passes Seethathode, we have no other option but to stay in the town or hire a taxi. Both these options are expensive for us considering our income. Also, the forest check post closes by evening and they will not let us in even if we have hired a taxi. All these make very regular things extremely hard for the residents of Gavi".
- 4. There are some instances, like mustering and issuing of certificates for scholarships where large number of people have to get service from CSCs at the same time. Infrastructure available in most of the CSCs are not sufficient to handle the high demand though frequency of such occurrences is low. Many residents of Kuzhalmannam block complained that they had to wait for prolonged period to get mustering done for social welfare pension scheme. They had to spend on food and refreshments while waiting for their turn and said that infrastructure of the Akshaya Centres is inadequate to manage the huge crowds, even though the employees are ready to provide service.
- 5. Proactive functioning of politicians / social workers / local administrators have significant role in ensuring user friendly e-Services to the people. In the regions where the social workers and local administrators are more proactive, it is observed that behaviour/attitude of employees in the CSCs, unwanted delays, and limitations faced during processes like mustering etc., are addressed adeptly. A resident of Valappad region said that when the ward members or

other representatives give proper attention to issues regarding e-Governance or other services given to the people, the system is found to be more efficient. Majority of the respondents from Gavi, Kuzhalmannam, and Panancherry had the same opinion. In the case of places like Padavayal, where ST populations are on the higher side, proactiveness of the ST promoter plays an important role.

- 6. It is found that the CSCs in some places make recurring mistakes in the application forms. Even though employees in the CSCs alone cannot be blamed for the errors, they need to be more cautious. There are large number of mistakes in the documents of persons in Gavi. Mistakes in the documents lead to denial of services including social welfare pensions and other benefits. Employees of CSCs in localities where the literacy rates of the people are comparatively less need to be cautious and help people to enter correct information. This issue was reported more in places with lesser literacy rates and development. A retired plantation worker in Gavi said that she was yet to receive pension and other retirement benefits only because 'a' in her name was replaced by 'e' in some of the documents. Many such cases were reported during the survey.
- 7. Another serious concern, common to all the localities surveyed is dependence of majority of the people on agents to get things done. Even people with internet connectivity and other requirements depend on CSCs or agents for their needs. They are of opinion that filling up and filing of applications is a onetime need and it is not necessary to learn the entire process and found service of the agents to be convenient. In places closer to urban areas more people access the services themselves. But this is also a small proportion. Main reason for dependence on third parties is lack of technical knowhow and access to equipments like computers and internet in the backward regions. In developed areas people found it more convenient to pay for the services of an agent and entrust her to complete the procedure. Development of applications with user-friendly and simpler User Interface may enhance the number of people accessing e-governance services directly, without dependence on a third party.
- 8. The absence of human discretion in automated processes also has an impact on the life of people. At Thannithode, a couple who had problems in getting a marriage certificate quipped that if the process were manual, they could have made the officers understand their situation. But now, as the online application needs certain documents to be uploaded which they do not possess they are facing difficulties in obtaining the certificate. Contrary to this view, at some places people criticised officers for delaying the processes wherever they have discretionary authority and taking bribes to fasten the processes.

4.1.2 Recommendations

- 1. User Interface of the applications for delivering services are not user friendly and this affects efficiency in service delivery. ARC recommends to Government to take immediate and timebound action to upgrade / update user interfaces of all e-Governance applications delivering services to people. Priority shall be given to high volume services like e-District, services of LSGD, Motor Vehicles Department etc. KSITM can come up with common standards for User interface for efficient service delivery.
- 2. e-Proficiency of employees in the departments affects e-Service delivery adoption and efficiency. Providing required training to departmental officers on ICT and e-Governance needs to be a priority for the government.
- 3. Present employee strength of Akshaya project was envisaged for implementation of e-Literacy Programme across the State. The number of services delivered through the centres have increased manifold. Government needs to take steps to redefine organisational structure of CSCs based on present requirements.
- 4. Most of the people consider Akshaya centre as an extended face of government for delivering services. On several occasions attitude and behaviour of the Akshaya entrepreneur and employees create negative image about delivery of government services. Government needs to provide training on behavioural aspects to Akshaya entrepreneurs and employees at regular intervals.
- 5. Government needs to put in place a mechanism to review functioning of the CSCs/Akshaya Centre and to collect feedback from people on availing of services through Akshaya. Suitable web / mobile applications shall be used for the purpose.
- 6. Government needs to consider allowing Post offices, Libraries, Residents Associations, Kudumbashree etc. as Common Service Centres for delivering e-services, as in the case of Akshaya.
- 7. Government has prescribed fees for various services through Akshaya centres. It is observed that some of the centres are charging more amount from people and also add services like scanning which may not be relevant for a particular service request/do not add any value to the service. Government needs to put in place effective mechanisms to monitor functioning of the centres and take stringent action, including cancellation of license of Akshaya centres who face consistent negative feedback like overcharging for services, rude behaviour etc.

- 8. Governments needs to direct District Administration, Akshaya District Offices and LSGIs to ensure availability of proper infrastructure and human resources at Akshaya centres during mustering, School / College admissions etc., when large number of people are expected to avail services through Akshaya Centre.
- 9. Elected members of Local Bodies, SC / ST promoters and other field staff of various departments needs to play proactive role in ensuring quality of service given through Akshaya Centres. Government needs to entrust these officials to monitor services provided through Akshaya centres and report to the district administration for corrective action.
- 10. Government may actively think of expanding the presence of CSCs (Akshaya Centres) in more remote areas.

4.2 e-Health

e-Health Kerala project funded by MeitY; Govt of India was started in 2013. A detailed RFP was prepared and through tendering process a third party agency was identified as Software Solution Provider to develop and implement the software at selected hospitals in Trivandrum on pilot basis and to provide support for rollout of the software at all Govt hospitals in 7 districts, within a period of five years starting from 1st October 2014.

The Central Government considered the Kerala project as a pilot project intending to extend it later to other states.

e-Health project has two components - Hospital Management System and Public Health Preventative Care, both components are integrated at the core.

Public Health Management (PH) system handles preventive care. Each person is registered using Aadhaar number. Registration is done through camps conducted in schools, health centers, other such institutes and also by visiting the houses. Jurisdiction of each Primary Health Center is divided into sub-centers, and under public health preventative care these areas are surveyed by Junior Health Inspectors and Junior Public Health Nurses. Medical data of each individual is collected by officials using Public Health Mobile application in e-Health tablet devices supplied across Kerala. They collect data regarding all diseases, and upload in the cloud server along with their remarks. These include control of communicable and non-communicable diseases, antenatal and postnatal care, immunisation, health packages, integration with national programmes like IDSP, NTEP, NLEP, NVBDCP, NPCDCS, NPCB etc. The officials also request individuals to visit the health center, if needed. GIS is used to mark location of residence and source of drinking water of the person. This data helps Medical Officers and Health Department to track

prevalence and spread of any disease in any particular area. The system automatically generates an alert when the number of patients with contagious diseases goes beyond a prescribed value in any area.

Hospital Management System (HMS) manages functioning of hospitals from Primary Health Centers to Medical Colleges. Each patient is allotted a Unique Health Identification Number (UHID) based on Aadhar number of the person and is internally mapped and integrated to the PH System. Entire hospital workflow, including registration, token issuance, pre-assessment checks, queue management, OP consultation, laboratory, pharmacy, billing, stores, radiology investigation, inpatient management, casualty, HR Management are part of HMS. For each registered individual, there will be an Electronic Health Record (EHR), consisting of history, previous visits, investigations, medication, and also data collected from the field. Queue is managed by the system itself, which helps in ensuring waiting time for patients hassle-free. Most of the processes of the system is paper-free. Paper is used only to provide pharmacy prescription and laboratory reports. Case sheets can be printed and given if they need it for external use.

Infrastructure required at hospitals for implementation of e-Health is also provided through the project. It includes hardware, LAN, connectivity, UPS and UPS wiring. Hardware includes, mini PCs, ink-tank printer, token printer, sticker printer, barcode/ QR code readers, lean servers, PACS servers, token display systems etc. Considering the criticality of e-Health system primary (KSWAN) and secondary connectivity is provided to minimise downtime at hospitals. Local 'Lean Servers' are envisaged at hospitals which will enable the hospitals to function offline during connectivity downtime. All e-Health points are provided with centralised UPS connectivity. As part of PH activities, about 9500 tablets are distributed to all the health workers across the state. e-Health system is deployed at the SDC cloud infrastructure of the state. Keltron is the TSP for e-Health and a Facility Management System (FMS) is used to manage the IT assets.

e-Health project is still in its rolling out stage. Primary Health Centers (PHC) and Family Health Centers (FHC) are gradually being transformed into e-Health platforms across the state. Works are at various stages in Medical College Hospitals (MCHS). e-Health has started functioning in Thiruvananthapuram, Kollam, Kottayam and Ernakulam MCHs. To capture facilitators' view of the system, semi-structured interviews were conducted with employees in different PHCs and FHCs, of Thiruvananthapuram district, and officials of e-Health Kerala Project Management Unit.

4.2.1 Issues

1. One of the major hurdles of e-Health system is the time consumed to capture all information/activities on the computer. Even though some doctors reported

that the new system has eased their job, on an average time taken per patient has increased with the new system. In PHCs where there is no separate staff to do preliminary checks, it takes even more time for the medical officer. This issue is more acute in places that are densely populated. In some places like Chemmaruthy, health center switches of the system during rush hours and runs manually. At Poozhanad FHC, each medical doctor has an average out-patient load of less than 100 and the e-Health system is working smoothly there. In places like Chemmaruthy where the population catered by the health center is huge, out-patient load per doctor is around 200. Medical officer from Chemmaruthy FHC opined that given the current efficiency level of e-Health system a doctor can manage it only if number of patients is below 100. Some doctors expressed the view that user interface of e-Health system still needs many modifications to reduce the time consumed per patient. They reported that the system has minor errors which has to be rectified, and also the system needs major updates which shall be done on an urgent basis. Another drawback of the current system used for e-Health is that it is not customised for use of different types of hospitals. From medical colleges to primary health centers the same software is used, and it has led to inefficiencies. Even though attempts have been made to customize the interfaces like OP registration, OP consultations etc., to suit different type of users, more customizations have to be done to make the system user friendly. e-Health PMU is now building up an in-house development team to take the project forward as the term of the primary system integrator has expired.

- 2. Attitude of some of the Health Department employees towards the new system and their capability to adapt to new technology are not favourable for successful implementation of e-Health which affects efficiency of service delivery. In around 50 FHCs e-Health is running in paperless mode. It is noticed that if doctors prescribe online, pharmacies and labs become efficient. Pharmacist can dispense medicines quickly, otherwise the pharmacist will have to enter the medicines prescribed by the doctor offline, which is time-consuming. Lab equipment integration facility of e-Health can improve efficiency of the labs at hospitals. Wherever lab integration is done, lab tests become automated and the results get uploaded to the server automatically, avoiding manual data entry. With a fully computerized system like e-Health, the State Health Department can become more effective and efficient.
- 3. e-Health Kerala Project Management Unit provides training in using the software, still some employees who are not used to computers find it difficult to operate the system. Lack of sufficient number of employees to complete the phases of e-Health survey is another issue found during the study. Existing team in the

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public health centers have to carry out the investigations by themselves. This can make other phases of the e-Health survey longer than expected.

- 4. e-Health data is critical in nature and hence data security is a concern. Health data of the entire population of the state is kept in e-Health cloud servers. Considering the sensitive nature of data, proper security measures are necessary to avoid any data breach. Earlier Aadhaar was considered as the unique ID but after the Hon. Supreme Court verdict, separate Unique Health ID [UHID] is created for the patient by authenticating the person with his Aadhaar Card during his first visit to the hospital as part of onetime Patient Registration process. During patient registration process, permanent UHID is issued to the person based on Aadhaar. For those who don't produce Aadhaar Card a temporary Health ID is issued, and treatment provided through e-Health itself with patient's details recorded against the temporary Health ID. The "One Patient, One EMR" concept can be achieved only if permanent UHIDs are allotted to all patients.
- 5. Considering data security issues, the hospital management system is accessible only in the KSWAN network provided at all hospitals. To maintain privacy of health data EMR of patients will be available at the hospital and is accessible to the doctors only when the patient visits the hospital. SSL is enabled for all e-Health-based domains. Measures are also taken to safeguard PH data. But comprehensive data security and data privacy policy, which is essential is yet to be in place for e-Health data.
- 6. It is found that people are happy with the new e-Health system. They are ready to pay small amounts if provided with good service. Kuttichal PHC has introduced plastic e-Health card for 10 rupees. Patients have the option of getting a paper card free of cost or buying a plastic card. Everyone buys the plastic card. Even when the PHC ran out of plastic cards people insist on plastic cards and are not willing to accept paper cards. E-Health allows people to take appointments for their next visit to the hospital. A token with time slot is given to the patients. It is very convenient for patients as they can avoid long waiting time at OP Clinics. e-Health also provides facility for doctors to issue advance review appointment token to patients at the time of consultation.
- 7. Token display system using digital signage manages the patient queue perfectly at OP clinics. This has revolutionised crowd management at OP Clinics especially at Medical College Hospitals, as reported by doctors of major specialties.
- 8. Previous treatment history of the patient can be viewed when Doctor selects a patient from the list of patients in the computer screen. This is a great advantage. EMR of the patients will be accessible by the doctors at all hospitals where e-Health is functional.

- 9. Doctors can prescribe medicines and order Laboratory and Radiology investigations through the OP consultation screen. They can create their own templates for pharmacy prescriptions, which can be reused with or without making changes. This is a great advantage for doctors to reduce consultation time.
- 10. A centralised Picture Archival and Communications System (PACS) for radiology is implemented which stores X-RAY, CT and MRI images.
- 11. SNOMED-CT an internationally accepted clinical terminology and recommended by Govt of India which enable clinicians to record data with enhanced accuracy and consistency is implemented in e-Health.
- 12. e-Health system meets the entire workflow in a hospital starting from OP registration to IP discharge. The functionalities have to be firmed up for enhanced user acceptance and patient-friendliness. Even though essential reports are available, facility for generating reports according to requirements of the users need to be provided.

4.2.2 Recommendations

- 1. To achieve the aim of "One Patient One EMR," awareness needs to be created among the people regarding advantages of having Permanent UHID and necessary steps needs to be taken to promote Aadhaar based Permanent UHID.
- 2. Proper directions/guidelines need to be issued by government for better usage of e-Health and follow up by concerned department needs to be ensured. Training needs to be imparted to users on a continuous mode for better usage and acceptance of e-Health system. e-Learning system shall be put in place for imparting training to users. Customized Change Management program needs to be undertaken for e-Health projects for various stakeholders.
- 3. To harness the benefits of e-Health system it needs to be rolled out to all hospitals in the State as soon as possible.
- Comprehensive Data Security and Data Privacy policy needs to be formulated and implemented in e-Health project. Information Security Audit and Certification (ISO 27001) needs to be done across the e-Health System at the earliest, as envisaged in the DPR.
- 5. PMU needs to be strengthened for speedy delivery of newer version, addressing critical customization requirements, bug fixes, new functionalities like telemedicine and adoption of latest technologies.

- 6. Since health data is getting built-up, e-Health PMU needs to undertake data analysis to provide inputs to government for better planning, by ensuring proper data privacy aspects.
- 7. Innovative technologies like IOT, AI, Block-chain, BIG data analytics needs to be explored for enhancing service delivery, research, predictive analytics compliance etc.
- 8. In Kerala, people generally move from government hospitals to private hospitals and vice versa for treatment. Availability of single electronics health records across hospitals in government and private sectors will be beneficial both to people and consulting doctors. Government may explore the possibility of exchanging EHR across hospitals with proper data security, privacy measures and standards.

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Conclusion

e-Governance system is introduced to provide services to people and all stakeholders in an efficient, transparent, reliable, and cost-effective manner. This report is an attempt to study the journey of e-Governance in Kerala - from service provider, facilitator to service receiver. Intended as an evaluative report for reform recommendations the report mainly focuses on inadequacies/limitations of e-Governance system in the state. From interactions with the departments and the field surveys various issues are identified and recommendations for improvements are given in the respective chapters. Some of the concerns like need to use personal data for providing government services across departments, security risks due to data integration and use/misuse of discretionary authority needs to be addressed at a broader level. Report has taken a neutral stand in such issues explaining both potential threats and gains. Ways to minimise such issues are also discussed. Many of the other issues identified are easily manageable/ remedied through changes in technology and changes in administrative procedures. A major finding of the report is that no exclusion of any kind is found in providing e-Services in the state. Public value for e-Governance is quite high. Implementation of right reforms to address the above discussed challenges, will enable the state to achieve the goal of efficient, transparent, cost-effective, and reliable delivery of services to all the stakeholders.

More than 90 percent of certificates requested for by people are for submission to another department or office. Government needs to rethink on the need for certificates in this digital era where most of the services can be given based on verified and authentic data available within the government system. Service delivery and governance aspects need to be revisited. Focus on emerging technologies through institutions like Kerala Blockchain Academy, K-DISC and projects like K-FON will assist the state to get back into the innovative aspects of e-governance. There are also innovative IT applications being introduced by departments, like using drones by Forest Department for addressing man - animal conflict, usage of Blockchain for building Aadhar Vault in e-Health Project etc. Other departments may explore suitable innovative approaches like these in their future projects. The concept of Proactive or Real-Time service delivery and governance need to drive conceptualisation and design of next generation e-Governance systems. Government shall not delay strategic planning and implementation for e-Governance 4.0. In the meantime, suitable use of cases for adoption of Disruptive Technologies in Government needs to be implemented with adoption/adaption of National and International best practices and learning.

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Part 1 : Annexures

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Annexure - I

SI. No.	Name of Department/Institution
1	Agriculture
2	Animal Husbandry
3	, Civil Supplies
4	Dairy Development
5	Food Safety
6	Health Services
7	Homoeopathy
8	Indian Systems of Medicine
9	Industries and Commerce
10	Kerala Water Authority
11	Kerala State Electricity Board
12	Land Revenue
13	Motor Vehicle
14	Police
15	Panchayath
16	Registration
17	Rural Development
18	Social Justice
19	Survey and Land records
20	Urban Affairs
21	NIC
22	KELTRON
23	Information Kerala Mission
24	Uralunkal Labour Contract Society
25	C-DIT
26	C-DAC
27	IHRD
28	LBS
29	SIDCO
30	IMG
31	Kerala State IT Mission
32	AKSHAYA

List of Departments/Total Solution Providers /Institutions with whom the Commission conducted discussions.

Annexure - II

Executive Summary of National Seminar on 'e-Governanace for better Governance'

Day 1 - August 26, 2019

INAUGURAL SESSION

1 Introduction

'e.Governance for Better Governance' a National seminar on e-Governance organized by Administrative Reforms Commission and co-hosted by the Department of Administrative Reforms and Public grievances (DARPG), Government of India and the Institute of Management in Government (IMG), Kerala was held at Thiruvananthapuram on 26th and 27th of August. The seminar served as a forum for sharing e-governance initiatives across the country for ensuring better delivery of services by Government.

Speakers and participants from Government of India and from different states and union territories of the country shared their opinions, views and ideas in the seminar. Apart from the officials from ARC and IMG, Shri. K.V. Eapen, IAS, Secretary, DARPG, Shri. V. Srinivas IAS, Additional Secretary, DARPG, Shri.V. Shashank Shekhar,IAS, Joint Secretary, DARPG, Ms. Kiran Puri, Joint Secretary, DARPG and Shri. Satish Jadhav, Director, DARPG were also participated in the seminar. The perspective of e- governance -"the use of technologies that both help to govern and to be governed" was portrayed through the presentations and discussions that followed.

Shri K Jayakumar IAS (Retd), Director IMG welcomed Shri Justice (Retd) P. Sathashivam, Hon. Governor of Kerala, Shri V.S. Achuthanandan, Chairman of the Administrative Reforms Commission, and speakers and invitees to the seminar. While delivering the welcome address he commented on the systematic approach followed by ARC in preparing and submitting reports on administrative reforms to the Government and of the importance of e- Governance as an effective tool for better governance and improved service delivery.

Presidential Address by Shri. V S Achuthanandan MLA, Chairman, ARC

Addressing the members, former Chief Minister of Kerala, Shri V.S. Achuthanandan spoke from his heart. He mentioned about the changes that Information Technology could bring to the daily lives of the people as well as the government. He recalled the days when he was the CM of Kerala, and decided to initiate steps to change the file system in Government offices. He spoke about the e-governance initiatives which worked as a bridge between people and the government. Through this the citizens enjoyed the advantage of getting information about the issues related to them and the government. He wished the collaborated work of DARPG, ARC and IMG in conducting the seminar success and to bring positive changes for the betterment of the society through all the technological and technical advancements.

Inaugural Address by Shri. Justice (Retd) P. Sathasivam, Hon. Governor of Kerala

The honorable Governor expressed his happiness to inaugurate the national seminar. He complimented Administrative Reforms Commission led by Shri V.S.Achuthanandan for collaborating with Department of Administrative Reforms and Public Grievances along with the Institute of Management in Government (IMG) for organizing the seminar which provided a formal platform for discussing reform related ideas and successful practices. ARC studies about people centric service aims to recommend steps for an effective administrative system that on thirteen core areas of governance. Hon'ble Governor said that good governance initiatives dates back to centuries. The concept of good governance and reforms in the administration are as old as history.

It is true that the evolution of the mankind was in a way a trial and error method that involved various reforms, changes and which underwent various governance styles in one or the other. He pointed out the fact that the ministry that handles administrative reforms is placed under the Prime Minister and is assisted by a minister of state and this reveals the strategic importance of the function. The idea of good governance becomes the part and parcel of the development of our society. He stated how welfare of the people were given much importance in the epic and mythic times where it was the reason behind the happiness of the ruler. Even at the time of Independence, Pandit Jawaharlal Nehru stated that the primary goal of democracy is the welfare of the people. He mentioned that political ideologies may be different but the ultimate goal is the welfare of the people.

At this time where there is a drastic change in the technologies and scientists plan a space tour, down in the earth people go to the extremes to know about their right to services. It is to eliminate this indifference that the e-governance efforts aimed to make their daily lives easier. Administrative reforms exist to translate the policies of the government and to ensure that the benefits reach the lower strata but often service delivery gets delayed. The belief that e- governance provide transparency and speeding up of service delivery attracts us. He quoted examples on how delayed service affects several cases that and this has attracted worldwide attention.

His words validated the views on information technology on sub policies that include digital inclusion, digital procurement, cyber security, Aadhar enrolment, Akshaya centres and the like. Kerala with 100% connectivity and as a digitally literate state has a well-set framework. But the limitation is absence of fully automated processes for fast online delivery. Revenue, land records and the other subjects covered by e-governance along with the studies of ARC on sustainable development, secretariat development, grievance redressal and so on raises a question on the security. Hon. Governor stressed on need for ensuring cyber security to overcome fraudulent activities done by cyber criminals as too much information goes online. He raised the possibility of a virus war in the future that may be a threat to mankind. He expressed his fear and the need to ensure sustainability, credibility and accountability of

the system. He wished Kerala to enjoy the fruit of this change in the fullest in the years to come and stated that he believed that this would enhance administration and governance to a completely revitalized one.

Address by Shri. K. V. Eapen, Secretary, DARPG, Govt. of India

Shri. K.V. Eapen mentioned the role of DARPG in e- Governance and mentioned about the national conferences that were successfully completed. The recent conference at Shillong had decided to consolidate the efforts that happened across the country. According to him, there is huge amount of repetitiveness in e-Governance in the country. In his words, "It is our job to replicate initiatives and to spread awareness across the country". He also pointed out the change in citizen's interaction with the government and their interference in the processes of service delivery. He mentioned about two ideas of central government, Central Bureau of Direct Taxes (CBDT) in Income Tax, and issue and renewal of passports that has become less cumbersome. He also mentioned about the Maharashtra government lead in setting up a Commission for Right to Service. The technological revaluation and implementation of systems like block chain, AI, cloud services, IOT, Automation, 3D Printing, along with Govt. of India services like Digital India, Skill India, other emerging technologies helps us to reach across the population at lower costs.

In his address, he noted that many states have come to the forefront and channelised their resources and Kerala is a leader. States like Maharashtra, Madhya Pradesh, Tamil Nadu, Andhra Pradesh, Telangana, Karnataka and Gujarat spread their initiatives across the districts. Eco systems of start-ups work to solve unique problems. He concluded that we foresee digital initiatives in a larger scale with the support of state and central governments for fostering changes.

Address by Dr. Ajay Kumar, Secretary, Dept. of Defence , Govt. of India

Dr Ajay Kumar expressed happiness to be in Kerala where he learned the initial lessons of administration. He shared his view that Kerala is always a step ahead in the implementation of innovative reforms and recalled various achievements of Kerala dating back to several years including 'Ahmednagar reform' experiment by Shri Gopal Pillai in Kollam district as District Collector, affordable house building construction scheme introduced by Shri. C.V. Ananda Bose in the same district which later transformed into state wide low cost housing innovation named 'Nirmithi', Cochin Airport (CIAL), the first airport in the country with private participation, the first state to start Common Service Centre, now known as Akshaya Programme, the first IT park in the country, 'Technopark' etc. He also mentioned the achievements of Kerala when he was the IT Secretary, Government of Kerala when Kerala became the only state in India with 100% connectivity. He said that Kerala has unlimited potential in technology for improving service delivery to the public.

In his view, administrative reforms need to assess how technology changed the profile of administration. From being merely transactional, government can become a part of the knowledge eco-system where e-Governance initiatives lead to improvements in overall policy formulation. He expressed the view that when lakhs of grievances are obtained from people, artificial intelligence should help government to sense what concerns the people most. He also mentioned that the Digital India Programme serves as the basic building block for implementing wide scale role out of IT applications and said he foresees Kerala emerging at the top of these advancements.

Address by Shri. M Shivashankar Secretary, IT Department, Govt. of Kerala

Shri.Shivashankar reminisced about the time when he worked with the 3rd Administrative Reforms Committee and recalled the survey undertaken involving all government departments on technological developments. The survey threw up shocking results which showed that the huge expenditure in technology did not lead to any benefit to the public as it did not result in any improvement in service delivery.

IT Department was in its infancy at that time and took two-three years to get into a fullfledged version. During this time, ARC recommended creation of an independent IT department and take up immediately projects that benefit people. 'FRIENDS' that changed the way bills for government services could be paid was one among the projects. Another recommendation was to transform the whole program of e-governance. He also pinpointed the changes visible today such as online delivery of certificates to the citizens, payment interface and customer interface reduction at the grass root level.

Vote of Thanks

Vote of thanks was delivered by Smt. Sheela Thomas, Member Secretary, Administrative Reforms Commission.

SESSION 1 INTEGRATED E-SERVICE DELIVERY

Presentation on Governance by Shri. Santhosh Babu, Principal Secretary, Department of IT, Tamil Nadu.

Shri. Santhosh Babu, first speaker of the first session of the national seminar talked about Governance as the portfolio that indulges in making policy, pushing files (e-Office), its implementation (End to End AS) and providing services to Citizens (CSCs). He spoke about improving governance through COE in ET (CEET), Startups, SFDB (State Family Database),
State Blockchain backbone, Zero ID Proof Based Government Service Delivery, BharatNet, TamilNet and CSA-TN etc. He suggested Single Citizen Portal, Single Citizen App, Single SMS Gateway and a Single Payment Gateway for better service delivery.

Presentation on Unified Mobile App for New-Age Governance (UMANG) by Shri Anil Agarwal, Head, UMANG NeGD, Meity, Government of India.

Shri Anil Agarwal, Head, UMANG NeGD, Meity, Government of India, discussed about Government's key objective of Goal- Oriented Decision Making with Citizen-Centric approach. He said that, many initiatives have been undertaken by the Government of India and projects like IRCTC Rail connect app and UMANG app of Ministry of Electronics and Information Technology (MeitY) have been rolled out. He explained features of UMANG app which is a platform designed for Indians with an aim to offer them access to the pan India e-Governance services. It includes the central, state, local bodies, and agencies of government on app, web, SMS, as well as IVR channels. The acceptance of the app by common people is due to its user-friendly UI/UX/navigation with multiple government services consisting only approximately 20MB and its support of multiple languages (13 languages including Hindi & English). The app has a dedicated consumer support and 12x7 Customer Care.

Presentation on People Centric Services for Disaster Recovery - Case Study of CRTF by Dr.Saji Gopinath, Chief Executive Officer, Startup Mission, Kerala.

Dr Saji Gopinath, Chief Executive Officer of the Kerala Startup Mission explained implementation of Integrated Service Delivery through his Case Study on Service Delivery during Disaster Recovery. He pointed out the difficulty in integrating the databases and also explained the need of a Unified Architecture to optimize the process and make government decision fast and robust.

Presentation on Technology Innovation in Project Monitoring by Prof R. Ajith Kumar, Assistant Professor IIITMK, Kerala.

Prof. R Ajith Kumar explained about the Web-Mobile based integrated information system (PLANSPACE) which enabled effective monitoring and evaluation of plan schemes and its implementation progress across all departments in the state. This effective G2G and G2C e-Governance project initiated by Kerala State Planning Board has been implemented across 220 Implementing Agencies and Departments providing real time dynamic and customized reports for various stakeholders.

With transparency and efficiency being the key points 'PLANSPACE' also ensures real time monitoring of plan projects of the state

SOCIAL ACCOUNTABILITY, GRIEVANCE REDRESSAL AND e-GOVERNANCE.

Presentation on Public Grievances by Shri K. V. Eapen, Secretary, DARPG, Government of India

Shri K.V. Eapen began his presentation with the 'Allocation of Business Rules, 1961', which allocates to DARPG, the responsibility for policy, coordination and monitoring of issues relating to:(a) Redress of public grievances in general (b) Grievances pertaining to central government agencies, in particular. (c) Citizen Centric Initiatives which includes Citizens' Charter and (d) Enhancement of Public Service Delivery Capability involving systemic changes to ensure better service delivery. For the redressal of public grievances, an online system facilitating lodging of grievances from anywhere and is accessible anytime was opened. This interlinked 87 Central Ministries/Departments and 36 States/UTs. More than 46,000 Sub-ordinate users were created on CPGRAMS. Centralized Public Grievance Redress and Monitoring System (CPGRAMS) is an online web-enabled system over NICNET developed by NIC, in association with Directorate of Public Grievances (DPG) and Department of Administrative Reforms and Public Grievances (DARPG). CPGRAMS is the platform based on web technology which primarily aims to enable submission of grievances by the aggrieved citizens from anywhere, anytime (24x7) to Ministries/ Departments/Organisations who scrutinize and take action for speedy redress of these grievances. Tracking of grievances is facilitated on this portal through system generated unique registration number. The PMO, President Sectt., DPG of Cabinet Secretariat, DARPG & the Pensioner's Portal are also integrated through CPGRAMS.

He also spoke about CPGRAMS Reforms. CPGRAMS reforms proposed three divisions; 'Inception', is proposed to streamline grievance redress process by mapping various grievances up to field level. Second is 'Concept' to improve the time taken for grievance redress and lodging of grievance through drop down menus. The final one is the 'Plan of Action' to revamp CPGRAMS in a phased manner with priority to maximum impact.

Methodology proposed for reforms in Grievance Redress process / mechanism, in the words of Shri Eapen, are Mapping of line end offices/officers, Identification of categories and subcategories, Development of a holistic questionnaire for easy and robust registration, Enlisting an exhaustive list of type of grievances and Identification of field offices/officers responsible for resolution of a grievance.

SESSION 3 MODERNISATION OF STATE SECRETARIAT

Presentation on Modernisation of Kerala Government Secretariat by Dr. K.M. Abraham

Dr. Abraham started his presentation with the comment that Secretariat is a much-maligned institution. In his concept Modernisation is an approach concerning two levels. He defined Modernisation as "the process of starting to use the most recent methods, ideas, equipment,

etc. so that something becomes or seems more modern" (Cambridge Dictionary). The two levels he described are LEVEL 1-Modernisation with only automation. Automation is using technological tools to perform old processes in a new way. LEVEL 2- Modernisation with Government process Reengineering (GPR) and automation.

He went on to speak about E-File processing efficiency. He classified this into individual, team and department efficiencies. The employee/ individual efficiency is the officer's efficiency and is the sum of 50% of individual efficiency and 50% of Average efficiency of members in the hierarchy (i.e. Individual Efficiency/2 + (Average of individual efficiency of all employees in hierarchy)/2). Team efficiency is the average of individual efficiency of all employees in hierarchy and department efficiency is the average of individual efficiency index of all employees in the department.

Automation, when it moves forward, will need more computerization of the existing processes, strengthening of information databases for retrieval, and integration of new technologies like Artificial Intelligence – machine learning – data/text analytics, Block Chain technology, where consensus between different departments/agencies is a key element to the service, Internet of Things (IoTs) and techniques like Virtual Reality/Augmented Reality/Online tools for training and so on.

Level two of modernisation, GPR (Government Process Re-engineering) or (Business Process Reengineering) approach is "the analysis and redesign of workflow and processes within and between organisations" (Michael Hammer and James Champy 1993). It is the fundamental rethinking and radical redesign of processes to achieve dramatic improvements in critical measures of performance such as cost, quality, service and speed.

Dr K.M. Abraham expressed the view that principles of GPR should (1) organize around outcomes and not tasks. Citizens, institutions, employees, governments are the stakeholders and G2B, G2C, G2E, G2G are the services. (2) identify all processes in an organization and prioritize them for redesigning (3) integrate information processing work into the real work that produces the information and (4) analyse the scope of parallel activities in the workflow – beyond serial or sequence integration.

Presentation on e- Office, Secretariat Reforms by Ms. Kiran Puri, Joint Secretary, DARPG, of India

Ms. Kiran Puri spoke about e-Office and informed that its one of the Mission Mode Projects under the National e-Governance Plan and is implemented by the Department of Administrative Reforms and Public Grievances (DARPG) to improve efficiency in government processes and service delivery mechanisms. It is implemented in Central Government ministries and departments through improvement in the workflow mechanism and associated office procedure manuals. NIC (National Informatics Centre) is the technical partner of DARPG in this project She mentioned about the new initiatives under Secretariat reforms that is the extension of use of e-office to state secretariat and sub-ordinate and attached offices. Presently e-office is a Central Mission Mode project and the plan is to make it a mixed Mission Mode Project. In order to implement in a mixed Mission Mode Project, Ms. Puri said, EFC/SFC (Expenditure Finance Committee/Standing Finance Committee) note is required to be prepared by DARPG and for which some information is required from States/UTs. States/ UTs to specify which part of funding will be incurred by them and in which components they require funding from DARPG/Central Government.

She recalled that the e-office Mission Mode Project was launched in 2011-12 in a phased manner. Several Expenditure at several levels is requirements of expenditure to be incurred for extension of e-office such as requirement at client side, setting up of Units, procurement cost of e-Office and SPARROW procurement cost, expenditure for deployment of infrastructure and Cost of Project Management Unit etc.

She informed that there will be four phases in the implementation of e- Office: -

Pre-project/Initial phase. This precede phase I and involves assessment of existing infrastructure and preparation of Gap Analysis Report.

Phase I is the preparation stage where formation of governance structures is made possible. In this stage procurement/upgradation of infrastructure and orientation workshops are carried out. Process for change management and transition management and creation of knowledge repository and bulk e.mails is also done in this stage.

Phase 2 is the implementation stage where configuration and delivery of services is done. This is configured by gathering e-Office data, DSC enrolment and a Training Plan. And delivery is done by setting up an e-office environment, and by training and handholding.

Phase 3 is the support stage where handholding and support is done and report of issues and bugs. This is also the phase where transfer of technical know-how on e-Office application and maintenance and implementation support takes place.

Presentation on Modernization of State Secretariat by Ms. Rachana Srivastava, DDG& HOD (e-Office), NIC, MeitY, Government of India

Ms. Rachana Srivastava expressed the view that adoption of pre-existing legacy practices by State Secretariats lead to lack of transparency and accountability and delay in decisionmaking which in turn results in slowness in public service delivery. Government transactions, be they with citizens, other governments, businesses or internal, have one core element

i.e. Decision Making, which is delayed in the absence of e-Governance. She proceeded further by stating that the e-Office project under Digital India Initiative, takes an important

step towards strengthening the governmental decision-making machinery by extending the use of modern information and communication technology to the government processes.

The importance of e-office and the change it could bring about on its successful expansion were discussed by her. A single window system for the easy access of knowledge and information is its vision, according to her, while she mentioned its mission as the single reusable system with high efficiency and transparency and which could change the outlook of government offices as stack rooms of files to a paperless office.

Before concluding she discussed about various implementation and technical challenges like resistance for GPR, lack of higher-level commitment, change in office procedure and so on and put forth strategies to overcome it.

Presentation on Integrated Office Automation Solution by Shri Suneel Chhabra, Technical Director, Department of IT, Rajasthan.

He began with a rhetoric question 'what is office?' The definition could vary from person to person and a mere thought of it could sprout different answers. The vision he propounded through the presentation is to have integrated office automation across the State, to create a smart / intelligent system for enhanced productivity, to have one-stop-place for all employees, for all common functions & roles, to have a decision support system and workflow, but it should not be mere post-facto data entry and reporting systems. The idea was also to focus on simplicity & usability across devices. Basically, Office on-the-move, and to create a platform and not merely a solution.

Key features of this integrated office automation are Defining Groups that is a provision to create groups' functionality wise. Secondly, Workflow Management (Routing/Approval Hierarchy) which opens a provision to define N-Level workflow as per requirement. A provision to add multiple verifiers / verifier groups module wise. Thirdly, assigning the rights. It is a provision to assign rights to PA/PS for taking action on behalf of an officer - module wise and can be withdrawn anytime. Fourthly, template generation that is a provision to map and customize templates at office level for creation of order/letter/circular etc. Fifthly, calendar customization, which is a provision to customize working calendar– district/ department/office level and duty roster of individual. Sixthly, the Communique, which is a two-way communication with a feature for monitoring response.

He envisages roll out of integrated automation across the state, in all government departments and PSU's up to the last mile office at the village level and the processes will include file and dak management, knowledge management, messaging and collaboration, resource management, smart office assistant etc.

He discussed about Raj-Samvaad, an official messaging application for collaboration and communication for Rajasthan government officials. It is a centralized and web-based address

book that provides secured messaging and encryption of messages. It takes care of real time updating of group members on change in service status, and message broadcasting which broadcasts messages to users and groups.

No storage of contact details on phone, send message without being a member of the group and maintaining data at Rajasthan State Data Centre (RSDC) are unique features that makes it a very useful tool for official use.

He informed that about 28 + departments have implemented one or more modules of Raj-Kaj based on their priorities. These include Information Technology and Communication, Raj COMP Info Services Ltd., Economics and Statistics, Police (Vigilance, CIB, SCRB etc.) and so on. He also informed the areas where they were implemented and the areas that are ready for implementation.

Day 2 AUGUST 27, 2019

SESSION 1 DIGITAL LAND PRACTICES

Presentation on BhuSeva by Dr. Manmohan Singh, Chief Commissioner of Land Administration, Andhra Pradesh

On the second day of the seminar Dr. Manmohan Singh presented on BhuSeva with an interesting subtitle 'Aadhaar to us...Bhudhaar to land'. Lives of millions of farmers depend on land. But as a curse to the farmers millions of cases are pending in courts about land. He substantiated the need for reforms in land administration further. Land is the back-bone of the economy but land records are not conclusive even in the modern times. Survey and sub-divisions are not done at the time of registration. There are lakhs of notional khatas – without field sub- division, fraudulent transactions of government lands and properties, mis-information and misleading information about land transactions and the list goes on endlessly. He expressed the view that Land parcels are not marketable commodity as on today.

The vision of BhuSeva is "to be the Single Source of Truth of information on land and property, identified uniquely by Bhudhaar, and to provide integrated land services to the citizens."

BhuSeva dealt with the Integration of 8 land related departments namely Survey & Settlements, Registration, Revenue, Panchayat Raj, Municipal Administration, Endowments, Wakf, Forest. BhuSeva is a web portal developed to integrate the land related data of all land related departments

By the implementation of BhuSeva, land related data of all the departments can be integrated. It functions as a clearing house for any transaction initiated relating to land/ property and fetch required information from the clearing house. Underneath this functions Bhu Samaacharam that provide history of transactions on land for 15 years or more.

The idea of Unique ID of Bhudhaar, which is a 11- digit unique id (99.778.539.905) that is assigned to each agriculture land holding, urban property and rural property. The basis for Bhudhaar is a Confirmed Record (Golden Record)- both Textual and Spatial that have to be in confirmity.

He discussed the process of assignment of temporary Bhudhar and also specified how to take land records to the citizens. He discussed about the two models linked to geo referencing and spoke about Continuous Operating Reference Station (CORS), a network of 80 reference stations that gave accuracy to land measured through satellite data. He concluded by mentioning the benefits of Bhu Seva and the contributions done by the Andhra Pradesh government.

Presentation on Samrakshane by Shri Shakeel Ahmed, Project Director, HRMS, Karnataka.

Shri Shakeel Ahmed spoke that Crop Insurance is provided based on the yield, yield compared with thresh hold yield, yield of previous seven years and indemnity level and crop cutting experiments to assess yield based on weather parameters. Adverse weather parameters are the main reason for loss of yield.

He discussed issues of the manual system. "Samrakshane" is end to end workflow-based e-Governance solution for management of Crop Insurance scheme. Technical Architecture and Electronic integrations add luster to it. The Enrolment Process includes 9000+ Bankers, 4000+ PACS, 5000+ CSCs, 700+ Raita Samparka Kendras (RSK) and farmers – using Aadhaar registered mobile number as user ID.

Premium calculators, status checking without login, are additional features of Samrakshane. What "Samrakshane" could not achieve - Bhoomi (RTC) had details of crop data of previous season (year) - but in 'Samrakshane' sometimes no crop information was available and even if crop data is available subsequently, for the current season, there is no assurance that the data has been recorded by Village Accountant by visiting the farmers field. This means people can still enroll under crop insurance without growing any crop or by growing some other crop and for area in excess of crop grown area. "Samrakshane" has to still depend on DES for sown area data. This would potentially mean application of Area Correction Factor where genuine farmers continue to suffer.

Efforts to handle the limitations were also discussed. These include development of "Insured Crop Verification" 'App' which facilitates Insurance Company (IC) to inspect crop of the insured farmers. Data of insured farmers is available in real time in the mobile app. This can be integrated with Crop Survey, a unique exercise of collecting crop details with GPS photos, through web interface.

SESSION 2 PUBLIC SERVICE DELIVERY

Presentation on Right to Public Service Act by Shri Swadheen Kshatriya, Chief Commissioner, Commission for Right to Public Services and Former Chief Secretary, Maharashtra.

The Maharashtrian State Commission for Right to Public Service Act was a revolutionary act enacted in 2015 and is headed by Shri. Swadheen Kshatriya. Its agenda is to provide efficient and timely delivery of public services with transparency to eligible persons in the State of Maharashtra. It brought transparency and accountability to the Departments and agencies of the Government and other Public Authorities that provide public services to eligible persons.

RTS act, in his words, highlights 'Transparency, Accountability, Timeliness, Efficiency and Emphasis on use of Information Technology'. "Right to service" means right of an eligible person to obtain the public services within the stipulated time limit as notified by the Government, from time to time.

Its salient features include, creation of a right to an eligible person to obtain public services, provision for delivery of public services by the Designated Officers to the eligible person, mandating Public Authorities to notify the public services, Designated Officers, Appellate Authorities. It provides for giving unique application number for monitoring online status and provides for appeals to the First Appellate Authority, Second Appellate Authority and the Commission. It also has provision to constitute the Maharashtra State Commission for Right to Service for

effective implementation of the law and for penalties and disciplinary action in respect of officials who have failed to deliver public services within stipulated time limit. It also provides for cash incentives to officials delivering public services before the stipulated time limit and appropriate awards to felicitate authorities that perform best in achieving purposes of the law. The Act contains provision for taking action against eligible persons who obtain public services by deliberately giving false or frivolous information or false documents.

He pointed out that for every notified service under the RTS Act, Government has notified the following Authorities: Designated Officer, First Appellate Authority, Second Appellate Authority, Third & Final Authority is RTS Commission. He also mentioned the role and action of the designated officer and the procedure for appeal.

The power and function of this commission are, taking suo motu notice of failure to deliver public services, carry out inspections of offices entrusted with the delivery of public services, recommend departmental inquiry against any designated officer or appellate authorities who have failed in due discharge of functions, to recommend changes in procedures for delivery of public services in addition to taking steps by the Public Authorities for efficient delivery of public services ,monitor delivery of the public services by public authorities and to hear and decide the appeals. He also spoke about penalty and rewards.

Presentation on Public Spheres by Shri Ashwini Bhagat, Director, HCMRIPA, Jaipur

Shri. Ashwini Bhagat started his presentation by pointing out that improved public service delivery system that is accountable, and transparent administrative machinery is the bedrock of good governance. It has greater impact on improving quality of life of the people. Moving on to the existing public service delivery system in Rajasthan he

presented that besides adopting service delivery systems directed by ADR, Government of Rajasthan has envisaged in house delivery systems through legislation or otherwise.

Rajasthan Sampark Portal which is an Integrated Grievance Management System undertaken by Government of Rajasthan intends to achieve all important aspects of good governance viz. Robust Delivery System, Transparency, Communication, Grievance Redressal and Sensitivity towards citizens. Sampark Portal is a Single Point of Contact for Grievances Redressal.

He also discussed about e-mitra, unification of various departmental public services under one single umbrella that give citizens of the state "multi- service" "single– window" public service delivery. Providing a hassle free one stop solution to citizens, its increased access to government services, payment of utility bills, government taxes, e- selling of RPSC exam forms etc. Along with this he discussed on e-dhara and e- dharati(old-Apana Khata) by computerization of land records, people can get copy of their land records or may get the mutation done through the system. He also talked about how e- registration changed public perception.

Additionally, he mentioned about the CMIS e-Samadhan to monitor the progress of centrally sponsored schemes and state schemes and to monitor the progress of district level programs and effective monitoring of various departmental works at Chief Minister level.

Besides the central legislation of the Right to Information Act 2005, Government of Rajasthan has enacted two more important Acts for time bound service delivery and time bound hearing. Rajasthan Guaranteed Delivery of Public Services Act (RGDP) 2011 and the Rajasthan Hearing Act. RGDP came into force from 14 November, 2011. It was enacted to ensure the delivery of Public Services to the citizens in a transparent, timely, efficient and

accountable manner. Currently 221 important services of 25 departments are incorporated in the Act. It promoted delivery of certain services to the people of the state by public authority and within stipulated time limits.

Rajasthan is the first and only state in country to enact the Right to Hearing Act. It gives an opportunity of being heard to the citizens within the stipulated time limit and right to get information about the decision made in the complaint.

Apart from the measures adopted in the state for service delivery to the people, Government of Rajasthan has also adopted ' Sevottam'- a project undertaken by the Department of Administrative Reforms and Public Grievances Government of India. Sevottam is a project on 'Capacity Building for Good Governance' and to develop a standardized methodology for bringing about improvements in citizen service delivery and public grievance redress.

It has three aspects. Preparation and implementation of citizen's charter, Public grievance redress system and quality of the process of the department, and improving the capacity of the department to deliver public services. While implementing the project, 21 major departments and 617 officers of the state have been sensitised/ acquainted about the module through workshops and training courses. All the Government Departments in Rajasthan have Citizens' Charter. He concluded the presentation by talking about the challenges and improvements.

SESSION 3

DIGITAL E-SERVICE DELIVERY AND ADOPTION OF EMERGING TECHNOLOGIES FOR DIGITAL TRANSFORMATION

Presentation on National Governance Services Delivery Assessment Framework by Shri V. Shashank Shekhar, Joint Secretary, DARPG, Government of India

UN e-Government Assessment framework is the measurement framework to determine e-Government readiness of the member countries. The (E Government Development Index) EGDI is based on a comprehensive survey of the online presence of all 193 United Nations Member States, which assesses national websites and how e-government policies and strategies are applied in general and in specific sectors for delivery of essential services. The assessment rates the e-government performance of countries relative to one another as opposed to being an absolute measurement. Assessment measures the use of ICT to transform and reform the public sector by enhancing efficiency, effectiveness, transparency, accountability, access to public services and citizen participation in the member countries.

Shri.Shekhar said India breaks into top 100 in UN's E-Government index 2018 and displayed a commendable growth in the Online Service Component of the EGDI score in 2018.

However, improvement in Human Capital Index and Telecom Infrastructure Index were marginal. India was among the top 15 nations in the e-participation sub-index with a score of 0. 955. The objective of the study is to assess States, Union Territories and Central Ministries in their efficiency in e-Governance service delivery.

Focus sectors of the assessment that he discussed are: Finance, labour and employment, education, social welfare, local governance and utility services, environment and fire. Assessment parameters were as follows: A Citizen Survey was conducted to determine the satisfaction levels of

respondents based on their experience in availing e-services from their respective States and UTs. The prime objective of conducting the survey was to understand first-hand experience of respondents to improve the quality of e-service delivery. Insights obtained through the perspective of the respondents will help the departments plug the gaps in the system and streamline the e- service process efficiency. The end goal is to sensitize and promote the adoption of e-governance framework across all departments and ministries in the country.

Presentation on Public Procurement and Startups – Kerala by Shri Sivashankar, Secretary, IT Department, Kerala

Kerala Startup Mission is the apex body of Government for promotion of Technology Startup Ecosystem. It is an autonomous society headed by Hon'ble Chief Minister, Dept of Electronics& IT. Mandated to implement State Startup Policy (under IT Policy), it provides end to end support for developing startup innovation ecosystem with Evangelization, Facilities, Incubators & Accelerators, Funding & Business Development. It also facilitated development and implementation of polices for supporting startup growth Technology, Innovation and Entrepreneurship Policy (2017). Considering government as a market place the early adoption of startup products in government departments made possible the models of procurement, exemption, direct procurement, demand days, Startup Linkage, co-development model, highly innovative products with innovation zones and exemption models with competitive tendering, exemptions for startups and MSMEs , EMD, prior experience, turnover, security deposit, price preference and purchase preference direct purchase, mechanism of procurement, eligibility to participate were also discussed.

He summarized that Government is a large market place. Adoption of Innovative products from startups can lead to a win-win situation. For this there is a need of focused effort for enabling and enhancing the startup procurement within the Government to push the envelope.

Presentation on Permanent Account Number (PAN) Tax Payer Services: A Changing Landscape by Shri Madhukar Kumar Bhagat, ADG(systems), Central Board Of Direct Taxes, Ministry of Finance

The presentation began with the discussion about PAN. Permanent Account Number (PAN) is a unique 10 digit alphanumeric number issued by the Income Tax Department (ITD). Hetalked about PAN Application forms , Form 49A - Indian Citizens / Indian Companies / entities incorporated in India / unincorporated entities formed in India ; Form 49AA - Individuals not being a Citizen of India / entities incorporated outside India / unincorporated entities formed outside India ; Change Request Form and CAF (Common Application Form) for corporates for PAN & TAN. PAN allotment was made possible by ITD since 1995 to 2003, UTIITSL since 2003 till date, NSDL eGov since 2004 till date, PAN Format, Physical PAN Card, Digitally signed E- PANPDF

PAN is required by Indian Citizens / Indian Companies / entities incorporated in India / unincorporated entities formed in India or Individuals not being a Citizen of India / entities incorporated outside India/ unincorporated entities formed outside India.

Recent PAN initiatives include issue of e-PAN for corporates within TAT of 12 minutes and average time of 2-3 minutes as compared to earlier TAT of 4 hours. Issue e-PAN to individuals through Aadhaar based e-KYC within TAT of 4 hours (in business hours) and average time of 2-3 hours as compared to 2-3 days previously, Issue enhanced QR codecapturing biometric as well as demographic information in PDF as well as XML format along with open schema, Facilitate e-PAN to all existing PAN holders (over 37 cr.) through Aadhaar based e-KYC route rather than through Change Request, Provide free of cost address change functionality through Aadhaar based e-KYC mode (under development) Enhance data security by strict compliance to ISO 27000 norms and NIST framework.

He spoke about amended provision for PAN allotment based on Aadhaar. As per the proposed Finance Bill 2019, amendment has been made which states, every person who is required to furnish or intimate or quote his permanent account number under this Act, and who, —

- a. has not been allotted a permanent account number but possesses the Aadhaar number, may furnish or intimate or quote his Aadhaar number in lieu of the permanent account number, and such person shall be allotted a permanent account number in such manner as may be prescribed;
- b. has been allotted a permanent account number, and who has intimated his Aadhaar number in accordance with provisions of sub- section (2) of section 139AA, may furnish or intimate or quote his Aadhaar number in lieu of the permanent account number.";

New PAN project which is a changing landscape that included PAN issuance and change requests, RTPC Mobile application for PAN and TAN Holders, update of address via aadhaar portal (free of cost), centralized grievance handling using various channels and multi-lingual taxpayer support were his other realms of discussion.

Presentation on Adoption of Emerging Technologies for Digital Transformation by Shri T.Mohana Dhas, Deputy Director General & State Informatics Officer, Kerala

Shri T. Mohana Dhas began with the agenda Digital Transformation (DT), Digital Government Technology Platform (DGTP), Emerging Technologies (ET) for DT, Adoption of Technologies for DT, Interoperable Systems and Platforms, Case Studies – IFMS Kerala in Agriculture Portal and Engineering Departments.

He presented that Digital Transformation enables moving from Physical to Digital with use of digital technology platforms and adopts emerging technologies to transform the functioning of government and delivery of services with personalised services to citizen / society.

Digital Technology Platform includes ICT Infrastructure, National Cloud Data Centres, SW Defined Networks, State Data Centres – Near DR and Far DR, BC, Mini Cloud Data Centre (TVM) with Open Stack ,Cyber Security Systems, CERT-IN, CERT-K etc, User Experience and Design Thinking, IT Systems (e-Gov Applications), SMS gateway, Email integration, LDAP, eSign, Digi Locker, Jeevan Pramaan, e-Regha (Mustering), GeM integration, CPP Integration (in progress), NIC DSC signer – browser Independent Plug-in - Available for any State and any e-Gov Provider (Free), IoT and Data Acquisition Systems, Data Exchange Platform & API Gateway, OGD, API, Enabling technologies (SMS, DSC, e Sign etc.), PKI and Encryption Technologies

Technologies for e governance, emerging technologies adoption, multidisciplinary connections of e governance which include artificial intelligence, deep learning and all were the other topics presented.

Resilience that is the ability to prepare for and adapt to changing conditions and withstand and recover rapidly from disruptions include the ability to withstand and recover from deliberate attacks, accidents, or naturally occurring threats or incidents. It is developing a business continuity plan, having a generator for back-up power using building materials that are more durable. Cyber Resilience= cyber security + business resilience is an entity's ability to continuously deliver the intended outcome despite adverse cyber events. Cyber resilience is about managing security with a multi-layered approach that encompasses people, processes, and technology

The presentation concluded with the question of Why Open Government Data? It provided the fuel for innovation – innovative ideas, solutions, systems. It was evidence-based planning

of socio-economic development processes that rely on quality data, is structured data, machine-readable data, raw data and linked data. Enterprise Architecture is a description of the structure and behavior of an organization's processes, information flow, personnel, and organizational subunits, aligned with the organization's core vision, objectives, goals and strategic direction. Integrated e-service platform, 8 different models of IndEA, asset management system, e- treasury, e-kuber, budget expenditure management, work managements in engineering depts., agricultural portal were also discussed.

CONCLUDING SESSION

The concluding Session was chaired by Smt. Neela Gangadharan, Member, ARC and Dr. S. Chithra, Director, IT Mission presented the summation of the national seminar which ended with promising allusions to e-governance.

- i. Transforming Kerala from fully Digitally literate State to fully Digitally empowered State using ICT.
- ii. The most disadvantaged should benefit by e governance through use of technology.
- iii. Leverage the data that various e-governance applications have generated, subjecting them to data analytics, for better policymaking.
- iv. Creation of faceless, paperless and cashless system of governance.
- v. Portability of all public service deliverables across service delivery channels is necessary to avoid duplication.
- vi. Improving the public service delivery, with high levels of personalisation and speedy grievance redressal by using Data Analytics and ArtificialIntelligence.
- vii. Leveraging start-ups for introducing innovation and disruptive technologies in e-governance and citizen service delivery.
- viii. Improving land governance using digital land practices for improving justice delivery systems in revenue courts and adopting best practices from success stories like "Bhudhaar" of Andhra Pradesh, and "Samrakshane" of Karnataka.
- ix. Implementation of public services delivery act brought about significant improvements in grievance redressal, enhancing the state's role in ensuring citizen satisfaction.
- x. Timely publication of e-service delivery assessment will enhance the quality of e-services being delivered.
- xi. Implementation of E-office in a time bound manner to help improve secretariat efficiency and other important institutions.

List of Speakers

- 1. Shri. C.P. Nair, Member, Administrative Reforms Commission.
- 2. Smt. Neela Gangadharan, Member, Administrative Reforms Commission
- 3. Smt. Sheela Thomas, Member Secretary, Administrative Reforms Commission
- 4. Shri. K. Jayakumar, Director, IMG
- 5. Shri. S.M. Vijayanand, Chairman, CMD & Former Chief Secretary, Kerala
- 6. Dr. K.M. Abraham, CEO, KIIFB & Former Chief Secretary, Kerala
- 7. Shri. K.V. Eapen, IAS, Secretary, DARPG, Government of India.
- 8. Dr. Ajay Kumar, Defence Secretary, Government of India
- 9. Shri. V. Srinivas, IAS, Additional Secretary, DARPG, Government of India
- 10. Shri. V. Shashank Shekhar, IAS, Joint Secretary, DARPG, Government of India.
- 11. Smt Kiran Puri, Joint Secretary, DARPG, Government of India.
- 12. Dr. Rajan Khobragade, Principal Secretary, Health & Family Welfare Department.
- 13. Shri. M. Sivasankar, Secretary, IT Department, Kerala
- 14. Shri. Hari Kishore, Executive Director, Kudumbasree, Kerala
- 15. Shri. Satish Jadhav, Director, DARPG, Gol
- 16. Dr. Saji Gopinath, Chief Executive Officer, Start up Mission, Kerala Prof. R. Ajith Kumar, Assistant Professor, IIITM-K
- 17. Dr. Abey George, Social Audit, Kerala
- 18. Dr. S. Chithra, Director, Kerala State IT Mission
- 19. Shri. T. Mohana Dhas, Deputy Director General & State Informatics Officer Kerala
- 20. Shri. Swadheen Kshatriya, Chief Commissioner (Former Chief Secretary) Maharashtra State Commission for Rights to Public Services.
- 21. Smt Ashwini Bhagat IAS, Principal Secretary (Training) & Director, HCM RIPA, Jaipur.
- 22. Shri. Madhukar Kumar Bhagat, Additional Director, General Income Tax (Systems) CBDT, Ministry of Finance.
- 23. Shri. Santhosh Babu, Principal Secretary, Department of IT, Government of Tamil Nadu
- 24. Smt. Reetika Khera, Associate Professor, Humanities & Social Sciences, IIT Delhi.
- 25. Smt. Rachana Srivastava, DDG & HoD (e-Office), NIC, Government of Inidia.

- 26. Shri. Shakeel Ahmed, Project Director, HRMS, Karnatak
- 27. Dr. Manmohan Singh, Special Chief Secretary, Revenue (Land) Department of Andhra Pradesh.
- 28. Shri. Challa Vijaya Mohan IAS (Retd.) Mission Director, BhuSeva Project, Government of Andrapradesh.
- 29. Shri. Anil Agarwal, Head, UMANG
- 30. Shri. Suneel Chabra, Technical Director, DoIT & C, Government of Rajasthan.
- 31. Dr. N. Prabhakar Reddy IAS, Director, Survey Settlements & Land Records Vijayawada.
- 32. Shri. V.V. D. Rao, Sr. Technical Director, NIC (A.P), Vijayawada

List of Participants

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- 2. Shri. S. Subbiah, Principal Secretary (Retd.)
- 3. Shri. Premkumar. V.R,IAS, Director, Survey and Land Records.
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- 14. Shri Arun. M, Consultant, KSDI.
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- 17. Shri Bejjy Appraim, Additional Director, Scheduled Caste Development Department.
- 18. Shri Bhadran. V.K, Scientist G, Group Head (ETG), C-DAC
- 19. Shri Biju. S, Nodal Officer IT, Scheduled Tribes Development Department

- 20. Smt Bindu Sunil Kumar, Senior Technical Director, NIC
- 21. Shri Binu Kumar. N.S, Assistant Section Officer, IT Cell Department
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- 41. Shri Rakesh. A.P, Consultant -TM (Security), E-Governance Team.
- 42. Shri Santhosh Kumar Soman, Senior Consultant-TM (Infra), e- governance.
- 43. Shri Santhosh Talaghatti, Consultant CM/CB,E-Governance Team.
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Recommendations related to e-Governance in previous ARC Reports

Sl.No	Recommendations	Reference
1	Online filing of PARs shall be facilitated to avoid delay in submission of PARs.	2nd Report Vigilance Systems Its Reforms Chapter 9 Para No.9.4.1
2	Considering the critical shortage of qualified faculty, virtual classrooms shall be set up at IMG and all district centers. There should be at least two to three virtual classrooms in each district. Necessary facilities for virtual classrooms can be arranged in DIETs and institutions of IHRD.	2nd Report Chapter 9 Para No.9.8
3	Common web portal shall be developed exclusively for training, wherein all training materials including curriculum, training calendar, details of training institutes, infrastructure facilities, faculty etc shall be provided. Database of civil servants in various departments who attended different training programmes and the topics covered in each programme shall also be maintained. This data and the web portal shall be managed by the proposed Training Division in Government P&AR Department.	2nd Report Chapter 9 Para No.9.15
4	There is critical need for preparing modules of training in line with that of IGNOU courses. This shall be made available to civil servants in Kerala through the dedicated website created exclusively for Capacity Development framework.	2nd Report Chapter 9 Para No.9.17.8
5	IMG shall also explore the possibility of starting Online Certificate / Diploma courses in association with IGNOU and universities in Kerala. MA Development Administration course of Mumbai University imparted to officers of Class B and above in Maharashtra State, through YASHADA is a replicable model.	2nd Report Chapter 9 Para No.9.17.9
6	Document best practices relating to child care and protection adopted in different places by different agencies in Kerala and make it available in the website of the Women and Child Development Department for others replicate /learn from the best practices.	3rd Report Welfare to Rights Chapter 1 Para No.1.5
7	Access to evidence is crucial in the delivery of justice. Interaction between employer and employee is not restricted to physical locations but is increasingly being conducted in digital premises such as e-mail, WhatsApp, etc. The organisational structure and arrangement must be such that evidences such as emails, chat transcripts, CCTV footage, SMS messages, access logs and computer records, etc. should be made available, if so required.	3rd Report Chapter 2 Para No.2.3.2.3

Sl.No	Recommendations	Reference
8	The influx of internet has increased reach of visual media. Steps must be taken to check dissemination of derogatory visual content with the help of cyber police and intelligence wing. The recent phenomenon of threatening and shaming through the social media also needs to be brought under purview of the Act(Indecent Representation of Women (Prohibition) Act 1986). Online abuse of women is one of the most reported cybercrimes in the state. Misuse of personal visual content such as selfies, photographs and videos must be checked. This requires strengthening of cyber cell in the state. There must be awareness campaigns on the dangers of cyber world and social media. Local governments and the Public Relations Department shall organise such activities.	3rd Report Chapter 2 Para No.2.4.1.3
9	The State government may constitute a Committee of experts to assess the possibilities of using information technology for education, vocational training, skill development and employment of PwDs. 3rd Report- Chapter-4 Persons with Disabilities	3rd Report- Chapter-4 Para No.4.4
10	Government should consider establishment of a Resource Centre for rehabilitation of PwDs designed as a single contact point for sharing ideas, research, training, design and capacity building, technology up- gradation enabling functional independence, IT enabled communications, transport and instrumental activities, and start-ups. This is also essential as per section 29 & 30 of the Act which provides for more action plans in the fields of culture, arts and sports. These are areas where more immersive studies need to be initiated for redesigning of cultural, athletic and artistic pursuits. A major institute for rehabilitation & research will help focusing on these disciplines which have not received the attention they deserve. This institute can be established in the National Institute of Rehabilitation at Kallettumkara, Irinjalakkuda, Thrissur District in the premises already available.	3rd Report- Chapter-4 Para No.4.4
11	IT enabled services should be function-driven wherever possible. Quite often, PwDs would be helped by small addition or enhancement of technology, like sensor operated lights and/or door openings.	3rd Report Chapter-4 Para No.4.4
12	Government shall give directions to all HoDs to compile the full text of updated Special Rules with Malayalam version; and publish it in the website.	4th Report Personnel Reforms Chapter-1 Personnel Administration Acts, Rules and Manuals Para No.1.14(v)

Sl.No	Recommendations	Reference
13	Application for transfer and its processing shall be done online and linked to SPARK.	4th Report Chapter-2 Recruitment and Cadre Management Para No.2.8(x)
14	The process of developing customized modules in SPARK is in progress. The Spark Payroll System (SPARK) can be utilised for ensuring effective use of technological advances in recruitment. ARC suggests linking Spark Payroll System (SPARK) to the IT system of Government. There should be a module written in SPARK that will assess vacancies arising in government and predict the chain of promotions and estimate the resulting vacancies to be reported to PSC.	4th Report Chapter-2 Para No.2.19(v)
15	SPARK shall be developed in to a complete HR and payroll package. A proper and scientific review of the SPARK system should be done by a professional agency outside the National Informatics Centre (The NIC has done an excellent job in developing the software for SPARK – but a review by NIC of their own software may result in an inadequate weighing of the functionality vis-à-vis best practices elsewhere).	4th Report Chapter-3 SPARK and Service Matters Para No.3.2(i)
16	Vacancy position and data on sanctioned strength of each category of post shall be generated using SPARK.	4th Report Chapter-3 Para No.3.2(ii)
17	Online transfer module shall be developed in SPARK and rolled out to all departments.	4th Report- Chapter-3; Para No.3.2(iii)
18	Module for processing all GPF related matters shall be developed in SPARK.	4th Report- Chapter-3; Para No.3.2(v)
19	Online facility for Report of Transfer of Charge (RTC) shall be made available in SPARK.	4th Report- Chapter-3; Para No.3.2(vii)
20	Government shall consult AG on the possibility of integration of SPARK with GEMS (Gazetted Entitlements Management System) to streamline issuing of pay-slip on transfer, promotion, etc.	4th Report- Chapter-3; Para No.3.2(viii)

Sl.No	Recommendations	Reference
21	SMS alerts for all transactions in TSB accounts shall be facilitated.	4th Report- Chapter-3; Para No.3.2(ix)
22	Online leave management system shall be introduced in all offices and organisations in Government. Applications for leave, its process, approval and rejection, etc. shall be done through online leave management system.	4th Report- Chapter-3; Para No.3.4(i)
23	The attendance monitoring and leave management system shall be linked with the payroll administrative system. Attendance monitoring system has been linked with SPARK in Government Secretariat. This shall be extended to all departments within a fixed timeframe.	4th Report- Chapter-3; Para No.3.4(ii)
24	Meetings of field staff shall be conducted on fixed days. Information in this regard shall be made available on the website. Use of information technology enabled services (ITES) and Video Conferencing shall be encouraged, as far as possible, to reduce absence of employees from the offices.	4th Report- Chapter-3; Para No.3.4(v)
25	Bio-metric Attendance Monitoring System shall be extended to all offices and in operation immediately.	4th Report- Chapter-3; Para No.3.8(v)
26	In order to reduce/minimise travel, official meetings and conferences shall be conducted through video conferencing. Use of latest communication technologies shall be adopted for dissemination of information so that usage of vehicles for delivery of letters, documents and other communications can be minimised.	4th Report- Chapter-4 Office Infrastructure & Facilities for Staff; Para No.4.7(vi)
27	A single digital file processing application shall be developed for Secretariat, departments, autonomous institutions, local bodies and other offices under Government.	4th Report- Chapter-5 Accountability; Para No.5.14(iv-a)
28	All official documents shall be in plain and simple language to make them citizen-friendly. Information shall be made available through electronic and print media as well as online portals and on mobile phones. Application of m-governance is one of the best ways of bringing the Right to Service Act, 2012 to people.	4th Report- Chapter-5; Para No.5.14(vi)
29	ARC recommends integration of various e-governance systems and web portals in to a single portal for effective service delivery and monitoring	4th Report- Chapter-5; Para No.5.14(vii)

Sl.No	Recommendations	Reference
30	Best practices and innovations in jobs shall be recognized. ARC recommends that meritorious services rendered by the employees shall be recognised through a citation/certificate. A system of outcome assessment coupled with output measurement has to be developed for every responsibility prescribed in the job description/job profile. In the present context of technological advancements, the quantity and quality of work done by an employee can be analysed using IT tools to ensure objectivity. The rewards and incentives shall be made free from all extraneous/political influence.	4th Report- Chapter-5; Para No.5.14(xii)
31	Duties and responsibilities of each employee shall be clearly outlined and published in electronic form and shall be disseminated to create awareness among employees, stakeholders and the public about duties and responsibilities of each employee. This can reduce the opportunities for exerting extraneous influence, and dissuade the employees from succumbing to such influences.	4th Report- Chapter-5; Para No.5.22(i)
32	Punching system shall be linked to SPARK in all the departments and deductions in leave account/emoluments shall be done compulsorily.	4th Report- Chapter-6 Discipline and Disciplinary Proceedings; Para No.6.11(v)
33	Data base of details of employees on LWA shall be maintained and linked to SPARK.	4th Report- Chapter-6; Para No.6.11(xi)
34	Personal record of every employee shall be digitised and kept up to date as a dossier by the concerned sections. This dossier shall be maintained as a module in SPARK. Number of the dossier may be same as PEN. The record shall also include information on disciplinary cases and recovery proceedings.	4th Report- Chapter-7; Para No.7.4(ii)
35	As part of its accelerated implementation of e-governance initiatives, Government may consider introduction of a digital Family Register (FR) accessible to notified officials/offices of the government. Head of household can update information of the family in the register through a secure online process. This will eliminate distress of people to a great extent, and the cumbersome procedures and related delays in other offices/ departments. Database of families maintained by Civil Supplies department for issue of Ration Cards could be used as base data for creating Family Register. After the roll out of Family Register family number on the card can replace the use of ration card.	5th Report- Towards People Centric Service Delivery Chapter-2; Land Revenue, Survey & Land Records Department; Box 2.5

Sl.No	Recommendations	Reference
36	Information related to the services of the land revenue department, which is now available in three websites (Land Revenue department, e-district and Akshaya), shall be integrated and provided in one portal with provision for access from any portal. ARC recommends that online services of the state government shall be available in a single portal as people may not always be aware about the department which delivers the service. At present, most of the information about services in the websites are available only in English. ARC recommends that all relevant information regarding all services shall be made available in Malayalam also.	5th Report- Chapter-2; Para No.2.4(v)
37	Uploading of the same supporting document each time a person seeks a service from the state government shall be dispensed with immediately. Government shall create a repository of documents submitted by people for availing services and this shall be accessed for subsequent applications received by any government department. This will mitigate hardships of the service seeker to a great extent and reduce the transaction cost of submitting application for services of the government. Workload of the Akshaya centres can be reduced through this decision enabling them to be more efficient in the delivery of services.	5th Report- Chapter-2; Para No.2.4(vii)
38	Akshaya staff shall be given necessary training with regard to services of various departments and Manual containing all necessary information and Standard Operating Procedures shall be made available to them. This will help in reducing errors in data entry and increase the speed of service delivery. There shall be a provision in the portal for automatic checking of errors.	5th Report- Chapter-2; Para No.2.4(ix)
39	Acknowledgment receipt with expected date of service delivery shall be issued on submission of applications, irrespective of whether it is applied online or offline. Integration of offline applications with the online system needs to be done for effective tracking of the service processes.	5th Report- Chapter-2; Para No.2.4(xi)
40	Government aims to deliver more of its services through use of information technology and e-governance solutions. Even ensuring effectiveness of service delivery through solutions already in use will require uninterrupted power supply and internet connectivity with sufficient bandwidth in the offices. Government needs to ensure that all computers, printers and UPS have valid maintenance contracts.	5th Report- Chapter-2; Para No.2.4(xiii)
41	License to Akshaya centres shall be renewed only after ensuring that service standards are met with respect to internet connectivity, power backup and work load that the centre can handle. There shall be a grievance redress system to register complaints against Akshaya centres. Revoking the license of poor performing centres or imposing penalties shall also be considered.	5th Report- Chapter-2; Para No.2.4(xiv)

Sl.No	Recommendations	Reference
42	The average number of Akshaya centres per village is less than two. Given that the villages in Kerala are large in size, this network is not sufficient to provide easy physical access to online services of the government. There is also a concentration of centres in more urban/ developed areas. Possibilities of opening service delivery kiosks in public sector office premises as seen in Madhya Pradesh (See Box 2.6) and doorstep delivery of people services through linkages with private providers by the Delhi Government (See Box 2.7)shall be explored. Government shall also explore the possibility of notifying other village level entities as service providers or increase the network of Akshaya centers.	5th Report- Chapter-2; Para No.2.4(xv)
43	Government shall enforce that reports of VO (Village Office)are sent to TO (Taluk Office) or other offices by email or by uploading the report instead of the present practice of submitting the same in person by the VO staff.	5th Report- Chapter-2; Para No.2.4(xvii)
44	Major delay in issuing of legal heirship certificate is the procedure of publication in Gazette before issue of certificate. It is seen that no value is added by this procedure. Government needs to consider adopting the procedure of publication in the website of the department, notice board of offices and ration shops in the locality, in place of publication in the Gazette	5th Report- Chapter-2; Para No.2.4(xviii)
45	Facility for payment of fees and submission of applications online in case of services of DD/AD Survey office needs to be provided. When the document is ready, the applicant shall be informed via mobile message. People shall have the option to receive the document online, directly from the office or by mail.	5th Report- Chapter-2; Para No.2.4(xxii)
46	File management system in the offices of the Survey department shall be strengthened. Digitization of records and computerization of file movement with online tracking facility will ease pressure on the staff by reducing search time and reduce hardships of the people. Until such a system is in place, a system of classifying files on the basis of survey/re- survey number shall be put in place for systematic retrieval of files and scheduling of field visits.	5th Report- Chapter-2; Para No.2.4(xxiii)
47	The digitization of re-survey records shall be done along with the re- survey process. Timely updating of changes in the extent of boundaries of land shall be done in the map when any transaction of land is done.	5th Report- Chapter-2; Para No.2.4(xxiii)
48	Process for online submission of registration details shall be simplified and made people friendly. Once the document writing itself is simplified, details required for online application will also be reduced. Rather than expecting people to enter information in all the fields, entry for certain fields shall be automated.	5th Report- Chapter-3; Registration Department; Para No.3.4(iii)

Sl.No	Recommendations	Reference
49	Different websites of the department shall be integrated and all required details shall be available to people at one place, in easily accessible format. Regular updating of all changes, including on process shall be included in the website. The websites shall be dynamic forums.	5th Report- Chapter-3; Para No.3.4(iv)
50	Even after increased adoption of e-governance and online delivery of services, option for offline application shall continue till efforts of Government to empower all people to access services online is successful. To ensure effectiveness of offline facility, service systems such as application forms, personnel and system to receive, acknowledge and process the applications, etc. shall be clearly defined and in place.	5th Report- Chapter-3; Para No.3.4(v)
51	The system of use of filing sheet during registration shall be replaced by scanning the original document and storing soft copy. This shall be done at the time of registration itself. If hard copies are mandated, photostat copies shall be kept. People should be able to print them as certified copy of the document with digital signature of the Sub Registrar. This will ensure that there will be no errors while copying and will prevent tampering of original documents. It is also an authentic copy of the original. Once these records are stored digitally, search fee component of the fees for certified copy can be reduced or eliminated as "search" service shall not be required and people can download the document from the digital repository on their own.	5th Report- Chapter-3; Para No.3.4(vii)
52	Measures to expedite the digitization process needs to be taken. Specific phased timelines shall be fixed and necessary systems shall be put in place to ensure that targets are met. As of now, the first page of a document registered in 2019 can be seen by the people by searching online. However, payment of fees for the document is not possible as the subsequent pages are not accessible. If the documents are scanned and stored as soft copies, the same could be printed out by the people themselves. This would also facilitate online payment of a prescribed fee, during the time of application.	5th Report- Chapter-3; Para No.3.4(x)
53	Currently digital signature of the Sub Registrar is applicable only for encumbrance certificate. If the same is applicable for certified copies as well, people can take copy when they require. Facilities for online payment such as e-pos machines shall be made available at the SROs or payment interface needs to be evolved.	5th Report- Chapter-3; Para No.3.4(xii)
54	As in the case of e-stamp for stamp duty of higher denominations, e-stamp for lower denominations shall be implemented as getting lower denomination stamp paper is a hindrance and affects people centered service delivery.	5th Report- Chapter-3; Para No.3.4(xiii)

Sl.No	Recommendations	Reference
55	Technical issues such as poor network connectivity, power failure, non- availability of generator and inadequate UPS backup needs to be resolved at the earliest. High speed internet connectivity as well as adequate power backup shall be ensured across offices. All computers and peripherals shall be covered by Annual Maintenance Contract (AMC), and it shall be ensured that timely servicing and repairs are undertaken.	5th Report- Chapter-3; Para No.3.4(xiv)
56	A common IT protocol shall be developed for the departments dealing with land, namely Registration, Revenue and Survey departments, in which usage of same software and seamless service shall be mandated. A software most suited for the needs of these departments and for proper integration of land ownership rights shall be adopted.	5th Report- Chapter-3; Para No.3.4(xix)
57	The present system of issuing ration card by filing of online application, printing and uploading of scanned copy and submission of printed copy to TSO is cumbersome and not people centric. Government needs to make the service people friendly.	5th Report- Chapter-4; Food & Civil Supplies Department; Para No.4.5(i)
58	When a person submits an application online, the system shall generate the date and time for collection of the ration card. A system needs to be put in place by which people can opt a date convenient for them to visit the TSO to collect the ration card, as is done in the case of generation of token for registration in the registration department.	5th Report- Chapter-4; Para No.4.5(ii)
59	The number of people who use online application platform for ration cards is limited as the procedure of downloading application forms and uploading it again after putting signature is cumbersome. The procedure of authenticating by signature may be dispensed with by using Aadhar details.	5th Report- Chapter-4; Para No.4.5(iii)
60	The ration shops are now expected to be involved in processing of services, as in Aadhaar seeding. Increased utilisation of the ration shop network shall be done to bring the administrative machinery closer to the people, than asking people to come to the offices. Ration shops can serve as information hubs; facilitate processing of applications, serve as delivery points of ration cards, etc. The feasibility of such an option shall be examined.	5th Report- Chapter-4; Para No.4.5(vi)
61	Proper evaluation of service delivery as per RTS parameters is possible only when the time taken is assessed from the date when a person applies online. When a person submits application online, it shall also be registered in the system at the TSO and monitoring of the performance on RTS parameters shall be done accordingly.	5th Report- Chapter-4; Para No.4.5(vii)
62	While the move towards an e-ration card is welcome, it needs to be mentioned that it is not only to get a ration card that people have to visit the TSO but also to rectify errors in it. Quality of the e-ration card, in terms of elimination of errors needs to be ensured.	5th Report- Chapter-4; Para No.4.5(xiv)

Sl.No	Recommendations	Reference
63	Though the civil supplies department has successfully implemented e-governance processes with respect to the rationing system, the same cannot be said about ration card services. The support provided by the department to the people on application process through the website, is poor. There shall be Standard Operating Procedures and a manual for availing all services and people shall have access to it. It shall be in English and Malayalam with illustrative description of different steps in the application process. There shall also be an option to check whether the application is complete and ready for processing.	5th Report- Chapter-4; Para No.4.5(xix)
64	It is to be ensured that service delivery is not affected due to network issues. It is reported by officials that network issues are observed more often in remote areas with poor internet connectivity. It is likely that households in these areas (hilly areas) already face access issues viz. distance to the ration shop maybe more than in other areas. In such areas it shall be ensured that people do not have to make repeated visits to get ration articles for the reasons of electricity failure and poor quality of network. A best practice reported was the linking of the E-POS in a shop in a remote area (Ayyampuzha Plantation) with earth-net provided by BSNL following the intervention of the concerned TSO.	5th Report- Chapter-4; Para No.4.5(xxiv)
65	With real time updating of ration intake, it is easy for the department to assess the pattern of people behaviour in buying rations, i.e. the phase when most people buy their rations and increases the load on the server. Required technical support shall be provided centrally to handle overloads and address network issues.	5th Report- Chapter-4; Para No.4.5(xxv)
66	Alternate measure to biometric scan such as iris scan shall be implemented in all ration shops. Currently, it is done on a pilot basis in few shops.	5th Report- Chapter-4; Para No.4.5(xxvi)
67	Linking of E-POS machine with weighing scales shall be expedited to prevent leakages.	5th Report- Chapter-4; Para No.4.5(xxviii)
68	There is a move towards e-governance through the Thuna portal. Public response to such initiatives is limited, so far, indicative of need for better promotion of such initiatives. Appropriate advertising/promotional campaign needs to be designed and implemented by the department to increase public awareness about people oriented programmes such as Thuna. Communication through newspapers, FM radio, cinema theatres, TV, social media, hoardings at prominent places etc., shall be done along with attractive, eye catching and interactive posters in all police stations and public places such as railway and bus stations, markets, schools, etc.	5th Report- Chapter-5; Police Department; Para No.5.4(vi)

Sl.No	Recommendations	Reference
69	It is necessary that the people be informed about the status of their petition. Though the petition status can be known online on iAPS, it is yet to become popular. Promotion and awareness activities need to be intensified, as said earlier. People, when they come to register their application shall also be given a demonstration on how to search status of their petition.	5th Report- Chapter-5; Para No.5.4(vii)
70	While registering any type of case in Thuna, a system for providing the details through SMS to the mobile number of the petitioner/people should be made. There needs to be a facility for providing phone number of the official in charge of a petition to the petitioner enabling them to contact the official and enquire about the status of petition, in cases where petitioner is not able to access information from the portal. The same could be provided on the acknowledgment receipt for the petition registration.	5th Report- Chapter-5; Para No.5.4(viii)
71	The transition to online processing of applications and cases needs to be expedited. The need for maintaining so many registers in the police station shall be studied. Change over to a digital system with maintenance of minimum needed records shall be done without delay, freeing up time for core duties, especially in the absence of ministerial staff and proper storage space in the police stations.	5th Report- Chapter-5; Para No.5.4(ix)
72	Allegations of corruption is widespread. Detection of traffic offences needs to be done through use of technological solutions and fines and fees shall be collected only through online payment facility. This is now done in a limited way and needs to be rolled out throughout the state for all vehicle users.	5th Report- Chapter-5; Para No.5.4(xi)
73	All the stations shall be properly equipped in terms of computer infrastructure, network connectivity and trained personnel to handle e-services for ensuring effectiveness of envisaged initiatives. An official shall be given exclusive charge of handling online services, without entrusting any other duty at the police station. All officials shall be given proper training as service delivery progresses toward technology driven solutions. Regular updating of technology, imparting training for updating skills and knowledge of officials on changes happening across the world, shall be undertaken. Regular training is necessary in the changing nature of crimes, transition from conventional methods of service delivery and investigation and technology-based services. Proper training modules shall be prepared for use in induction and refresher trainings.	5th Report- Chapter-5; Para No.5.4(xv)
74	Deficiency in the capacity of Police personnel in local stations for implementation of e-governance initiatives are noticed and is a major reason for poor take off of e-governance initiatives. One of the criteria for eligibility of transfer to local police shall be clearing atest on computer awareness and use of ITES during training.	5th Report- Chapter-5; Para No.5.4(xxiv)

Sl.No	Recommendations	Reference
75	Fisherfolk need to be empowered to avail services online. End to end technology solutions need to be developed for remittance of dues, availing benefits, and accessing information. e-Literacy will enable their inclusive development	Sixth Report- Welfare to Rights- II; Chapter -1 Fisherfolk; Para No.1.4.15
76	Signing of any document by the STs shall be done before reliable witnesses. They shall be assisted to take informed decisions. The purpose for which their consent is given needs to be made clear to them, whether it is implementation of a right or giving up certain privileges for alternative benefits. Entire process of transaction needs to be digitally recorded / video graphed and properly maintained to prevent malpractices.	Sixth Report - Chapter -2; Scheduled Caste and Scheduled Tribes; Para No.2.2.3.4(iv)
77	The Commission recommends that in the current scenario facilities for online education need to be made available in slums at individual/ household and community levels.	Sixth Report - Chapter -3; Slum and Colony Dwellers; Para No.3.2.3.4(iv)
78	Government shall take steps to build a dynamic database of street dwellers with provisions for updating at regular intervals and a system for overall updating at intervals to be decided by government. The database will enable government to study composition of the street dwellers, their issues and will help in identifying areas that require intervention- drugs (consumption and sale), gender issues, problems faced by the elderly and the children. Data needs to be accessible/ sharable to all decision makers and stakeholders as per security protocols decided by government	Sixth Report - Chapter -4; Street Dwellers; Para No.4.4.1(I)
79	It is proposed that features of the PRICE software be expanded to allow departments to store documents online, in a central repository. It needs to be made necessary to upload feasibility reports, DPRs, bid documents etc. at each stage of the process to proceed with the next stage. As mentioned earlier, as more data becomes available on an online platform, monitoring the quality of documents by the departments will become doable.	Seventh Report-Public Infrastructure Development & Management; Chapter-3 Recommendations; Para No.3.1.3
80	ARC recommends that an IT based centralised system of monitoring need to be adopted. It will enable officers at the field level to carry out project execution responsibilities with the confidence that delays, if any can be resolved at the monthly review meeting chaired by an officer.	Seventh Report- Chapter-3; Para No.3.4

Sl.No	Recommendations	Reference
81	 ARC recommends that Quality Control practices included in the PWD manual needs to be implemented in letter and spirit. This will, as mentioned in section 3.4 require installation of a suitable IT solution with the following features: Allows contractors to login and raise requests for site inspections by teams of government. Online confirmation of dates of site inspection by government officials. Online uploading of all QC lab results, both scanned copies and entry as editable text, to enable central monitoring and automatic flagging of deviation values. Online approval of QC reports by officials before payment is released to the contractors. 	Seventh Report- Chapter-3; Para No.3.5
82	IT based review system which enables the official responsible for maintenance to ticks off boxes and certifies on a monthly basis that the checklist has been completely adhered to needs to be put into place to ensure that the officer responsible carries out maintenance as per plan. This can be supplemented by uploading a defined number of photographs to ensure cleanliness of premises and facilities.	Seventh Report- Chapter-3; Para No.3.6(2)
83	Empowering People: People can be easily involved and empowered through IT solutions that allows them to photograph or video record complaints and share it with a centralised government call centre/ MIS centre (the complaints can also be segregated by department and made available to each Secretary). Once the complaint is logged into the system, a 'complaint registration date' becomes known. Compliance of the complaint is again the responsibility of an officer at the field level, who will address the complaint and close the complaint on the IT system. This system is the default system that is being used by all private service providers (D2H, telecom, consumer durables etc.). The closure report filed by the officer can then be verified through a random IVRS based system where audit calls are made to the persons to verify if they are satisfied with the complaint. The entire system can be run at an extremely low-cost using technology.	Seventh Report- Chapter-3; Para No.3.6(5)
84	ARC recommends that government shall develop a digital platform for coordinating and monitoring related activities by all concerned agencies. Coordination of all related agencies needs to be ensured by government to prolong the life of roads by avoiding digging of roads immediately after completion of road construction/road improvement. Concerned officials shall be held accountable for lack of coordination and failure in monitoring.	Seventh Report- Chapter-4; Roads; Para No.4.6.1(5)
85	Constraints/ insufficiency of personnel for monitoring and supervision of projects diminish quality of the projects and cause delays. ARC recommends to government to overcome the issue of shortage of human resources through, restructuring of technical cadre of the departments, process reengineering, increased use of digital/IT solutions and adoption of latest technologies in the construction sector.	Seventh Report- Chapter-4; Para No.4.6.2(1)

Sl.No	Recommendations	Reference
86	ARC recommends that Public Works and Local Self-Government departments needs to take action within three months for systematic updating of information of all civil infrastructure and prepare a comprehensive database of assets. If the departments find it difficult to collect and compile the data, outside agencies may be assigned to do the work as a one-time assignment. Possibility of entrusting the work to engineering colleges may be explored. Subsequent updating and maintenance of the data base/register shall be done by PWD/LSGD. Departments whose assets are mapped shall be given access to the data. Required training needs to be given for preparation, use and maintenance of the data using information technology tools. The departments can have common software for updating details of assets. All activities related to assets including improvement, additions, maintenance etc shall be linked to the digital Asset Register. Additional details like future development required, land details etc. also need to be incorporated in the Asset Register.	Seventh Report- Chapter-5; Infrastructure – Development and Management; Para No.5.8(3)
87	Similar to management of all government land by Land Revenue department, all government buildings with various departments needs to be managed by PW department. Power, water, and IT installations in these assets also needs to be the responsibility of PWD. Custody of the buildings may remain with the concerned departments itself. But maintenance of these assets or additions needs to be done through the PWD. PWD shall maintain updated data with relevant details of all the government buildings in a digital platform to be shared with concerned departments, prepare annual maintenance plans as per PWD Manual and carry out maintenance without any deviation from the prepared maintenance plan.	Seventh Report- Chapter-5; Para No.5.8(5)
88	Farmers Data bank and e-payment facility need to include all allied departments such as Animal Husbandry, Dairy Development, Fisheries etc. Separate data bank for each department is not required. A comprehensive web portal as a subset of Kerala Government portal may ease workload of officers at the grass root level and give them time for promotional, enforcement and allied responsibilities.	8th Report- Sustainable Development Governance Issues; Chapter-1 - Agriculture, Fisheries, Biodiversity, Forests; Para No.1.1.3(v)
89	Projects/schemes implemented by LSGIs need to be limited to development of common facilities for agricultural production and marketing. Individual beneficiary projects/schemes shall be limited to required minimum and ensured that beneficiaries are selected through a transparent process with the assistance of IT tools. Application of IT for various functions of the department, especially functions of repetitive nature will reduce workload of the departments to a great extent	8th Report- Chapter-1; Para No.1.1.3(viii)
90	Online database of State PCB on waste collection, disposal needs to be made more efficient.	8th Report- Chapter-2; Para No.2.3(xxxv); Waste Management, Pollution, Health and Sanitation

Sl.No	Recommendations	Reference
91	Systems need to be strengthened to check illegal actions of officials including acceptance of bribes, to avoid harassment and ensure protection of honest officials. Transparency in the functioning of the department through use of IT tools shall be done. Transparency in the functioning of the department needs to be ensured through increased use of IT tools.	8th Report- Chapter-3; Energy, Industries, Infrastructure and Tourism; Para No.3.4.3(iii)
92	Mining department shall access data of vehicles registered in the country through web service of Motor Vehicles Department to make the process of obtaining e-pass easier for vehicle owners and avoid enrolling vehicles in the Mining Department portal for ePass by the lorry owners.	8th Report- Chapter-3; Para No.3.4.3(iv)
93	Development of Information Technology solutions for the department needs to be time bound in the scenario of fast paced developments in the state. Government needs to capacitate IT Mission to take the lead role in coordination and development technology solutions for all departments including the department of Mining.	8th Report- Chapter-3; Para No.3.4.3(viii)
94	ARC recommends that government needs to ensure availability of all relevant data on a common platform for easy access of all concerned government departments/agencies and other stakeholders. A state web portal on water resources and its conservation in line with www. indiawaterportal.org may be developed for this purpose.	8th Report- Chapter-4; Water; Para No.4.5(v)
95	Ground water department needs to take urgent steps to complete collection of data on bore wells and upload the data on the web portal for water resources, suggested above. This will assist in monitoring and speeding up the registration process of bore wells.	8th Report- Chapter-4; Para No.4.5(xv)
96	Digital environmental database needs to be created and made available online to support decision making and improve transparency.	8th Report- Chapter-5; Climate Change and Disaster Management; Para No.5.4
97	India Disaster Resource Network (IDRN) provides country specific information, which needs to be customised to state specific needs and language. The database shall be updated once in 6 months.	8th Report- Chapter-5; Para No.5.4
98	GIS based digital spatial-temporal database and information system as mandated in the Wetlands (Conservation and Management) Rules, 2017 needs to be developed and shared with all stakeholders and the people.	8th Report- Chapter-5; Para No.5.4

Sl.No	Recommendations	Reference
99	Conventional method of submission of audit reports and replies needs to be replaced by technology aided methods for communication, evidence taking, and giving on the spot recommendations.	9th Report- Accountability and Public Grievance Redress Mechanisms in Government; Chapter-1; Accountability; Para No.1.3(viii)
100	ARC recommends that the application software 'Sankhya' developed by IKM is deployed to all LSGIs and its full potential utilised.	9th Report- Chapter-1; Para No.1.3(xiii)
101	Government may consider publishing all Audit Reports- AG Audit and State Audit, in the departmental websites and relevant portions of the report of an office on the notice boards.	9th Report- Chapter-1; Para No.1.3(xiv)
102	District Purchase Committees which are currently non-functional needs to be strengthened. Reporting by departments on status of purchases needs to be ensured. This shall be initiated by developing a suitable online system for reporting.	9th Report- Chapter-2; Internal Audits and Inspections; Para No.2.5(xi)
103	Facility for online registration of complaints needs to be made available in all grievance redress institutions. Commissions and other grievance redress mechanisms in the state needs to develop online portals for this purpose.	9th Report- Chapter-3; Public Grievance Redress; Para No.3.6(i)
104	ARC recommends to undertake wide publicity through state, regional and local media as well as through digital media to create awareness regarding grievance redress mechanisms among people, particularly among vulnerable and marginalised groups of people including women, persons with disability, scheduled castes, scheduled tribes and people living in remote areas of the state. Periodic advertisements in media, publishing and distribution of bulletins, pamphlets on the organisations, and publishing relevant information on the website of the organisations etc., needs to be done.	9th Report- Chapter-3; Para No.3.6(iv)
105	Separate or common Websites needs to be developed for the commissions/ombudsman. This can be a common web portal with links to each organisation or separate for each. Provisions for registering complaints, tracking complaints, facility for online payment of fees and provision for downloading relevant documents/judgments needs to be provided on the website. It is preferable to exempt Tribunals from charging fees. Government may consider exempting payments from service charges. Possibility of developing mobile applications also needs to be explored.	9th Report- Chapter-3; Para No.3.6(xviii)
Sl.No	Recommendations	Reference
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106	Categorisation of grievances/petitions based on subjects needs to be done with the assistance of Information technology tools. This is essential for identifying reasons for grievances and their redress by amending rules / regulations / procedures and through policy initiatives, if necessary.	9th Report- Chapter-3; Para No.3.6.1 A(ii)
107	The Information Commission needs to establish a website in Malayalam by linking all the government departments/institutions and PIOs. Facility for online submission of applications and payment of fees shall be provided and government may consider exempting the fee from service tax. All applications received may be published on the website as a public document to avoid black mailing and repeat submissions. To ensure the responsibilities of the public authority as specified in section 4, all information about an organisation shall be published on the website. Adalaths may be organised to clear pending applications.	9th Report- Chapter-3; Para No.3.6.1 C(i)
108	There is alarming increase in internet related crimes against women. The Kerala State Women's Commission needs to be enabled to access services of experts in cyber security.	9th Report- Chapter-3; Para No.3.6.1 E(ii)
109	Website to be designed and provision for online tracking needs to be included by the Ombudsman for Local Self Government Institutions.	9th Report- Chapter-3; Para No.3.6.1 H(i)
110	Support of government and NIC needs to be ensured to enable KAT in increased use of ICT for benefit of its stakeholders.	9th Report- Chapter-3; Para No.3.6.1 K(ii)
111	LSGD need to take steps to ensure that the entire process from submission of application for permit to allotment of building number and issuance of occupancy certificate online, so that people need not make repeated visits to LSGI office. LSGD shall examine whether a modified version of 'Suvega', implemented on pilot basis in Kozhikode Corporation for processing applications for building permits can be used for the same in all LSGIs. It will also facilitate access to officials to these documents in the field during inspection. The shift from a system of having many documents (to be submitted in triplicate) to a digital, paperless system will make matters easier not only for the people, but also for the officials. It will also reduce file build-up in the office.It may be noted that the Ministry of Environment, Forests and Climate Change of Government of India permits online submission of applications and supporting documents for environmental clearance of projects (a greater number of documents are to be uploaded than in the case of building permit).	10th Report-People Centric Service Delivery in Local Self Government Institutions; Chapter-1; Service Delivery Of Local Self Government Institutions; Para No.1.5(11)

Sl.No	Recommendations	Reference
112	The Commission recommends that the provision of online meetings shall be continued even after the pandemic situation is over as it is found that there is increased attendance of beneficiaries in online meetings vis-à-vis physical meetings in AWCs. Measures shall also be taken to make these meetings and classes more interactive. Requirements of the participants need to be assessed and sessions arranged accordingly. Topics and timing of classes/meetings shall be decided in consultation with the beneficiaries. e-Resources shall also be shared on the virtual platforms accessed by the AWC beneficiaries. The beneficiaries shall be connected with AWCs through social media platforms.	10th Report- Chapter-2; Para No.2.3.3(10)
113	LSGI and other supervisory offices such as DMO shall ensure that meetings are conducted through video conferencing/other online platforms, as far as possible to ensure that provision of services are not hindered by the absence of the officials. It also needs to be ensured that online meetings are scheduled without causing disruption to services to be provided. Delegation of more administrative and financial authority to implementing officials will assist in limiting the number of meetings.	10th Report- Chapter-2; Service Delivery Of Selected Transferred Institutions; Para No.2.4.3(5)
114	Thorough revamping of the office administration in Krishi Bhavans including office procedures, filing system, documentation and record keeping and processing of applications needs to be done without any further delay. Use of mobile apps and other online platforms shall be adopted for accepting applications for services. Adoption of IT enabled processing of applications will enable officials of the Krishi Bhavan to process applications even when they are in the field. Integrated software suite for gathering and organising data, like ERP shall be adopted for Krishi Bhavan. This will be more effective for monitoring the functioning of Krishi Bhavan by LSGI and the department. To put this into effect, Agriculture department shall conduct a study to streamline the functioning of Krishi Bhavans and focus on reducing the time required for office work.	10th Report- Chapter-2; Para No.2.5.3(1)
115	Database for various schemes shall be integrated to avoid the need for submitting supporting documents along with applications each time a service is sought, even if it is for the same land/crop. This shall reduce workload of the farmers as well as officials in administering schemes of the agriculture department and LSGI. The integrated database shall be accessible to Krishi Bhavan and LSGI officials.	10th Report- Chapter-2; Para No.2.5.3(2)

Sl.No	Recommendations	Reference		
116	The Commission recommends that information dissemination through Krishi Bhavan needs to be made more effective through better use of social media platforms and use of information dissemination mechanisms available with the LSGIs. Rapid spread of mobile phones and social media offers opportunities to improve service delivery to small and marginal farmers. Mobile phones could be particularly useful in extending the reach of services by facilitating communication that is not restricted by distance and time. Information on crop insurance, markets, price, plant varieties, pest and disease management, calendar alerts, farm inputs, soil nutrients, fertiliser application can be communicated more effectively. Messages to famers about schemes, good practices, changes in knowledge and technology and services of Krishi Bhavan and location specific information related to agriculture can also be communicated through these platforms. Response to famers' questions can also be provided. However, information shall also reach those farmers who are not able to use such platforms, through conventional methods of communications. A register of all farmers with their address, phone numbers and WhatsApp numbers (if available) needs to be prepared in all Krishi Bhavans to facilitate the same.	10th Report- Chapter-2; Para No.2.5.3(7)		
117	ARC recommends that RTS time norms for getting test results from the Krishi Bhavan needs to be reframed for faster delivery of results. Given the technological options available for soil analysis and communication, the test results could be communicated much faster, say within 3 days if not in lesser time. There is also need for a mechanism to update the farmers about the status, i.e., when the sample is forwarded, test conducted and the results through SMS, WhatsApp messages, emails or other online communication methods. But considering the issues faced by large number of farmers in accessing online communication, there should be an option for speedy delivery of the test results at door steps rather than asking the farmer to visit the Krishi Bhavan to receive the results. Mobile sample collection units/soil testing laboratory at the Block level with specific dates for collection of samples from each LSGI, can greatly improve usefulness of the service.	10th Report- Chapter-2; Para No.2.5.3(8)		
118	The Commission recommends that the LSGD needs to take the initiative to collect relevant data in the agriculture sector in all LSGIs with the support of the agriculture department to provide reliable data for local level planning in the sector. Methodology and data collection formats shall be prepared at the state level considering variations in cropping patterns, terrain, size of holdings, homestead cultivation, etc. 10th Report- Chapter-2; Para No.2.5.3(11)			
119	Conditions that prevailed during spread of COVID 19 has led to increased use of virtual training programmes. Such methods need to be employed not only for training of officials of the department, but also of elected representatives of LSGI and the farming community. 10th Report- Chapter-2; Para No.2.5.3(15)			
120	Prevalence of COVID-19 has made many offices adept in using technology solutions for convening meetings through video calls. Except in cases where physical presence is necessary, meetings and training programmes may be organised through video conferencing/webinars, thereby saving time spent on travel.	10th Report- Chapter-2; Para No.2.6.3(2)		

Sl.No	Recommendations	Reference		
121	There is scope for reducing office work by revamping office procedures, filing system and processing of applications. Use of mobile apps and other online methods for receiving applications for services will reduce office work. While the Animal Husbandry department has made some initiatives in this direction, there is more scope for reducing the office work. The possibility of introducing ERP for office and file management needs to be considered by the department.			
122	The Department shall implement well-structured online platform for data processing, processing of feed order and automated generation of delivery schedule and communicating the information to the beneficiary about distribution in the registered phone number. 10th Repor Chapter-2; Particle 10th Report No.2.6.3(9)			
123	The Dairy Development department needs to provide devices that can be used by the officials to update data on real time basis from the field itself to reduce documentation work at office. Knowledge in using computer and its applications shall be made mandatory to DEOs and DFIs. The existing employees shall be provided necessary training.			
124	The Commission recommends that the Department shall examine the feasibility of an app based appointment system to which all DESUs shall be linked. Registered farmers shall be able to seek appointment with the DESU officials either individually or through dairy cooperatives. Schedule of the officials for training, meetings and field visits need to be made available to the dairy farmers through LSGI level functionaries like DFI and cattle care workers and through dairy cooperatives. It is also recommended that meetings and training for officials shall be held online as far as possible. COVID-19 scenario has made people more adaptable to online meetings and this trend needs to be encouraged.	10th Report- Chapter-2; Para No.2.7.3(7)		
125	The Commission recommends that all DESUs need to make information dissemination more effective not only among members of dairy cooperatives but also dairy farmers who are outside the dairy cooperative network. A list of dairy farmers with their phone numbers shall be prepared and messages about services and technical information shall be communicated by phone.	10th Report- Chapter-2; Para No.2.7.3(8)		
126	The Department needs to focus on providing more information to the farmers through the website, with regular updates. The recent renovation of the website of the Dairy Development Department is a welcome initiative, especially having a dedicated 'farmers' corner'. However, more information needs to be provided. The schedule of the implementation of schemes, right from publication of advertisement, block wise allotted targets, number of applications received etc. shall be updated on real time basis. The website shall also provide RTS notifications. Links of the same needs to be made available in LSGI websites.			
127	Online training programmes shall be organised so that farmers need not have to travel to the Block office. The dairy cooperatives shall make provision for accessing online training programme for farmers who could not access it from home. Training schedule and calendar shall be prepared for online and offline programmes.	10th Report- Chapter-2; Para No.2.7.3(10)		

Sl.No	Recommendations	Reference		
128	Fisheries Department needs to enhance the scope of FIMS to ensure that all services delivered through Matsya Bhavans are integrated and facilitated online to minimise administrative work of the staff and enable them to focus more on field work. Use of mobile applications accessible by officials in the field itself needs to be introduced.10th Report Chapter-2; Pa No.2.8.3(5)			
129	Efforts shall be made to reduce the need of fisherfolk to visit Matsya Bhavan for services such as remitting SCRS instalment, and to the extent possible the services shall be provided online or at the doorsteps. Provision for online payment of SCRS instalments and payment through Akshaya Centres shall be facilitated. The services of promoters can also be made use of for collecting the same from the fisherfolk.	10th Report- Chapter-2; Para No.2.8.3(10)		
130	Infrastructure and facilities required for the smooth implementation of FIMS shall also be provided at the local level. Consolidation of data relating to fisherfolk and beneficiaries of various schemes and across agencies through the FIMS will help in smooth implementation of different schemes and expedite service delivery. It will also help in cross verification to ensure transparency in providing assistance and delivering other services. There shall also be a mechanism through which information on various services are made available to the fisherfolk through messages by linking the phone number once FIMS entry is completed.	10th Report- Chapter-2; Para No.2.8.3(11)		
131	State government needs to revamp the system of office administration of institutions of the LSGI - office procedures, filing system, documentation and record keeping, and processing of applications involving LSGD and other government departments. The institutions need to move towards less paper mode of functioning. To enable this, all field officers, need to be equipped with devices in facilitate entry of information from the field itself. A model that could be replicated by the field departments of the state government is the initiative of National Nutrition Mission to provide Anganwadi workers with smart devices for real time updating of data from field rather than entering it in different registers kept in the Anganwadi. An integrated software suite for LSGIs to gather and organise data such as ERP needs to be adopted to cover the services of the transferred institutions. This will also facilitate effective monitoring of the functioning of grassroot level institutions by LSGI and the department.	10th Report- Chapter-3; Towards People Centric Service Delivery from Local Self Government Institutions; Para No.3.2(6)		
132	Data of people seeking services of LSGIs (including schemes of the department and LSGI) shall be integrated to avoid the need for repeated submission of documents each time a service is sought. This will simplify the application process and reduce administrative work of the staff.			
133	Meetings, workshops and training programmes for staff of the institutions shall be organised, as far as possible using online platforms to save the time for travel. This will also ensure the presence of the functionaries in the institutions. Timing of such programmes shall be fixed in such a way that service delivery of the institution is not affected.	10th Report- Chapter-3; Para No.3.2(8)		

Sl.No	Recommendations	Reference
134	The Commission recommends that information dissemination at the local level needs to be more effective through better use of social media platforms and IT enabled services. Mobile phones could be particularly useful in extending the reach of services by facilitating communication that is not restricted by distance and time. Information on different services of the LSGI and grass root level institutions, service standards, schemes of the LSGI and government departments, good practices in farming, fishing, livestock management, dairying, changes in knowledge and technology and services can be communicated through these platforms.	10th Report- Chapter-3; Para No.3.2(10)
135	There is an urgent need for scaling up the range of services available through ILGMS. State government needs to consider integrating provision of online services of departments and the LSGIs in a single portal, with links provided to the concerned department/LSGI, as the case may be. This will be a major step in the direction of ensuring people centered service delivery.	10th Report- Chapter-3; Para No.3.2(12)
136	GIS platform for mapping details of schemes and interventions of LSGI and transferred institution needs to be developed at the state level to facilitate better planning by LSGIs. LSGI functionaries shall be given necessary training to use GIS for planning at the local level.	10th Report- Chapter-3; Para No.3.2(17)

Part 1 : Appendices

Appendix - 1

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Appendix - 2

DETAILS OF VILLAGES SURVEYED

Sl No.	District	Block	Village	Reason
1	Palakkad	Mannarkkad	Padavayal	Low literacy and higher proportion of ST population
2	Palakkad	Coayalmannam	Kuzhalmannam	Higher concentration of SC population
3	Thrissur	Thalikulam	Valappad	Higher proportion of Fisher Men's community and nearness to the coastal lines
4	Thrissur	Ollukara	Panancherry	Nearness to urban center and better infrastructure facilities
5	Pathanamthitta	Konni	Thannithode	Semi-remote area with moderate infrastructure
6	Pathanamthitta	Ranni	Gavi	Remote location, lack of accessibility and lack of well-developed infrastructure

Gavi village in the district of Pathanamthitta was selected because of its remote location and lack of transport and other necessary infrastructure and facilities. Thannithode in Pathanamthitta is found backward with modest transport connectivity. Padawayal village in Palakkad district was selected because of its less accessible location, along with a higher proportion of households belonging to the ST category and low literacy rate. Kuzhalmannam village from Palakkad district was chosen due to its higher percentage of SC population. Valappad in Thrissur was surveyed to get perception of people dwelling along the coastal belt. Panancherry in Thrissur district is a developed area, urbanised to a considerable extent with higher literacy rates and better infrastructure. This helps in contrasting the findings from the generally backward regions.

PART - II

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TOWARDS DIGITAL KERALA

Introduction

Kerala's performance in the number of e-Services provided is consistently well. As per the eTAAL portal of Govt of India, Kerala ranks 4th among all the states in the number of e-Transactions provided during the year 2020-21 and 3rd in terms of number of e-transaction per 1000 population. Despite this there is immense scope for improvement in terms of the quality of services, people-centricity and in providing innovative new services by both the public and private sector as brought out in Part-1 of the report. Part-2 of the report explores this potential and makes recommendations for enhancing the status.

The terms 'e-Government' and its successor 'e-Governance' needs to be differentiated. e-Government is the transformation of government to provide efficient, convenient and transparent services to people and businesses through the use of Information and Communication Technology (ICT). e-Governance is a further evolution of the concept and includes transformation of not only government but also Government-People relationship. People-centricity, choice, consultation, engagement and empowerment of the people are additional features of e-Governance.

The concept of e-Governance has further evolved during the last 2 decades to Digital Transformation. Digital Transformation, in the context of Government is a fundamental change in the way government delivers value to the people. e-Service is the goal of e-Governance while Digital Service is the goal of Digital Transformation. In the context of this report, it is essential to differentiate between the two as it would make a fundamental change in the way future projects are designed and guide the authorities and the implementing agencies alike to rethink the concept of service delivery. Table 1 provides **the distinction between e-Service and Digital Service**.

Attribute	e-Service	Digital Service
Maturity	Service Request and Service Delivery are electronic.	The interaction is digital end-to-end
Channel	Predominantly Web	All devices/ channels, predominantly mobile
UX	Generic / Common to all	Personalized, Localized
Integration	Limited to an Application	Enterprise-wide integration
Architecture	Service Oriented Architecture	Enterprise Architecture Open API- based Micro-Services Architecture Ecosystem Architecture
Technologies	Internet	SMACI (Social, Mobile, Analytics, Cloud & IoT) Emerging Technologies (AI/ML, Blockchain)
Scalability	Finite	Infinite
Interoperability	Needs conscious effort	By default
Dev Method	Waterfall, Agile, DevOps	Agile, DevOps

TABLE 1 : FROM e-SERVICE TO DIGITAL SERVICE

Part-2 of the report on 'e-Governance for better Governance' attempts to recommend future course of action to be taken on multiple fronts like policy, technology, personnel, process and infrastructure **to propel the State toward re-strategising its efforts towards Digital Transformation.** The recommendations are based on assessment of current state of adoption of e-Governance in Kerala and is in continuation of issues identified and recommendations made in the first part. Some of the issues and recommendations made in the 2nd part for clarity in recommendations made in this part.

An assessment of the current state of e-Governance indicates several gaps and challenges, which are pointed out in the part-1 of the report. **These gaps and challenges may be perceived as opportunities to leapfrog into the digital age**, avoiding several intermediate stages of evolution, and **create a state-of-the-art, citizen-centric digital environment**.

It may be noted that

- 1. recommendations made in this report confine to **a set of policy interventions and initiatives** required to catalyze digital transformation and to streamline efforts for maximum impact.
- 2. the recommendations require detailing by a multi-sectoral team to evolve into a set of **policies and frameworks**, which would produce significant impact through the delivery of digital services. Available national and international frameworks and policies may be studied to elaborate, detail and operationalise the recommendations.

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Assessment of Existing Situation

CHAPTER 1

1.1 Policy environment for e-Governance

Kerala was one of the earliest States to bring out a legislation on 'Right to Service' in 2012. The Act provides for *'the delivery of services to the general public within the stipulated time.'* However, though passed in the prime period of the e-service era, the Act is silent on electronic delivery of services.

The Kerala IT Policy 2017 is complemented by few sub-policies relating to e-Governance, namely, (i) e-Governance Policy (ii) FOSS Policy (iii) Digital Capacity Building Policy and (iv) Cybersecurity Policy. Vision of e-Governance is stated as:

"Transform Kerala into a digitally empowered society and knowledge economy towards sustainable economic growth by harnessing the e-Governance ecosystem of the state and provide all public services to citizens through electronic mode."

The sub-policies stated earlier, provide for alignment with the Right to Service Act, establishment of a Digital Governance Advisory Board, IT Infrastructure, electronic service delivery, m-Governance and CSC's. At best, these can be seen as a set of high-level intentions.

The State does not have an exclusive and holistic policy/legislation on Digital Transformation. Aspirations like establishing a digital society do not happen unless backed by appropriate/s comprehensive policies and frameworks.

1.2 Institutional Structure:

The Commission have examined the role of the two institutions established in 1999 to performance certain functions in the area of e-Governance in part-1 of the report (Chapter 1). They are institutions established through executive order and do not have any statutory powers.

Few of the issues regarding functioning of these two institutions is reiterated below:

- a. While they were effective in the initial years, they have not evolved into the higher stages of capability-maturity.
- b. They could not meet expectations of government and people and led to stagnation in conceptualization, development, and implementation of e-Governance projects in the state.
- c. The personnel do not stand for professional excellence, updated knowledge and innovative thinking and agility in execution. This is on account of multiple factors like the inappropriate selection process, lack of opportunities and incentives for continuous learning and skills upgradation, lack of performance management systems.
- d. KSITM has not taken up any innovative e-Governance projects in the last few years.
- e. Due to inaction of IKM, Local Self Government Institutions (LSGIs) are still using obsolete technology and applications developed in the 90's. The effort in integrating them is slow and not impactful.
- f. KSITM is yet to take efforts to develop state of the art applications to replace the obsolete applications to meet the present requirements of the departments and the people. People face constraints/difficulties in submitting applications directly through e-District portal, without the support of Akshaya Centres due to lack of user friendliness of the application.

In sum, there is an acute need to rethink the institutional structure(s) required to take the State to the stage of Digital transformation.

1.3 Infrastructure

Availability of robust, secure and scalable IT infrastructure is one of the critical requirements for the rapid evolution of e-Governance. Major components of the IT Infrastructure are State Data Centre(s), StateWide Area Network (SWAN) and Citizen Service Centres (CSCs). Kerala has 2 SDCs established in 2001, KSWAN, established in 2008 and a network of Akshaya and FRIENDS centres established in 2002-04. Analysis of existing IT Infrastructure shows following issues and areas for improvement as explained in Part-1, Chapter 2 of this report.

Data Centres

- a. Out of the 2 SDCs, SDC-1 has outdated infrastructure and does not have any spare capacity.
- b. While rack space in the SDCs is fully occupied, individual co-located servers are underutilised.
- c. Several departments have their own independent IT Infrastructure. These are sub-optimally managed.
- d. Cloud technologies are not leveraged fully, limiting the use to virtualisation features. and not Other advanced features like containerisation, monitoring, metering etc., are not utilised.
- e. There is no Disaster Recovery arrangement and no Business Continuity Plan.
- f. Resource constraint seriously limits providing satisfactory support to the departments.

KSWAN

- a. KSWAN provides a 2 Mbps connectivity to 14 District Headquarters and 152 Taluk / Block Headquarters. Remote offices are connected through leased lines and wireless. The network is over a decade old and does not meet the present-day requirements, considering the exponential growth in the size of data and the number of transactions.
- b. Last mile connectivity from Block headquarters (BHQ) to department offices is affected many times due to low bandwidth and lack of redundancy in KSWAN.
- c. Service quality, operational and maintenance issues in KSWAN affect delivery of e-Governance services by the offices.

CSCs

CSCs, established under the name of Akshaya as a network of service centres currently number2060. They provide 16 categories of citizen services. Following deficiencies were noticed in survey conducted by the Commission into the functioning of the CSCs and is dealt in detail in chapter 4, Part-1.

a. Lack of facilities for power backup, frequent failure of internet connectivity and outdated hardware are common issues with the CSCs.

- b. Infrastructure available in most of the CSCs is not sufficient to handle peak demand especially in certain periods like commencement of educational season or agricultural season, when the demand for e-Certificates is high.
- c. Dependence on intermediaries persists, despite high literacy rate of the state. Main reason for this is the tedium of the processes for availing some of the services of CSC and poor UI.
- d. There is certain extent of dissatisfaction among the people due to unresponsive attitude of CSC agents.

Redesigning basic IT Infrastructure to be in tune with time is the need of the hour.

HR for e-Governance

People constitute the single biggest success factor for e-Governance – people with right competencies, skills and accountability. This applies equally to people within Government and private sector players (TSPs) that provide IT services to the government and to the people. Following issues are noticed:

- a. Most of the departments barring a few do not have in-house team with technically qualified personnel for development and management of e-Governance applications and to provide online technical support services to the people.
- b. Significant dependence on NIC has resulted in an overload on NIC and in delays.
- c. Due to the processes adopted for award of projects, the TSPs do not necessarily position personnel with the right/ adequate technical skills resulting in poor quality.
- d. There is no overarching HR Policy for e-Governance.

Investing in people, skills and talent in a systematic manner is an urgent requirement.

1.4 Project implementation

Following issues are noted in the current procedures of procurement, solution development and project implementation:

a. Excessive dependence on TSPs leading to sub-optimal solutions and inefficiencies.

- b. Difficulties in defining scope, deliverables and outcomes affect quality and timeliness of project implementation, and adversely impact people experience.
- c. Lack of technical expertise in the departments reduces effectiveness in working with services providers and in managing contracts.
- d. The practice of out-sourcing by the TSPs leads to loss of accountability.
- e. Non-uniform practices in SLA management and AMCs lead to poor service levels.
- f. Lack of coordination across departments leads to duplicating solutions and wasted efforts/ resources.

An effective Procurement Policy and Project Implementation and Management Framework would ensure value for money.

Recommendations

CHAPTER 2

The Commission is of the view that incremental changes may solve immediate problems, but may not provide lasting benefits to the cause. Therefore, a set of recommendations is made that address root causes and enable moving towards long-term vision.

Following recommendations are aimed at raising the bar from the goal of e-Governance to a goal of Digital Transformation. It is desirable that these recommendations are considered holistically and together to produce the intended outcomes.

2.1 Recommended Policies

2.1.1 Digital Transformation Policy/Act

There is a surge in the expectations of people in terms of Quality of Service (QoS) and provision of innovative services - driven by advancements in technologies and management practices. Digital Transformation is a multi-dimensional concept that requires coordinated, multi-stakeholder approach over a sustained period. It requires a holistic and comprehensive framework for action. Considering this it is recommended that a comprehensive enabling policy/legislation is brought in for realising the vision of Digital Transformation.

The proposed policy/legislation needs to provide for the following:

- a. Definition of the terms 'Digital Service' and 'Digital Transformation'
- b. Mandatory provision of Digital Services by all government agencies, along with requirement to meet QoS specifications.
- c. Desirability of digital services to conform to Digital Service Standards notified by Govt of India¹
- d. Requirements to adopt enterprise architecture and ecosystem architecture notified by Govt of India

¹ Microsoft Word - DSS Ver1.1 JS 25 NOV 12 clear Final_1_1_.docx (egovstandards.gov.in)

- e. Mandatory provisions requiring compliance with the applicable law and policies on security, privacy and data protection.
- f. Mandatory provision on adoption of open standards.
- g. Requirement to design and implement appropriate cyber security policy and privacy policy by all government agencies implementing e-Governance and/ or Digital Transformation projects.
- h. Establishment of Institutional Structure, in the nature of a Digital Transformation Authority with the responsibility of coordinating implementation of Digital Transformation projects in various agencies of government and with authority to issue directions/ provide advice to the departments on technical matters.
- i. Enabling provision for policy on human resource development required for promoting, supporting and/ or implementing digital transformation projects.
- j. Obligation of government agencies to lay down appropriate policies for enabling and regulating sharing of data for provision of Digital Services to the people and businesses and for innovation, subject to terms and conditions as may be specified by competent authorities.
- k. Such other provisions considered expedient for promoting Digital Transformation, including those for delegation, paperwork reduction, process transformation, ease of doing business, service delivery and grievance management.

Recommendation #1: A holistic and comprehensive policy/acton Digital Transformation may be formulated to enable, promote and implement digital initiatives with peoplecentricity, efficiency and transparency as the end goals.

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2.1.2 Information Security Policy & Cybersecurity Framework.

e-Governance processes generate enormous amount of data, most of which are sensitive and critical. This makes data security and privacy an integral and vital part of e-Governance administration. There are examples from around the world where uncertainty over these issues led to conflicts between civil society and government. However, better e-Governance needs more and more data regarding people and other entities necessitating appropriate policies on security and privacy to be adopted in all e-Governance processes.(Please see Chapter 3, part-1 also).

Government of Kerala has automated reasonable portion of its process using various e-Governance application systems. File flow management software - e-Office, payroll management software (SPARK), Aadhaar-enabled Public Distribution System (AePDS), Integrated Financial Management System (IFMS) are some examples. Wide use of e-Governance applications has resulted in gathering lot of people-related information and has made the following tasks essential - ensuring confidentiality, integrity and controlled availability of data.

It is necessary to distinguish between the two terms 'Information Security' and 'Cyber Security', both of which are relevant from the perspective of e-Governance and Digital Transformation.

Information Security is defined as *'the protection of information and information systems from unauthorized access, use, disclosure, disruption, modification, or destruction in order to provide confidentiality, integrity, and availability*.² The base of information security depends on the systems or procedures that collect, organise, and disseminate information.

Cyber security is defined as *'the ability to protect or defend the use of cyberspace from cyber attacks*.² Cyberspace refers to a global domain within the information environment consisting of interdependent network of information systems infrastructure including the Internet, telecommunications networks, computer systems, and embedded processors and controllers. Cybersecurity encompasses networks, devices on the networks, and programs used in conjunction with the network.

Information security encompasses more than information in cyberspace, it includes information in physical form. While cybersecurity targets cyber criminals and fraud, information security deals more with unauthorised access or disclosure as well as operational disruptions.

In the context of e-Governance and Digital Transformation programs considered in this report and the concept of digital society propounded by Kerala IT Policy, it is eventually necessary for the government to consider bringing out policies and frameworks related to both Information Security and Cybersecurity.

Comprehensive approach to the Security of information systems requires formulation of (A) a set of Information Security Policies, (b) Information Security Management System and (C) Cybersecurity Framework, preferably in close sequence.

² National Institute of Standards and Technology [NIST], USA

These requirements are described as follows:

A) Information Security Policy

The term Information Security Policy has two connotations – especially the term 'Policy'. 'Policy', in the context of the government (as a whole) connotes its *intent* to ensure a secure digital environment in various aspects of using digital technologies and is goal setting in nature, on par with say, Agriculture Policy, Education Policy etc. In the context of a department, the term 'Security Policy' is to be understood in purely technical sense and entails a more granular view of requirements of security in relation to perceived threats and risks. Since requirements of most of the departments are comparable, it is not efficient to require them to formulate their own security policies. It is therefore prudent for the government to formulate a unified Information Security Policy, that in turn contains several 'sub-policies', also called Security Policies by universal convention.

The **Kerala Information Security Policy** may be designed as a compendium of the following 'Security Policies', applicable to all the government departments and agencies.

- 1. Acceptable Use Policy (including employee Internet use, monitoring and filtering)
- 2. Anti-virus policy
- 3. Data Archival and Destruction Policy
- 4. Digital Signature Policy
- 5. Disaster Recovery and Business Continuity Plan Policy
- 6. E-Mail Policy
- 7. Network Security Policy
- 8. Mobile Device Management Policy
- 9. Password Policy
- 10. Remote Access and VPN Policy
- 11. Removable Media Policy
- 12. Risk Assessment Policy
- 13. Security Audit Policy
- 14. Software Installation Policy
- 15. Web Application Security Policy

- 16. Wireless Communications Policy
- 17. Workstation Security Policy (including BYOD Policy)

B) Information Security Management System (ISMS)

An ISMS (Information Security Management System) is a systematic approach consisting of processes, technology and people that helps protect and manage an organisation's information through effective risk management. It enables compliance with ISO-27001 as also with the applicable laws like IT Act 2001 and other requirements. It focuses on protecting 3 key aspects of information, namely – Confidentiality, Integrity and Availability, together known as the CIA Triad. ISMS draws significantly from ISO 27001, which is the universally adopted standard on information security and consists of 114 Security Controls organised into 14 categories called Control Sets. Design and development of ISMS involves an assessment of risk, framing of security objectives and selection of the relevant sets of controls from the ISO. It requires technical expertise in this specific area.

C) Kerala Cyber Security Framework: (K-CSF)

Cyber Security Framework (CSF) is the most comprehensive instrument in dealing with the entire gamut of requirements. The global benchmark in CSF is the NIST-CSF, which consists of 5 basic functions - **IDENTIFY – PROTECT – DETECT – RESPOND - RECOVER.** It applies not only to the government, but also all the ecosystem players in the digital space operating in Kerala.

Given that the Digital Economy figures prominently in Kerala Economy, it is quite essential that the State should make requisite and time-bound efforts to design and implement the Kerala Cyber Security Framework: (K-CSF).

Recommendation #2: A triad of policies and frameworks, and systems - A. Kerala Information Security Policy, B. Information Security Management System, C. Kerala-Cyber Security Network, need to be developed and notified in close sequence for ensuring Confidentiality, Integrity and Availability of information, besides protecting cyber assets and cyberspace of the State from cyberattacks.

Notifying the Security Policy, ISMS and CSF would not suffice. These actions need to be supplemented by creating the necessary Infrastructure and human resources to realise the goals of these 3 instruments. Recommendations on infrastructure and human resources are included in the subsequent sections.

2.1.3 Privacy Policy

The Hon'ble Supreme Court of India has declared that the right to privacy is a fundamental right protected by the Constitution of India. In this context it is necessary for the state government to define its Privacy Policy in respect of Personally Identifiable Information (PII) by stating how it collects, uses, manages, protects or discloses PII. The privacy policy shall be applicable to all agencies of the government and its service providers. Protection of PII involves defining seven principles - Notice, Purpose, Consent, Security, Disclosure, Access and Accountability. Personal Data Protection Bill is currently under the consideration of the Parliament.

Keeping in view the current situation the Commission makes the following recommendation:

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Recommendation#3: Privacy policy may be notified in respect of protection of Personally Identifiable Information encompassing the principles of Notice, Purpose, Consent, Security, Disclosure, Access and Accountability.

All the departments and agencies of the Government and their service providers shall be required to comply with the privacy policy (i) by defining suitable processes for implementing the principles and (ii) publishing their privacy policies on their websites. The privacy policy may be amended suitably after the Personal Data Protection Bill becomes law.

2.1.4 Data Governance Framework and Data Management Policy

Data is an asset. Data is at the core of any digital transformation initiative. It is essential, therefore, that data is **created**, **stored**, **secured**, **used**, **updated**, **shared and managed** following applicable standards and adopting best practices. This intent is to be observed uniformly and rigorously by all the departments and service providers of government.

To achieve the objective of efficient and effective treatment of data as an asset, systematically and uniformly across the government and to inculcate **data discipline** at all levels it is essential for the government to design and enforce two instruments - (i) Data Governance Framework and (ii) Data Management Policy. These are described below.

Data Governance Framework

Data governance is the process of *"planning, oversight, and control over management of data and the use of data and data-related sources."*³

Objectives of Data Governance Framework are given below:

- 1. Minimise risk of data loss or data breach.
- 2. Establish internal rules for data use.
- 3. Implement compliance requirements.
- 4. Increase the value of data.
- 5. Facilitate administration of the above.
- 6. Reduce costs.

Data Governance Framework involves identification of high-value datasets of the departments, defines roles for its creation, maintenance, sharing and securing, and approving investments for ensuring that data is managed systematically. These roles include Chief Data Officer, Data Management Officer, Data Stewards, Data Protection Officer, data administrators. Along with roles come responsibilities and accountabilities, which again have to be specified in the Governance Framework.

Designing a Data Governance Framework is a simple but extremely important task to be pursued by the e-Government and enforced across all its major departments. Capacity Building and continuous skill development in Data Governance is a critical requirement for sustainable digital transformation.

Data Management Policy

Data Management complements data governance. It defines *"the processes used to plan, specify, enable, create, acquire, maintain, use, archive, retrieve, control, and purge data".*³

Data Management Policy provides specific technical methods in the following areas:

- 1. Data Architecture
- 2. Data Modelling & Design
- 3. Data Storage and Operations
- 4. Data Security
- 5. Data Integration and Interoperability
- 6. Content Management
- 7. Reference and Master Data
- 8. Data warehousing and Business Intelligence
- 9. Metadata
- 10. Data Quality
- 11. Data Sharing (principles and rules).

Recommendation#4: Data Governance Framework may be designed and notified to ensure that roles, responsibilities, and accountabilities are defined for the creation and management of data of all departments, with special focus on high-value datasets.

Recommendation#5: Data Management Policy may be designed and notified to ensure that data is architected, designed, created, stored, secured, is interoperable, shared, used and analyzed in accordance with global standards and best practices, across all departments of the government

Given the seminal importance of data and the need to govern and manage it effectively, it is necessary to establish requisite framework and policy. Accordingly, the Commission makes the following recommendations on data governance and data management.

2.1.5 Policy on Procurement for Digital Transformation

Many e-Governance projects get bogged down at the procurement stage, despite best intentions and consequently the opportunities for transformation get buried under the labyrinth of process. Digital transformation projects have more barriers than e-Governance projects because of the need to build in innovation and flexibility in designing and implementing projects and the requirement of new business models.

The Commission has observed several inefficiencies, bottlenecks, and barriers in the space of procurement for e-Governance projects. These have been brought out in section 2.5 ante. The model of TSP (Total Solution Provider), which was new/original 2 decades ago is observed to have acquired significant inefficiency and dysfunction. Departments are not quite comfortable with TSP arrangement. There is a need to reformulate existing procurement processes in such a manner as to be conducive to requirements of Digital transformation.

A new policy to be termed 'Procurement Policy for Digital Transformation' may be introduced to overcome existing bottleneck and barriers and to enable the departments to implement innovative, people-centric projects in an agile manner.

Following good practices observed in major transformational projects at the State and National level may be examined and incorporated suitably in the proposed new procurement policy.

i. The objective of the new Procurement Policy is to enable innovative and peoplecentric services to be designed, developed and delivered efficiently through a set of processes which are efficient, transparent, agile and compliant with the financial norms.

- ii. The concept of **outcome-based procurement** needs to be introduced. It involves defining outcomes expected of the initiative rather than 'prescribing' detailed requirements and specifications in a 'conventional manner'. Payment(s) to the implementation agency/ partner would be in proportion to / linked to the quantity and quality of results produced after the project is launched.
- iii. Agile Procurement: Increasingly, software development is moving towards adopting the Agile Methodology. The Agile IndEA Framework⁴ notified by the Govt of India addresses the need to leverage benefits of the Agile methodology. In line with this, the framework also recommends a set of Agile procurement methods. Relevant extract of the Agile IndEA Framework relating to Agile Procurement methods is at Annexure I. This may be examined and adopted with improvements and modifications as needed in the context of Digital Kerala.
- iv. Design around VALUE and People-centricity: The objective of e-Governance projects has been and will continue to be with more emphasis, to create new VALUE and to be people-centric. The accent is on cashless, presence-less, and paperless services. All existing major projects may be critically appraised, using the 3 lenses cashless, presence-less and paperless nature of the services. Existing processes may be transformed to meet these 3 criteria. All new projects may be designed around value and people-centricity in general, and to comply/satisfy the 3 criteria mentioned here.
- v. **Empowered Structures:** Many projects get delayed for want of right decision at the right time. This situation has been avoided in some of the successful transformation projects, by constitution of appropriately represented and **empowered** committee(s) to steer the initiative. The Committee meets at predefined intervals and takes all decisions relating to value/outcome definition, implementation model, procurement method(s), Service Levels and procurement. Following recommendations are made in this regard:
 - a. Empowered Committee headed by Principal Secretary IT needs to be constituted for steering projects that (1) involve establishing shared IT infrastructure, or (2) involve design, development and implementation of Core Building Blocks required to be used by multiple departments/ projects.

³ Agile India Enterprise Architecture (IndEA) Framework | Ministry of Electronics and Information Technology, Government of India (meity.gov.in)

- b. In all other projects, Empowered Committee headed by the Principal Secretary of the Domain Department (major department, in case the project involves multiple departments) may be constituted.
- c. The Empowered Committees may consist of experts drawn from Academia and Industry Association(s) of IT and the Domain.
- vi. The architecture and high-level design of large Digital Transformation projects may be co-designed in association with academia and industry. Appropriate criteria may be fixed to decide on what constitutes a 'large Digital Transformation project'.
- vii. **Clearing House mechanism:** In order to ensure consistency and value for money, **proposals for taking up Digital Transformation projects** exceeding a specified size (in terms of estimated investment) and complexity (involving more than 3 departments), may be required to go through a Clearing House mechanism, which needs to be chaired by the Principal Secretary IT and consist of senior representatives of Finance and Planning departments. The Clearing House would examine such proposals from the following perspectives:
 - a. Adequacy of identification/ definition of outcome-focus and peoplecentricity.
 - b. Prima facie justification/ feasibility of the proposal w.r.t national and international precedents and case studies.
 - c. Need for interoperability with other IT Projects.
 - d. Feasibility to use the existing Building Blocks created by GoI or Govt of Kerala.
 - e. Possibility to reuse the existing IT infrastructure, in the form of Compute, Storage, Networks or delivery channels.
 - f. Leveraging / dovetailing with any existing national e-Governance project
- viii. **Standard templates for RFP's and SLA's** : Standard templates may be designed and developed for helping the departments prepare RFPs and SLAs rapidly when required, without losing important ingredients. The Model RFPs (for procuring partners for IT Projects/ PPP projects and consulting services) published by Meity and the Ministry of Finance, GoI may be used as the basis and condensed/ modified to suit the requirements of Kerala. Importantly, the templates need to be

modified to align with the special requirements recommended to be included in the new Procurement Policy in this report.

- ix. **PPP Models:** PPP models of implementation may be preferred to conventional implementation models.
- x. **Innovative Solutions:** Innovation cannot be procured through the typical tender processes of the government. However, it is widely acknowledged that promoting innovative solutions is the right way to go to create citizen-centric, cost-effective services that can scale rapidly. This apparent dichotomy between procurement process and innovation can be resolved by instituting appropriate provisions in the new procurement policy for selecting innovative solutions that involve an investment of less than Rs 25 lakhs through a quick process substantially based on the PoC, invoking the provision of GFR 183(i). An appropriate institutional mechanism supported by a set of criteria for selection needs to be included in the policy to ensure transparency.
- xi. **Review the TSP system:** The existing system of implementing IT projects through TSPs may be critically reviewed, and if found necessary may be included in the new procurement policy with substantial modifications to address its shortfalls.

Given above is a set of features desirable to be included in a new procurement policy meant for Digital Transformation Projects to be taken up in future. The Commission recommends as follows:

Recommendation#6: A new Procurement Policy for Digital Transformation projects may be designed and notified to bring in agility, innovation and people-centricity, incorporating the features and requirements indicated in this report.

2.1.6 HR Policy for Digital Transformation

Availability of Human Resources with the right knowledge, skills and experience is critical to the success of any Digital transformation initiative – existing or future. New age technologies and implementation models require expertise of a special kind – like enterprise architecture, ecosystem architecture, agile development methodologies, DevOps, cybersecurity, data protection, new delivery models and emerging technologies like AI/ML, IoT, DLT, AR/VR. The Commission has noted that most of these competencies do not exist in the public sector currently. Keeping this in view, it is considered expedient to establish a new policy called 'HR Policy for Digital Transformation'.

Salient features of the proposed HR Policy are:

- **i. Establishing 7 Missions:** Digital Transformation initiatives need to be implemented in a Mission Mode to produce the desired impact in time. It is suggested that Missions may be created on 7 major themes Primary Sector, Education, Agriculture, Rural development, Welfare, Public Safety, and Performance Management. Each Mission would be responsible to develop digital ecosystems in its sector, comprising all the related departments. For instance, Primary sector would comprise of the department of Agriculture including Horticulture, Animal Husbandry, Fisheries and Food Processing.
- ii. Each Mission may be led by a Mission Leader, at the level of a Secretary/ Commissioner to work on a dedicated basis.
- iii. Each Mission would have a Mission team which includes at its top, a CIO, a CTO, 3 SMEs, 1 Enterprise Architect, 2 Program Managers and 2 Technology Managers with supporting professional staff.
- iv. The experts (other than SMEs) would be drawn from the **market at prevailing compensation** to attract the best talent. transparent method of selection needs to be prescribed.
- v. **A cadre of 30 Digital Transformation Champions** would be developed through a special program of intensive training for 3 to 4 months, by selecting candidates from the constituent departments with specified entry criteria and 10-12 years of experience in the domain. This program would be specially designed and implemented in partnership with GoI and the Industry.
- vi. Continuous training programs would be taken up at the HRD Institute of the State (IMG) to build capacities on Digital transformation among mid-career employees.
- vii. All mid-career employees of the departments falling within the purview of the Missions, needs to be encouraged to undergo shortlisted online training courses relating to various aspects Digital Transformation. Course fee shall be reimbursed to the employees obtaining certification.
- viii. Continuous series of seminars and webinars shall be conducted on the subject.

Recommendation#7: New HR Policy for Digital Transformation needs to be designed and notified to induct and build experts and expertise required to design, develop and implement digital ecosystem programs through 7 Digital Transformation Missions to be established on priority sectors.

2.2 Technology

2.2.1 Importance of Architecture Development

Architecture is an essential initial activity when we contemplate long-term sustainability, incorporation of basic principles like open standards, interoperability, inclusivity, reusability, people-centricity-by-design, and primacy of domain vision (over technology). However, it has been seen to involve 'big modelling upfront' requiring special expertise and therefore, results in a lot of time elapsing in a project before the first Line of Code is written and the time-to-market get prolonged. Dichotomy between the 'tedium and time' that architecture calls for and the expediency of producing *'working software in weeks, not months'* has been debated. Fortunately, with the advent of models like Agile Architecture taking concrete shape, a happy marriage between architecture and coding is possible. Section 3.3.2 which deals with Agile IndEA Framework throws more light on this. Assuming that architecture continues to be relevant, especially to State-level and National-level IT initiatives this section focuses on the role the State can play in developing projects, which are sustainable-by-design.

Assess the architectural maturity of existing projects

MeitY, Govt of India, had notified (2018) India Enterprise Architecture or IndEA, a set of Principles and Reference Models that together help the GoI Ministries and States to architect their major IT Projects systematically, holistically, and quickly. The implementation handbook that accompanies IndEA framework, provides practical, step-by-step approach to architecting large projects and an architecture maturity model to assess existing projects. It is a desirable exercise to be undertaken to assess the top 10 state-wide e-Governance projects undertaken by Kerala during the last 10 years from the perspective of conformance to the IndEA principles and to arrive at an action plan to align them towards compliance to IndEA.

Await and adopt IndEA 2.0

MeitY, GoI is currently engaged in designing a more advanced architectural pattern, termed IndEA 2.0, that seeks to enable the Ministries and States to conceptualise the architectures for entire digital *ecosystems*. Successful and prominent examples of digital ecosystems available today are Aadhaar, UPI and GSTN.

In the context of the need to establish Digital Missions around the priority themes, like the 7 Missions recommended in 3.1.6 ante, the need to work on Digital Ecosystems rather that Digital Systems becomes more critical. As alluded to earlier, each of these domains involves the convergence of vision, designs, developments, services, and outcomes of multiple related departments -typically 8 to 10 and includes in its purview initiatives of the private sector and start-up community. Such a convergence cannot happen on its own. An ecosystem architecture based on and bound by a set of principles and architectural patterns is the preferred option.

In the context of the above, it is desirable to await the result of the ongoing efforts on IndEA 2.0 and adopt the same at the earliest.

Ministry of Health and Family Welfare, GoI had already published Ecosystem Architecture for the Health sector, that applies to Centre, States, Public and Private sectors alike. It is being currently piloted in the Union Territories. Similar efforts are ongoing to develop ecosystem architectures for several other sectors, namely Education (NDEAR, expected by April 21), Agriculture (IDEA, expected by May 21) and Social Justice and Rural Development (in early stages, expected in the second-half of '21).

Given the significant emphasis of GoI on architecture, especially on digital ecosystem architecture, it is essential for any major exercise of Reform, such as envisaged by this Commission needs to leverage the same and build on the same.

Federated Architecture

Federated Architecture is a pattern in enterprise architecture that allows interoperability and information sharing between semi-autonomous de-centrally organised entities, IT systems and applications. Federated Architecture is ideally suited for large Digital Transformation efforts such as recommended for Digital Kerala, for the following reasons:

- i. Multiple departments have to develop their systems autonomously, but still be able to interoperate with the related departments for providing integrated, people-centric services;
- ii. State Government agencies have to interoperate with systems of respective Ministries of GoI in a seamless and sustained manner;
- iii. Privacy and security considerations demand that data is held and managed in a decentralised manner, however providing for interoperability.

Keeping the above factors in view, the following Recommendations are made on evolving appropriate architecture(s) for Digital Kerala.
Recommendation#8: Strategy needs to be designed for developing a set of digital ecosystem architectures for major initiatives contemplated under Digital Kerala. The architecture strategy could focus initially on the scope of the 7 Digital Missions. [See Recommendation #7].

The IndEA Framework may be leveraged while developing **strategy** for digital ecosystem architectures. Developments in the ongoing IndEA 2.0 initiative of GoI may be closely followed, and adopted when it is notified by GoI.

Recommendation#9: Architecture of the top 10 major e-Governance projects of Kerala needs to be critically assessed w.r.t compliance with the principles of IndEA Framework and suitable enhancements need to be made to incorporate/align with such architectural principles.

Recommendation#10: Federated Architecture pattern may be adopted for all major digital initiatives to ensure autonomous development of different projects, while assuring interoperability, security and privacy.

2.2.2 Roadmap for cloud adoption

The Commission has noted that the utilisation of existing IT Infrastructure is sub-optimal on the one-side (in terms of low capacity utilisation of most of the co-located servers) and is 'saturated' on the other side (in terms of lack of rack space in the SDCs). IT Infrastructure is not efficiently managed both from technological and operational perspective. Potential of the cloud technology is not leveraged adequately. In the absence of a clear roadmap for IT Infrastructure at the State-level, departments make fragmented investment in infrastructure, leading to inefficiencies, wastages and sub-optimal management.

GoI has implemented the Meghraj project with a view to optimize investments and to provide rapid provisioning of IT resources on a dynamic basis. GoI has also established a framework of Government Community Cloud or GCC, whereby qualified and certified Cloud Service Providers have been empanelled. Ministries and States have the opportunity to leverage the GCC Scheme and provision their IT Infrastructure rapidly, efficiently and cost-effectively.

It is also significant to note that GOI has discontinued its financial support for SDCs. Keeping in view the emerging scenario of increasing cloud adoption in the public sector, nationally and globally, and the current approach of GOI on the subject the Commission makes the following recommendation.

Recommendation#11: A clear Roadmap for IT Infrastructure and Cloud Adoption for 5-years may be designed in consultation with MeitY, GOI and IT Infrastructure industry to enhance (i) efficiency and speed in provisioning of IT Infrastructure by the departments (ii) cost-effectiveness (iii) leveraging potential of cloud technologies to the full extent.

2.2.3 Connectivity Plan (KFON)

BharatNet is an ambitious project of Ministry of Telecom, Gol, initiated in 2011 to extend fiber-optic connectivity to all the 2.5 lakh Gram Panchayats in India. Despite lapse of 10 years, it could touch only 1.54 lakh GPs and has become operational in 0.64 lakh GPs. Since significant investments have been made and lasting benefits are envisaged, it is necessary for the State to get actively involved in completion of BharatNet within the State and to fully leverage its potential. The following recommendation is made to accelerate and energize KFON to give fillip to Digital Kerala initiatives.

Recommendation#12: A high-level Committee, preferably chaired by the Chief Secretary may be constituted to (i) review the progress of KFON, identify implementation bottlenecks at policy level and field level (ii) take appropriate decisions to accelerate the progress of KFON (iii) prepare sustainable business plan, including PPP Model, for effective utilisation of the bandwidth for various services of public and private sector and (iv) monitor utilisation of the infrastructure in terms of number of connections, active users, services operating on KFON and bandwidth utilised.

2.3 Process

2.3.1 Guidelines to Depts with timelines for completing GPR

One of the key thrusts of any effort for Administrative Reforms is, transforming the processes which are often archaic and defeat the intention to provide people-friendly services. Government Process Re-engineering or GPR is one of the established methods. However, it is observed that many e-Governance projects are undertaken with inadequate effort on GPR, thus merely replacing physical paper with 'digital paper', which does not produce any transformative impact on end-user experience.

The Commission recommends that the departments, especially those being prioritised into the 7 Digital Missions, may undertake fundamental process reform. Government may provide specific guidelines on the aspects to be addressed in a GPR exercise. At a high-level, the guidelines need to include the following:

- a. In the first instance, departments should define desired set of people-centric services, the outcomes and service levels aspired for. Then they should work backwards to decide upon the new [TO BE] processes and requirements of digital applications to support the transformed processes and services.
- b. The methods of process reform to be emphasized in the GPR guidelines include the following:
 - i. **ELIMINATION** of non-value-adds and 'process barriers', including forms and workflows that are either not required at all to achieve the people-centric service or act as barriers to achieve the same.
 - ii. **OPTIMIZATION** of the forms and workflows which are essentially and minimally required to provide the service.
 - iii. **STANDARDIZATION** of processes, forms, workflows and UI within and across the departments
 - iv. **INTEGRATION** of the processes of multiple departments required in the course of providing a single service to a person, obviating the need for her to apply to different offices to get a task done. E.g., building permission, many types of licenses etc.
 - v. **AUTOMATION** of processes to support cashless, presence-less and paperless transactions to be completed at 'one go' by a person.
 - vi. **SELF-SERVICE** by default, whereby most of the services can be availed by the people on a mobile, on 24x7 basis, without having to make physical visit. This requires special effort involving UX experts.
 - vii. **ONLY ONCE** principle, whereby the information would be sought people only once and re-used by government for providing multiple services.
- c. **A definite time limit** needs to be prescribed for all the prioritised departments to complete the GPR exercise and demonstrate the same.
- d. GPR entails significant changes to be made in the **Acts and Rules**. A time-bound action plan needs to be prepared and implemented for the same.

Recommendation#13: A special drive may be undertaken on GPR (Government Process Re-engineering), with focus on prioritised departments - this needs to include clear mandate and guidelines on GPR, time-bound compliance of the GPR guidelines and consequential changes to Acts and Rules.

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2.3.2 People-centricity

People-centricity is at the heart of Digital Transformation. People-centricity is about turning the focus of government around – looking at service delivery from the eyes of the people rather than the process or operational perspective of government. It is about taking an 'Outside-in view' rather than an 'Inside-out view' of service design and service delivery. People-centricity is less about technology and more about 'design thinking'. Many governments all over the world have made distinctive approaches to understanding and implementing the desirable objective of people-centricity. The most common principles adopted in the successful cases are given below.

- a. **Understand the needs of the people** in a specific domain, through focus group discussions, opinion polls and public debates. Design projects that can meet these felt needs.
- b. **Understand and manage the entire people** journey in accomplishing a single task, which may involve multiple touch points, multiple channels and cross-functional processes to be complied with. Take an integrated and holistic view and 'simplify' complexity for the people. The goal needs to be that the journey should begin and end in a single 'session' or visit and with certainty of the result.
- c. **Send proactive notifications and status updates** as also appropriate communications to keep the people informed at all times.
- d. **Measure people satisfaction** and address subsisting and persisting pain points.
- e. **Provide choice to the people** rather than assuming their possible response.

While all the above precepts are logical and simple enough, it requires a fundamental rethinking of the processes and delivery systems to accomplish the above. Digital Transformation initiatives need to make conscious effort in this direction.

Value-driven systems

Another concept closely related to people-centricity is value-driven systems. To reiterate an earlier proposition, 'Digital Transformation, in the context of the Government, is a fundamental change in the way the government delivers value to its citizens.'

Designers of value-driven systems identify and define the value proposition in a consultative manner and build projects / initiatives around methods to realise that value.

Agile IndEA Framework notified by GoI addresses the theme of architecting large digital initiatives on value-driven approach, and implementing them in an agile manner. It adopts a 4-stage process shown in Figure 1. The Framework harmonises requirements of the domain in terms of value to the people, meeting the department's own long-term goals and vision, and also applicable SDG Goals.



Figure 1: Agile IndEA Framework on Value

The Digital Service Standard⁵ notified by MeitY, GoI provides a set of standards for designing new digital services and to assess existing e-Services. top e-Services

Recommendation#14: People-centric and value-driven approaches are of paramount importance in designing/ re-designing digital initiatives. Agile IndEA Framework and Digital Service Standard notified by GoI may be adopted by the departments.

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Recommendation#15: The top e-Governance projects may be assessed using DSS and enhancements made to achieve compliance with DSS.

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projects currently in operation in the state may be assessed using DSS Standard and improvements made in service delivery. The DSS template for assessment of e-Service/ digital services is provided in Annexure 2.

2.4 Implementation Approaches

2.4.1 Enable Vs Build

One of the drawbacks of large e-Governance programs has been the propensity of government departments to build the applications by themselves or through an implementation agency selected by it through an RFP process. While this has been the norm over the last 2 decades, recent studies have brought to focus inadequacies of the 'build' approach. Not being people-centric, building services not needed, poor user-interfaces, multiple touch points, unresponsiveness, poor performance, poor user interface, lack of an integrated approach, and above all lack of scope for innovation are the most common maladies noticed.

An emerging trend in moving from the e-Governance era to Digital Transformation is to follow the principle of **'Enable rather than Build'**. Key logic behind this principle is that digital ecosystems can't be built – they evolve. The evolution, which can be rapid takes place through enabling a large community of innovators and developers to create value in different ways with the common aim of meeting the end-user needs precisely and elegantly. In this approach, government only enables by undertaking minimal steps to catalyze such an evolution. These steps include:

- a. Indicating broad outcomes expected in a sector.
- b. Architecting and establishing the core building blocks in a collaborative way.
- c. Enabling access to core data through open APIs.
- d. Defining standards, and where needed, specifications that need to be complied with.
- e. Creating sandbox environment for innovative ideas being tried out.
- f. Establishing institutional structures private and public for testing and certification of products and solutions.
- g. Establishing regulatory systems to ensure security, privacy and ethics.

Recommendation#16: Departments seeking to undertake transformation initiatives may first evaluate whether it is more effective to adopt the principle - 'Enable rather than Build'.

The examples of <u>large digital ecosystems which have emerged in the recent times</u> through adoption of such an enabling approach are the digital payments and the GST <u>system</u>. Given the greater chances of success and impact of such an approach, the Commission makes the following recommendation.

2.4.2 Adopt/Adapt national models

During the last decade, a number of successful e-Governance projects have been implemented by Government of India in areas that fall in the concurrent list or the State

Recommendation#17: Thorough due diligence may be made on existing major applications already implemented by GOI and the need and scope for adopting / adapting them to meet needs of the State. Collaboration with MeitY maybe appropriate for ensuring efficiency in identification and implementation.

list. It is appropriate that such projects are evaluated for their applicability to the state, and adopt those or adapt with appropriate modifications, rather than trying to build them afresh. An illustrative list of such programs includes – DigiLocker, MyGov, UMANG, e-Hospital, SWAYAM, Scholarships portal.

2.4.3 Institutional Framework

An ambitious proposition like Digital Kerala proposed in this report requires adoption of Mission-mode for its realisation. Existing institutions like KSITM and IKM were established 2 decades ago, with specific mandate. Requirements and expectations have changed dramatically. It is necessary to restructure these 2 institutions, preferably into one new entity called Digital Kerala Authority to propel the transformation journey. The mandate and structure of the proposed Digital Kerala Authority are indicated below:

Mandate of Digital Kerala Authority (DKA)

DKA would basically be a facilitatory and enabling body responsible for coordinating activities of various departments and agencies associated with digital transformation. It's 'Authority' would be limited to issuing directions and guidelines to all departments on matters relating to Architecture, standards and frameworks required to implement initiatives under the Digital Kerala program.

Functions of DKA would broadly be in the following areas:

- 1. Development of core architecture of Digital Kerala
- 2. Supporting departments and agencies in the design of architectures of digital systems and digital ecosystems.
- 3. Supporting development of policies, frameworks and guidelines required for Digital Kerala
- 4. Facilitating formation of the 7 Digital Missions, including sourcing of experts
- 5. Supporting IT Department in its functions as the Clearing House for large digital initiatives taken up by departments.
- 6. Undertaking capacity building and training programs, with special focus on developing e-Champions
- 7. Enabling conduct of audits and assessments of the e-Governance projects for conformance.
- 8. Organising surveys for obtaining people-feedback on e-Services/ digital services
- 9. Organising seminars, webinars and consultation workshops relating to digital transformation, adopting a multi-stakeholder approach
- 10. Promoting innovation and value-added services

Structure of DKA

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Recommendation#18: A new institution to be called Digital Kerala Authority may be constituted under the proposed policy/ legislation on Digital Transformation, subsuming KSITM and IKM, with mandate to coordinate Digital Kerala initiative across the whole of Government.

Digital Kerala Authority would be an autonomous authority, to be established under the policy/legislation on Digital Transformation [pl see Recommendation #1 of this report]. It will be a thin organisation. Top positions may consist of CEO, CTO, Experts in Enterprise Architecture, Design Thinking, Data Protection, Information security, Cyber Security, Agile Methodologies, PPP Models, Capacity Building and Finance. **Recommendation#19:** Survey of global best practices in Digital Transformation needs to be undertaken through secondary research, especially focused on Canada, Singapore and Korea. The aspects needing deeper study are architecture, UX, peoplecentricity, interoperability and procurement practices

2.4.4 International Best Practices in Digital Transformation

While undertaking the major transition from e-Governance to Digital Transformation, it is desirable that the Government surveys global best practices in this area. This enables avoiding reinventing the wheel and provides the possibility of leapfrogging certain stage in the evolution.

2.4.5 Operational recommendations

The discussion and recommendations in the foregoing part of this report mostly relate to policy and strategic levels. However, during its study, the Commission has observed several operational issues which need to be and can be fixed relatively quickly. These are listed in **Annexure 3**.

3. Conclusion and next steps

Part-2 of the report on 'e-Governance for Better governance' – Towards Digital Kerala, has concentrated on the realm of policy and strategy.

However, the challenge of implementing these recommendations is immense. It calls for dedicated effort by dedicated teams of experts working in a coordinated manner, consulting the stakeholder community at different stages and arriving at detailed Policies, Frameworks and designs. Given the wide range of the recommendations, it is necessary to constitute at least 3 Task Forces to focus on (i) Policies (ii) Architecture

Recommendation#20: Considering the complex and wide-ranging nature of the work required to detail recommendations of the Commission, 3 Task Forces, each consisting of 6 to 8 experts, may be constituted to detail the recommendations and submit draft policies, frameworks, architectures, and designs within 3 months for consideration of the Government. Given pan-government nature of the work, a Steering Committee headed by the Chief Secretary may also be constituted to provide guidance and oversight.

and Infrastructure and (iii) Human Resource Development& Process. Detailed Terms of Reference needs to be formulated, and timelines prescribed for the Task Forces. Each Task Force may consist of 6 to 8 Experts drawn from Government, Academia and Industry and may be required to submit their reports in 4 months. A Steering Committee headed by the Chief Secretary may be constituted to provide the policy direction as also to review progress on a monthly basis.

Given the enormity and complexity of the tasks involved, the recommendations may be implemented in a phased manner over 4 months as indicated in Table 2.

Task Force	Phase 1 (T0+1month)	Phase 2 (T0+2 months)	Phase 3 (T0+4 months)	Number of Deliverables
Policies	2A. Security Policy	 3. Privacy Policy 4. Data Governance Framework 6. Procurement Policy 	2B. ISMS 2C. Cybersecurity Framework 5. Data Mgt Policy	7
Architecture & Infrastructure	11. Roadmap for IT infrastrcture and Cloud Adoption	9. Asses the architecture of major eGov projects 12. KFON Review 14. Guidelines on adoption of Agile IndEA	8. Strategy for 7 Digital Ecosystems 10. Federated Architecture 15. DSS Assessment	7
HRD and Process	 15. Guidelines on Citizen centricity 16. Guidelines on Enable vs Build 19. International Best Practice Study 20. Constitution of 3 task forces 	 13. GPR Guidelines and Special Drive 17. Adoption of Gol Applicatinos 	7. HRD Policy for Digital Transformation 18. Establish Digital Kerala Authority	8
Number of Deliverables	6	8	8	22

Table 2: Action Plan for the 3 Task Forces on Digital Transformation

Part 2 : Annexures

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Annexure - I

AGILE PROCUREMENT METHODS EXTRACT OF AGILE INDEA FRAMEWORK NOTIFIED BY MEITY GOVT OF INDIA

- 1. Adopt a Hybrid Price Model: The Agile IndEA Framework articulated in this handbook takes a holistic view of digital transformation. Software development is but one of the several other components like provisioning the IT and non-IT infrastructure, capacity building, change management and service delivery in the IT value chain. The IT Infrastructure, which forms a significant proportion of the project cost, consists of the hardware, system software and networking, which are amenable to a precise estimation and specification. The efforts involved in capacity building and change management, likewise, are quantifiable. Accordingly, it is possible to adopt a hybrid price model while formulating the RFP, whereby, a fixed-price model is adopted for all the components except the application software and a T&M model is adopted for the development of the application software. This reduces the 'variability' to a large extent.
- 2. Adopt pay-per-use model for IT Infrastructure: All IT infrastructure, including system software, is today available on a cloud-model, i.e. pay-per-use. Advantage of this model may be taken while procuring for digital transformation projects. MeitY guidelines on selection of empanelled Cloud Service Provider (CSP) are useful in this regard.
- 3. Adopt Transaction Model: Several projects have been implemented on a paypertransaction model. The earliest and the highly successful model is of the Passport Seva Project. Several digital transformation projects are amenable to be designed on a transaction model. The main difference in using such model adopting the Agile IndEA approach is that the sponsoring organization gets deeply engaged in the design and development of the project jointly with the selected implementing agency or partner.
- 4. Use Statement of Objectives (SOO): In a typical performance-based services contract, as exemplified in the previous paragraph, an SOO forms the key part of the RFP. The detailed specification of requirements is not undertaken. This is precisely the requirement in the adoption of the Agile IndEA framework, in so far as the application development is concerned. SOO is a precise and concise statement of the broad, basic, top-level objectives of the initiative and is used as a tool by both the Government and bidders in crystallizing on the approach to the solution.

- 5. Areas of further work: While the recommendations 1 to 4 above, provide a way forward in agile procurement, the following areas need a detailed examination by the procuring organization for successful procurement and outcome.
 - a. Agile Contract
 - b. Method for effort estimation for software development in an agile way.
 - c. Modular procurement to synchronize with the phased implementation in waves and deliver value with velocity.

Annexure - II

TEMPLATE FOR ASSESSMENT OF DIGITAL SERVICE AS PER DSS STANDARD

SI No.	Parameter	Rating 0-5	Weightage	Score
A	В	С	D	E (CxD)
Asse	ssing the DEFINE Phase 22%			
1	Are the objectives of DS defined?		1	
2	Are the Objectives of DS SMART (Specific, Measurable, Achievable, Relevant, Time- specific)?		1	
3	Do the Objectives derive from SDG's or the Priority Programs of the Government?		2	
4	Are the user charges/ fees published/ Publicized?		1	
5	Has the DS been classified appropriately? And / Or Are the services organized along life-events?		1	
6	Are the services organized along life-events?		1	
7	Does the DS have personalization features?		1	
8	Has the DS been conceptualized and scoped consultatively?		1	
9	Does the DS provide end-to-end functionality?		2	
10	Is the DS integrated or linked to the related DS's?		2	
11	Have Service Levels been defined and publicized for DS?		2	
12	Has the QoS been defined for the DS?		3	
13	In case of a Portal, does the directory of DS's follow a standard taxonomy?		2	
14	Has the metadata of the DS been published?		1	
15	How well is the DS visible?		1	
	SUBTOTAL (DEFINE PHASE)		22%	
Asse	ssing the REALIZE Phase (DESIGN) 20%			
1	Has User Needs Analysis been made?			
2	Has BPR been undertaken?			
3	Is the DS Secure			
4	Has survey of best practices been done?			
5	Is the DS Cashless? Is e-Payment is integrated with the service? (net-bank- ing, payment bank, debit/ credit card, APB)			
6	Is the DS Contactless?			
7	Is the DS Paperless?			
8	Is the DS being delivered is through multiple channels? (Web/Mobile/Kiosk etc.)			
9	Are the forms simple? (less than 2-page long)			
10	Have the attachments been eliminated or reduced? (0 or 1 attachment)			
	SUBTOTAL (DESIGN)		20%	

Assessing the REALIZE Phase (UX and UI) 25%				
1	Is the DS easily 'discoverable', through the use of simple keywords in a web search?		2	
2	Does the system notify the user the regarding the current status of the application/ request w.r.t. current internal process?		1	
3	Are the on-screen messages to the user in simple, natural language?		1	
4	Does the DS provide 'undo', 'redo' buttons?		1	
5	Does the DS provide online validation of the inputs provided by the user?		2	
6	Does the site have online help feature?		2	
7	Has UNICODE been used for all labels, messages and form fields?		1	
8	Does the DS meet the special accessibility requirements of the differently abled?		2	
9	Are the forms in the DS downloadable and in an open format and fillable offline?		2	
10	Does the DS provide an acknowledgement to user on completion of the request?		1	
11	Does the site/portal provide SSO feature for accessing multiple services in the same session?		1	
12	Is the DS responsive?		3	
13	Does the DS ensure and assure the privacy of the personal information?		2	
14	Are all the user interfaces clear to an average user?		2	
15	Are the screens and messages precise?		2	
	SUBTOTAL (UX and UI)		25%	
Asse	ssing the REALIZE Phase (Architecture and Standards) 25%			
1	Has the Digital project adopted any Architecture framework or standard?		5	
2	Are MDDS Standards of GoI followed?		3	
3	Are the Regulations of UIDAI followed in the in the matters relating to security and privacy of Aadhaar data?		3	
4	Is the ISO 27001 complied with by the DS Project?		3	
5	Is an annual audit of the application/ DS Project conducted?		2	
6	Has an open API-based architecture been adopted to create an eco-sys- tem?		3	
7	Is the use of local language in compliant with UNICODE?		2	
8	Have the relevant documentation standards been followed in the develop- ment?		2	
9	Is there a version control system in place?		2	
	SUBTOTAL (Architecture & Standards)		25%	

Assessing the REALIZE Phase (Delivery) 8%				
1	Does the DS provide for the inclusion requirements of disadvantaged groups?		2	
2	Is the feedback and grievance redressal mechanism for the DS functional?		2	
3	Does the organization have a Unified Contact Centre?		2	
4	Is the DS delivered also in an assisted mode?		1	
5	Has the organization adopted appropriate capacity building exercises for operationalization of DS?		1	
SUBTOTAL (Delivery)			8%	
Grand Total			100%	
Pl note that the total score shall be against a maximum of 500				

Annexure - III

RECOMMENDATIONS OF THE COMMISSION RELATING TO OPERATIONAL AREAS

Technology-related Recommendations

- 1. A special drive may be undertaken to improve the user-friendliness of the existing major applications, especially relating to G2C services.
- 2. A central repository and directory of existing applications and services may be created for reference by all the departments and for exploring their reuse.
- 3. Tool-based processes may be established for software change control and version management for all existing applications.
- 4. The utility of SSDG may be reviewed and a view taken on its discontinuance in the face of significant advancements in technologies for data exchange and interoperability.
- 5. Mobile First principle may be emphasized across the departments to give a fillip to m-Governance. A synergy may be established with the UMANG program of GOI.
- 6. Disaster Recovery infrastructure may be established for the applications and data currently hosted in the 2 SDCs.

Process-related Recommendations

- Departments may be required to allocate a certain percentage (in the range of 2 to 3%) of their annual budgets to Digital Transformation initiatives, which fall within the ambit of the recommendations made in this report.
- 2. A coordination mechanism may be established to prevent avoidable purchase of hardware and software by the departments, without, however, centralizing the procurement function.
- 3. The practice of holding virtual meetings, established during the pandemic may be continued, to achieve cost-effectiveness, time-effectiveness and higher productivity.
- 4. IT Cells may be constituted in all major departments with qualified and trained personnel.
- 5. Audit of GPR efforts undertaken in the major citizen-facing departments may be undertaken.
- 6. A system of evaluation of performance/ rating of TSPs may be instituted.



GOVERNMENT OF KERALA

Abstract

Personnel and Administrative Reforms Department – Administrative Reforms Commission – constituted – Orders issued

PERSONNEL & ADMINISTRATIVE REFORMS (AR -12) DEPARTMENT G.O.(Ms) No.16/2016/P&ARD. Dated, Thiruvananthapuram, 06/08/2016

ORDER

Government hereby order constitution of Administrative Reforms Commission with a view to improve the efficiency of the State Administrative System. The composition of the Administrative Reforms Commission is as follows:

Shri. V.S. Achuthanandan, MLA,	
Ex.Chief Minister,	
Velikkakath,	Chairman
Punnapra North P.O,	
Alappuzha.	
Shri. C.P.Nair	
Chief Secretary (Retd.)	
'Seasons', PPD,	Member
Kuravankonam, P.O,	
Thiruvananthapuram.	
Smt. Neela Gangadharan,	
Chief Secretary (Retd.),	
No.528/Type VI, CPW Quarters,	Member
27th Main Road, HSR Lay out,	
Bengaluru -560 102	
Principal Secretary	
Personal and Administrative Reforms Department	Member Secretary

The Chairman of the Administrative Reforms Commission will have the rank and status of Cabinet Minister and the members will have the rank and status of Chief Secretary to Government

The Terms of Reference of the Commission will be issued separately.

(By Order of the Governor)

S.M. VIJAYANAND Chief Secretary to Government То

Shri. V.S. Achuthanandan, MLA, Chairman, Administrative Reforms Commission. (Velikkakath, Punnapra North. P.O, Alappuzha).

Shri. C.P.Nair, Chief Secretary (Retd.), ['Seasons',PPD, Kuruvankonam. P.O, Thiruvananthapuram].

Smt.Neela Gangadharan, Chief Secretary (Retd.) [No.528/Type VI,CPW Quarters, 27th Main Road, HSR Lay out, Bengulure – 560 102]

The Principal Accountant General (Audit), Kerala, Thiruvananthapuram The Accountant General (A&E), Kerala, Thiruvananthapuram. The Director, Information & Public Relations Department. The General Administration (SC) Department [Vide Item No. OA -16], Dated, 03.08.2016] The District Treasury Officer, Thiruvananthapuram. The Sub Treasury Officer, Secretariat Sub Treasury Thiruvananthapuram.

Copy to:

Information and Public Relations (Web&Media) Department for uploading in the official web site of Government of Kerala. Additional Secretary to Chief Secretary PA to Principal Secretary, P&ARD. Stock File /Office Copy.

Forwarded/By Order,

(Sd/-) Section Officer



GOVERNMENT OF KERALA

Abstract

IAS- Posting Smt. Sheela Thomas IAS (Rtd.) as Member Secretary, Administrative Reforms Commission on re-employment basis-Orders issued.

GENERAL ADMINISTRATION (SPECIAL-A) DEPARTMENTG.O.(Rt) No.2528/2017/GAD.Dated, Thiruvananthapuram, 22/04/2017

ORDER

Smt. Sheela Thomas IAS (Rtd.)is appointed as Member Secretary, Administrative Reforms Commission on re-employment basis.

2. The above appointment will be subject to the usual terms and conditions of re-employment.

(By Order of the Governor)

NALINI NETTO Chief Secretary to Government

То

Smt. Sheela Thomas IAS (Rtd.)

The Principal Accountant General (A&E)/(Audit),Kerala,Thiruvananthapuram

The Secretary, Ministry of Personnel, Public Grievance & Pensions, Department of Personnel & Training, Government of India, New Delhi.

The Member Secretary, Administrative Reforms Commission, Thiruvananthapuram

The Personnel and Administrative Reforms Department

The General Administration (SC) Department

The Information and Public Relations Department

The Web and New Media.

Copy to:

The Secretary to Chief Minister.

The Private Secretary to Chief Minister.

The Additional Secretary to Chief Secretary-

PA to the Additional Secretary General Administration (Special A&C) Departments Stock File/Office copy.

Forwarded/By Order,

(Sd/-) Section Officer.

ADMINISTRATIVE REFORMS COMMISSION

TERMS OF REFERENCE

GO(MS) No. 21/2016/P&ARD Dated 30/08/2016

- 1. To review the structure and functioning of the administrative machinery of the State and suggest measures for improving its responsiveness, efficiency and effectiveness as is required in a welfare State.
- 2. To revisit and redefine the roles of department and important agencies in Government.
- 3. To suggest measures for co ordinated and joined up functioning of Government departments and agencies to enhance positive outcomes.
- 4. To suggest measures to eliminate delays, corruption, favouritism and nepotism and to make administration result oriented.
- 5. To suggest steps for enhancing delegation of powers to increase efficiency and citizen satisfaction.
- 6. To suggest modern management methods and Information Technology system and tools, which can be adapted in Government.
- 7. To review the policies relating to recruitment, placement and promotion and suggest measures for improvement of the performance of civil servants.
- 8. To suggest methods for democratization of different organs of Government at various levels and increase participation of the people in governance.
- 9. To assess the delivery of key public services and suggest measures for increasing their efficiency.
- 10. To suggest measures to make Government more open and accountable.
- 11. To suggest measures to refine/ operationalize Gender Budgeting, Child
- 12. Budgeting.
- 13. To recommend modern fiscal planning tools like output and outcome based budgeting.
- 14. To assess the capacity building system in Government and suggest
- 15. measures to make it more effective.
- 16. To make any other recommendation arising form the above matters or incidental to them or considered necessary or appropriate by the Commission.