

*A journey  
of a  
thousand  
miles begins  
with a single  
step*

*Confucius*



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## Preface

In keeping with its role and responsibility as a rising global economic and political power, the Government of India promulgated a new law to promote competition. The Competition Act, 2002 (amended in 2007) follows the philosophy of modern competition laws and prohibits anti-competitive agreements, abuse of dominant position by enterprises, and regulates combinations wherever such agreements, abuse or combinations causes, or is likely to cause, appreciable adverse effect on competition in markets in India.

The objectives of the Act are sought to be achieved through the instrumentality of the Competition Commission of India (CCI) which has been established by the Central Government with effect from 14th October 2003. The Commission was formally notified on March 1, 2009 and is now fully functional. The Commission is headquartered in New Delhi.

Realising the unequivocal advantages of putting in place a comprehensive, competent and coordinated Information & Communications Technology (ICT) framework for business processes, the Commission took an early decision to introduce an e-governance initiative way back in April 2007. The express need was "to ensure efficient and timely progress of the cases which may be brought before the Commission ... and with a view to achieve the organization of a paperless office or at least to minimize paper work and also to maintain "confidentiality" of documents to be provided by the parties".

Considerable thought and discussions took place over the next two and a half years to proceed in the direction of the desired objectives of adopting and implementing e-governance in the functioning of the Commission.

The objective of this document is to show a way forward in introducing elements of e-governance in establishing an effective and efficient competition regime in India and to develop the Competition Commission of

India as one of the most modern and capable regulatory authorities in the nation.

However noble a goal and however deep a desire to achieve it, success comes only through right focus and unambiguous approach. Moreover, for any roadmap to be of use for the motorist, it must be easy to comprehend. Therefore, principles of clarity, conciseness and cogency have been adhered to throughout this document.

A roadmap must not be a mere academic devise but should also be useful. Therefore this document forms the basis of the proposed Expression of Interest (EOI) and a Request for Proposal (RFP) for consideration of the competent authorities. The EOI and RFP would act as the first step toward establishing an e-governance framework in the Commission. The 2 documents may be considered an intrinsic part of this Roadmap and at the same time, the RFP must be read by an interested vendor / consultant in conjunction with this document.

## *PART 1*

# **Guiding principles**

### **Definition first**

Before embarking on the road to e-governance, the term must be defined in the context of the organizational needs of the Competition Commission of India.

E-Governance is defined for the purposes of this paper as the application of Information and Communications Technology (ICT) in the interaction between the Competition Commission of India and citizens, businesses and other stakeholders in the competition regime of India, as well as in internal operations to simplify and improve procedures, performance and productivity of the organization.

E-Governance is not just about improving delivery of services to citizens, businesses, stakeholders and employees. It is also about blending ICT with administrative functions to make the Commission more efficient, drive down costs and increase transparency in how the Commission works. If implemented properly, it can help introduce new levels of efficiencies in the competition regime in India.

### **Consonance with overall Government approach towards e-governance**

The most essential tenets of e-governance accepted internationally and recommended by the Government of India should be kept in mind while conceptualizing and implementing E-Governance initiative for the Commission and for preparing a tender document.

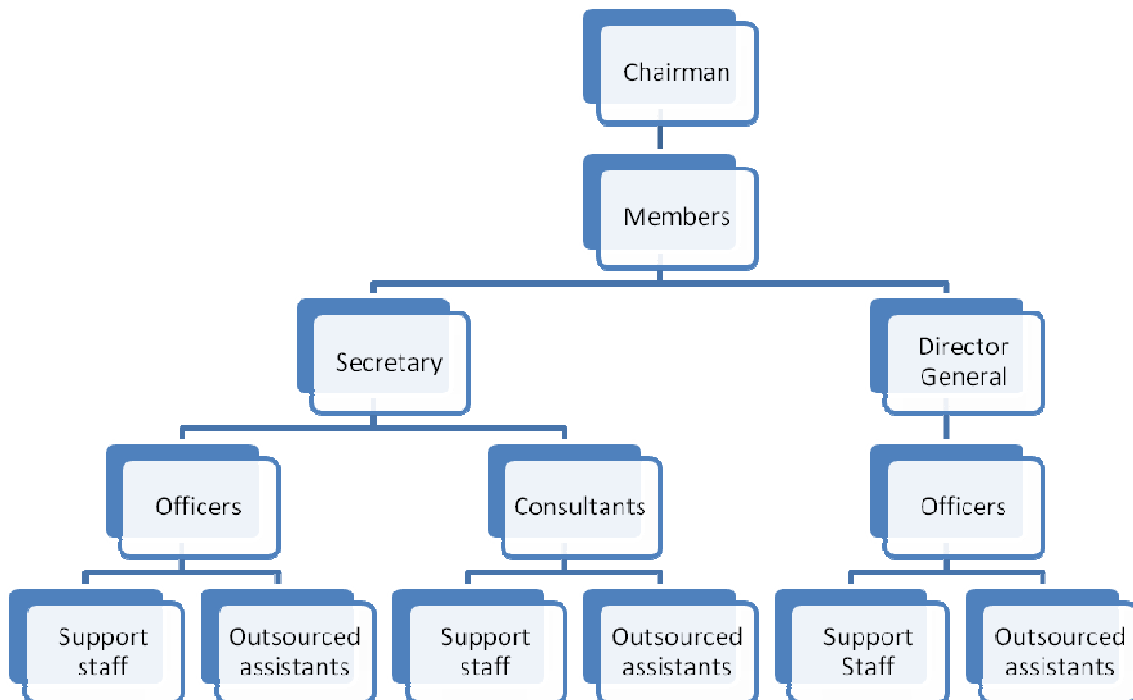
The Eleventh Five-Year Plan (2007-2012) gave explicit recommendations for Improving the Efficiency of e-Governance Initiatives. The table below translates the relevant macro-level parameters in the context of CCI:

<b>11<sup>th</sup> FYP recommendation</b>	<b>Application to requirements of CCI</b>
Encourage the use of IP/products developed by Indian companies in e-governance projects.	The tender document should include this requirement.
Encourage the central and state governments to procure e-governance services rather than procuring hardware, software, services, and networks separately. This will bring about a more outcome based procurement model as compared to the current outlay oriented model.	By selecting a consultant who would design and develop integrated system, network and application as well as suggest compatible hardware / software products, CCI would move toward outcome based procurement.
Encourage reusability in e-governance projects at both the infrastructure and application level.	The consultant would be advised to develop components on basis of replicability and scalability.
Faster replication of already successful e-governance programs.	The CCI model can be freely offered to existing or future regulatory agencies if they ask for it.
Define interoperability standards/criteria and ensure that e-governance applications adopt these standards irrespective of the vendor supplying the technology.	The tender document should include this requirement.
Incentivise citizens for using online	The web portal should be made

services.	interactive. The tender document should include this requirement. At a later stage, CCI can publish an advocacy booklet to guide visitors about using the interactive features such as e-filing of information.
Prepare a detailed e-governance plan for each central ministry and state which details a time-bound schedule for implementing e-governance. The budgetary support from the central government for the e-governance initiatives can be linked to achievement of specific milestones.	This Roadmap is in accordance with the recommendation.
Ensure that e-Governance applications are IPv6 ready.	Internet Protocol version 6 (IPv6) is the next-generation Internet Protocol version designated as the successor to IPv4, the first implementation used in the Internet and still in dominant use currently. The tender document should include this requirement.
Maximize Government transactions online through development of content in local languages.	The website can be redesigned to make it bilingual at a later stage. The CCI can either hire in-house content Hindi translators or use a contracted service model. The tender document should include this requirement.
Sensitising citizens for using online services	Already discussed above.

## The user

A simplified organogram of the Commission is given below:



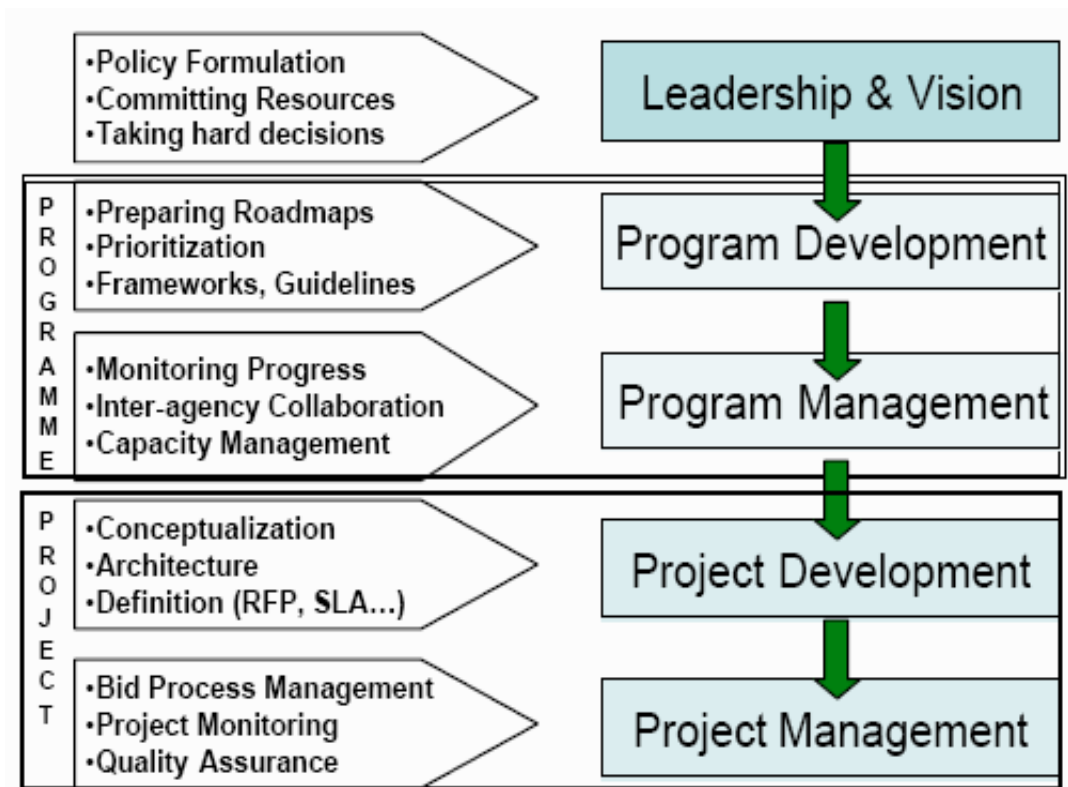
At this stage there are roughly 40 employees in CCI. Over the next 1 year the strength (including consultants / interns etc.) may go up to 200. A few branch offices may also come up.

Detailed Business Process Model function flow charts of some of the major statutory work of the CCI is placed at Annexure to this document and will serve as a starting point for work flow study by the ICT consultant.



## A model for Programme and Project development

In such type of exercise, the role to be played at different levels of hierarchy is normally envisaged as below:



Thus, this Roadmap is the “Program Development” component of “PROGRAMME” and once accepted by the Commission will become the E-governance Policy for the Commission. It would serve as the overall guidebook for vendors, in-house technicians or consultants. The “Program Management” component of “PROGRAMME” should be the overall responsibility of the Administration. Later, with the appointment of IT professionals, this role can shift to them.

This Roadmap seeks to provide the conceptualisation and generate a RFP. The exact architecture will be developed in a participative manner by the

consultant through the process of **SRS (specifications review stage)**. Under SRS the consultant would understand organizational requirements broken down into those of various Divisions and percolating down to those of an individual official. But these and related things are discussed in detail later in the “**Suggested Way Forward**” section of this paper.

### **Learning from some Best Practices in India**

It is now widely accepted by project planners that each organization is unique, with its own unique structure, functionalities, limitations and requirement. This differentiation prevents adoption of readymade models that have been applied or developed elsewhere. However, a new organization like the CCI can learn a great deal from the experiences of some successful e-governance initiatives in recent past. Therefore, this paper has been prepared after examining some of these initiatives that have been appreciated by the community of professional consultants. The elements of e-governance suggested in this roadmap as also reflected in the RFP have considered experiences of a few successful initiatives in different sectors.

A study called “*Towards an ideal e-Governance scenario in India*” conducted by the reputed consultancy firm **Tata Consultancy Services** has examined some of the best practices in e-governance in India. Similarly, a few prominent initiatives have also been examined by **Department of Information Technology** in their paper “*CAPACITY BUILDING FOR E-GOVERNANCE IN INDIA*”

Though a detailed analysis of these initiatives may not be germane to this Roadmap (as ideally every organization must develop its own approach toward e-governance) a synopsis of these projects / initiatives is given below. These may be relevant in appreciating the possibilities and scales of advantages.

## **Project Akshaya**

'Akshaya', an IT dissemination project, was launched on 18th November 2002 as a pilot in Malappuram, a district in Kerala. The project envisaged development of 5000 networked Multi-purpose Community Technology Centers - Akshaya e Kendras - to provide ICT access to the entire population of the state. The objective of this project, was to make at least one person in each of over 65 Lakh (6,500,000) families in the state e-literate.

## **MCA21**

The Ministry of Corporate Affairs (MCA) is responsible for administration of the Companies Act, 1956, other allied Acts and Rules & Regulations framed for regulating the functioning of the Corporate Sector in accordance with law. The programme was implemented in a record time of 78 weeks. This project is India's 1st mission mode project (the highest priority rating assigned by the Indian government) under the National e-Governance Plan (NeGP). MCA21 has enabled 100% electronic filing, electronic payment mechanisms, use of Digital Signature Certificates for all transactions, delivery of more than 90% of services by MCA offices within charter defined by Ministry.

## **APOnline**

APOnline ([www.aponline.gov.in](http://www.aponline.gov.in)) is a digital gateway of the Indian state of Andhra Pradesh to provide multiple government services through multiple channels, anytime and anywhere to citizens and businesses through a single window. The bi-lingual portal has redefined government-citizen interface and government-business interface by providing information, interactive and payment services to the citizens. The APOnline solution is based on the lifecycle event model, dictated by events in the citizen's lifecycle.

## **E-Choupal**

The E-Choupal model, <http://www.itcportal.com>, is centered on a network of 'e-Choupals' which are information centres armed with a computer connected to the Internet. The e-Choupals, information centres linked to the Internet, represent an approach to seamlessly connect subsistence farmers with global markets. e-Choupal has helped link the largest labour force with the mandis, the international markets as well as the final consumer at much reduced transaction costs. The e-Choupal initiative; one of the largest information technology-based intervention in rural India has transformed the Indian farmer into a progressive knowledge-seeking netizen. It has enriched the farmer with knowledge and elevated him to a new order of empowerment.

## **Central Customs and Excise**

- 98% of export and 90-95% of import documentation computerized
- Electronic filing through ICEGATE at 3 locations (Mumbai, Delhi, Chennai)
- 80% of Service Tax returns electronically processed

## **Indian Railways**

- Anywhere to Anywhere reservation from Anywhere
- Electronic Booking of tickets on select sectors
- Online Information on Railway reservation on Internet

## **Postal Department**

- Direct e-credit of Monthly Income Scheme returns into the investors accounts
- Dematerialization of Savings Certificate (NSC) and Vikas Patras (KVP), offering full portability

## **MEA Passport / Visa**

- 100% passport information computerized
- All 33 Regional Passport Offices covered
- Machine readable passports at some locations

## **Lessons learned**

The Commission is still in its inception stage and it lacks a robust and competent in-house IT Division. Yet, there is immediate and obvious requirement to computerise its business processes, develop the appropriate software, hardware and networking solutions to meet its functional requirements and to create an effective cyberspace interface that would promote its cause, enable knowledge sharing and improve public service deliveries and its own administrative efficiency. Clearly, the only way to proceed along this path is to acquire an IT partner that would help create and develop the requisite IT infrastructure and environment.

What is required is a strategic solution/services based approach. The Commission needs to start procuring IT services rather than procuring hardware, software and services separately by its own.

With this new approach, the IT related needs of CCI would be addressed in conjunction by an IT partner (the appointed consultant) and after a thorough consultation process (like SRS). Such **Public Private Partnership (PPP)** model for managed services would enable CCI to concentrate on core-mission critical value-adding activities while moving the technology-related requirements to IT professionals (IT partner). In other words, it can focus its attention on what it does best; and use the IT partner to deliver what it is most experienced at delivering.

The caveat for such an engagement has to also be based on clear **service level agreements (SLAs)** that are completely outcome-driven, allowing both client and IT partner to decide and agree on deliverables. And based on these SLAs, the IT partner provides services to the client and is paid periodic fixed amounts. This allows the government department to understand exactly what it is paying for and hold a provider accountable to deliver. If the IT partner breaches any of these SLAs, the Commission should be able to penalise the provider according to the agreed norms. The proposed RFP has been designed to allow such SLAs.

### **The advantages of such an approach would be**

- i.** Technology risk will be borne by the IT partner
- ii.** The Commission is absolved of IT responsibility, ownership, obsolescence and upgrades and can focus fully on its core business
- iii.** IT infrastructure optimised and sharing of knowledge / information / data becomes possible among Divisions and individual officers
- iv.** Single platform and synchronised deployment becomes possible

- v. SLAs ensure service standards with the Commission paying only for desired service
- vi. Project related risks move entirely to the IT consultant as the Commission pays only for desired/acceptable outcomes
- vii. Cost of technology is converted into cost of service
- viii. SLAs ensure outcome-based investment in technology leading to tangible results and increased stakeholder value and perception

### Some key parameters to be observed

- **Clarity in objective setting:** Projects are sometimes launched without a clear focus on outcomes or on building sustainable services. The specific service needs of stakeholders and those of different Divisions / individuals are often overlooked or accorded low priority in the overall project framework. Very often, objective setting is purely in ICT terms such as computers, networks and so on which are specified in great detail, while business process outcomes are either not defined or are defined in vague terms that do not lend themselves to measurement post implementation. This is because tender documents wrongly, though ambitiously attempt to put every requirement in black and white. This makes the resultant documents vulnerable to disputes, particularly when it comes to feature enhancement requests or customisation demands by users or even mid-term course correction. This unfortunate situation can be easily avoided if RFPs are kept broad based and general in nature as far as **Scope of Work (SOW) or Terms of Reference (TOR)** are concerned. These should be indicative, not exhaustive. The tender document should stipulate that the final SOW or TOR would be developed through a consultative process where the vendor / consultant would interact with users / officials to understand their specific requirements or problems. SRS is very useful tool for this.

- **Ensuring service delivery:** E-governance projects have primarily focused on internal process automation and generally are hardware and infrastructure driven (sometimes even vendor driven) with little focus on citizen service delivery or outcomes. The Commission should ensure that any application developed must be made on server based platforms that would enable public access as and when required in the future. In this context, it is imperative to avoid vendor dependency. This is discussed in greater detail in the section captioned “**Avoiding vendor dependencies**”
- **Need for Business Process Reengineering (BPR):** Computerization of inefficient processes can lead to higher rather than lower levels of inefficiency and spiralling cost. Hence, ideally, it is essential to undertake process re-engineering as an integral part of e-governance project implementation in order to ensure increased efficiency and reduced costs. However, under the existing circumstances it may not be desirable to involve in BPR since several processes are still in the process of initial formation. The consultative approach suggested for SOW or TOR would itself make officers / users think about business processes and come up with suitable modifications in procedures / processes during SRS phase. A summation of these modifications would result in automatic BPR, at least in the initial stages of the existence of CCI. A separate BPR exercise may become necessary after the next 3 to 5 years of functioning of CCI.
- **Standardization and Interoperability:** Departmental approach and absence of a national framework for common standards has resulted in adoption of different technical standards and varied architectures. This has significant implications for designing effective integrated applications and also entails long-term costs and sub-optimal results. This issue has been discussed in greater detail later in this document under the section “**Open Standards and Interoperability**”.



- **System Security Plan (SSP):** It is important that the consultant puts in place a dynamic and upgradable SSP in place. The SSP should cover all work environments such as the primary computing platform(s) used (e.g., mainframe, desktop, Local Area Network (LAN) or Wide Area Network (WAN)). It should take into account the principal system components, including hardware, software, and communications resources. . The System Security Plan describes the system's security requirements, the controls in place or planned, and roles / responsibilities of all authorized individuals who use the system.

The Security Plan ensures that each employee knows the security boundaries and what the penalties of overstepping those boundaries will be. Among other things, SSP should be able to:

- Review security controls when system modifications are made.
  - Eliminate security vulnerabilities associated with the configuration of the organization's systems/applications.
  - Implement a uniform approach to security across computer systems and databases.
  - Specify who creates user accounts, conventions for usernames and passwords, access requirements.
  - Identify how users are tracked, sensitive information is managed and steps to take for data protection.
  - Identify penalties to be enforced as a result of different levels of security breaches.
  - Conduct regular security audit and make course corrections.
- **Independent Impact Assessment:** There is requirement for developing institutional mechanism for an independent assessment of projects post-implementation to determine whether they have achieved the set objectives, except in purely financial terms. Some suggestions for devising an assessment framework are given later under "**Project Assessment Framework**".

- **Localisation:** English is the statutory language of the Commission. Therefore ICT solutions would be developed with an English Language interface. However, in India a vast majority of the citizens do not know English and use the local language. This reality needs to be reflected in the implementation strategy. In practical terms, the Commission web portal should be designed with bilingual capabilities, even if the capability is not used in initial months / years due to lack of translators for the content.
- **Internal Capacity/Project Management Expertise:** At this moment, the Commission has limited access to any institutional mechanisms for building capacities in the areas of e-governance project development and design, bid process management, professional project management, development of **Contractual Frameworks, Service Level Agreements**, etc. It also has no means of accessing external competencies that are difficult to procure within the governmental framework. Therefore the initial stage consultant should also help build capabilities in terms of appropriate training, help in selection of in-house IT experts, systems maintenance etc. This requirement is further discussed in detail in the section captioned "**Capacity Building**".

### **The road not to be taken**

Different studies indicate the fact that most government departments had largely followed a "commodity-based" approach while finding answers to their IT related needs. This approach is counterproductive and more often than not turns out to be more expensive in the long-run. In the past, the in-house IT arms of various government departments had followed the practice of purchasing hardware, software, services and networks from multiple vendors without giving much thought to compatibility issues. Such practices have left these departments with disparate computer systems, standards and

technologies that cannot interface and consequently prove to be an obstruction to information sharing and collaboration.

This happens because in most cases, not much thought was given to preparing a proper roadmap for computerization and e-governance. Therefore it is essential for the Commission to consciously shun the commodity based IT approach in favour of a mature solution/services based approach based on clear **service level agreements (SLAs)**, that are completely outcome-driven, allowing both the Commission and its ICT consultant to decide and agree on deliverables.

### **The right direction**

Broadly speaking, the guiding principles of e-governance in the Commission should hinge around outcomes that enhance

- Transparency
- People's participation
- Efficiency, cost-effectiveness
- Convenience to citizens/ businesses/ stakeholders
- Greater citizen access to public information
- Accountability and responsiveness in delivery of services
- Simplicity, efficiency and accountability

- Managing voluminous information and data effectively
- Information services
- Swift and secure communication

### Open Standards and Interoperability

The e-governance initiative should give due weight to standards and interoperability. Interoperability implies ability to easily exchange information and mutually use the information which has been exchanged. It means that systems, applications and applications ought not to have a narrow technological base and should be compatible with most widely used hardware or networking interfaces. For example, using a server based platform compatible with Windows 2003 or above would enable most citizens and computers to utilise applications.

Adherence to standards is the response to the concerns to interoperability.

Open Standards are publicly available specification for achieving a specific task. By allowing anyone to use the standard, they increase compatibility between various hardware and software components since anyone with the technical know-how and the necessary equipment to implement solutions and build something that works together with those of other vendors. **Web Content Accessibility Guidelines (WCAG) 2.0** as open standards of web portals is one such example. Such Open Standards should be followed.

## Avoiding vendor dependencies

One of the problems that have plagued user organizations in the past is the issue of vendor dependency.

Since Open Standards are freely accessible, knowledge of the standards is more widely available. The expertise is therefore less specialised and hence cheaper too. It is dangerous to tie data to a proprietary program or vendor. When the program becomes obsolete or the vendor goes out of business, the data is lost. Also important data has a lifetime much longer than any program.

The challenge is to provide business tools and solutions as efficiently as possible in a world of limited budgetary resources. As an organization under formation, the Commission lives in that tense middle ground between the development and support needs of a large organization and the realities of our mid-market budget. To walk this high wire safely, the Commission has to adopt a sourcing strategy that takes into account its limitations. In short, CCI should buy when possible, build only when it must and develop support in-house. As corollaries to that strategy, the Commission must strive to avoid becoming too dependent on any single vendor.

The Commission's initial approach to any solution should be to see if applications already exist that could meet our needs. It should opt for common platforms as far as possible, leaving aside exotic solutions. Any software platform it chooses must be interoperable with other applications and have the capability to support multiple applications. Extensive use of what are called Open Source software or technology is an example of how to achieve this.

As a thumb rule, it's critical for the organization to maintain a healthy degree of independence from any single vendor. The Commission can't allow itself to be victimized by unforeseen disasters or dysfunctional business relationships. Therefore, any RFP should include

- delivery timelines
- penalties for delays in project implementation and
- clear exit clause in case of dissatisfaction with consultant

In addition, the Commission must gradually develop capabilities of basic in-house maintenance. It must be in control of its own destiny for certain applications. Typically, these may include ability to make minor modifications in application parameters (already provided for by the vendor), website content management and our updating any central database.

Therefore, any contract must include the following points:

- Explicit ownership of the data
- Requirement to provide source codes and user manuals
- Comprehensive documentation relating to technologies used and outlining program logic
- Stipulations that would ensure effective coordination and sharing of non-proprietary components with any other vendor that the Commission may appoint for an application that may require interface with the first vendor
- Unambiguous exit clause
- Stipulation that changeover process would be fully supported over a mutually agreed time frame

## **Project Assessment Framework**

The Department of Information Technology, Government of India (DIT), has felt it necessary to create a rational framework for assessing e-Governance projects on various dimensions. It has therefore developed e-Governance Assessment Framework (EAF Version 2.0).

In the context of the EAF Version 2.0 the following specific objectives are formulated for the proposed Framework:

- To assess whether and to what extent a given e-Governance project has the characteristics of a good e-governance project delivering "Value" to stakeholders.
- To guide in funding of e-governance projects at various stages of their life-cycle (newly starting, roll-out, scaling up, replication)
- To provide guidelines for mid-term assessment of ongoing initiatives, so that mid-course corrections, if any, can be applied

DIT considers it desirable that the frameworks developed are comprehensive, holistic and above all meet the objectives for which they have been designed. Essentially, the EAF should provide authentic and unambiguous answers to questions like the following:

- a)** How far has the Project succeeded in achieving its purpose and objectives?
- b)** Has the Project been designed and developed with all the technological features that are elegant and conform to widely accepted architectures and standards?
- c)** Is the Project sustainable over long periods of time, with or without the motive force that initiated the Project?
- d)** Is the Project cost-effective in terms of return on investment or in terms of cost per transaction?
- e)** Is the Project replicable in other geographies?

It is highly desirable for the CCI to include an assessment framework in its e-governance plan. This implies that the RFP would stipulate that the selected consultant for any project/s would conduct regular internal EAF audit as per approved framework of DIT, such as EAF Version 2.0.

The Commission may also consider getting an external EAF audit done by an independent and objective agency. The contract should ensure that selected consultant would subject itself to any such external audit as and when required by the Commission.

To help organizations in this effort, DIT has given guidelines for selecting such external audit agency. These are:

- a.** Have experience in conducting Market Research
- b.** Have familiarity with e-Governance projects
- c.** Should be disinterested and neutral. Example: Academic Institutions, research establishments, and consulting organizations
- d.** Should be able to employ investigators who understand the regional issues and local language
- e.** Should be able to employ investigators who should be able to broadly understand information technology and e-governance issues

Examples of such organizations recommended by DIT are:

- i.** Research centres of Indian Institutes of Management
- ii.** Management schools / departments of Indian Institutes of Technology
- iii.** Indian Institutes of Information Technology (IIITs)
- iv.** IRMA, MICA, Management Institutes which have e-Governance focus
- v.** Departments of Universities with Management / E-Governance curriculum
- vi.** ORG-MARG, Mudra



**vii.** Public Affairs Council (Bangalore)

**viii.** Institutes engaged in applied research in Economic and Social development

## **Capacity Building**

While implementing any projects the Commission should recognize the importance of building human capacities in terms of necessary knowledge and skills to conceptualize, initiate, implement and sustain e-Governance initiatives. It is equally important to foster an attitude and mindset that is receptive to ICT based administration and ICT based delivery of services. The mere development of e-Governance strategies and induction of technology will not help deliver the quality of services envisaged unless human resources are aligned to provide the right services to the right stakeholder from the right sources with the right tools at the right time. To achieve this, what is required is comprehensive capacity building programmes across key areas relating to:

### **i. Policy making**

This programme should be intended for the Chairman and Members of the Commission who may not be concerned with the details of an e-governance project, but who nonetheless have to provide the leadership and an environment conducive to make it happen. Since at that level of seniority such persons are typically extremely busy people, a short one-day program should be designed to familiarise them with the main capabilities of the project/s or applications and impart key perspectives regarding their role, particularly in change management.

### **ii. Appointing a Chief Information Officer**

The accumulated wisdom from experience is that an e-governance project that is not lead and driven by a senior person from within the government domain in which it functions, is unlikely to succeed. Most such people,

however, do not have the skills to lead a project through all its developmental stages. Hence a basic training program extending over duration of 2-3 days can be designed by the consultant for the identified official. Typically, such persons have a scientific or technical background or an aptitude for project management. After undergoing this training program, an official is expected to have all the skills necessary to implement an e-governance project from conceptualization to complete rollout stage. At a later stage, with the formation of a proper IT Division, this role can be transferred to a professional Chief Technology Officer. The section "Things to do" towards the end of this document gives the role of CIO in detail.

### **iii. Personnel training**

All CCI personnel should be trained specifically on the package developed. Since this involves performance of tasks that they were already performing manually before the advent of the computerised system, a short one-week training program can be quite adequate. Typically, such training is part of the project and is built into the project in terms of cost, timing and content.

### **iv. Institutional arrangements**

The procurement officials of the Commission should have a positive attitude towards IT related requirements of the staff. Equipments should be promptly repaired when required. Similarly, requirements for necessary peripherals such as data cards, pen drives, computer stationary should be promptly met. There should be regular training need assessment to ascertain training requirements. This can be imparted through empanelled training institutes.

### **v. General ICT training**

As computers become more pervasive, it is necessary to impart training to existing employees in use of computers for general purposes like word processing, spreadsheet, power point, etc. Typically, a five to ten day

program is imparted by organizations like the National Informatics Centre (NIC) or private training institutions.

**vi. Access to professional expertise**

It may not be cost efficient to keep a plethora of IT experts on the Commission's payrolls. Over the years, there may be case-sensitive requirements for decoders, disaster recovery experts, data warehousing, data mining etc. The Commission may hire experts from the market as and when required. The services of the main IT consultant could be used for identifying, selecting and interfacing with such "case" experts. For example, in the event of a Dawn Raid, the Commission officials may need to get information out of the database of the raided party. Empanelled IT professionals can be hired for such jobs at a short notice.

**vii. Outcome monitoring**

To begin with, the consultant should be asked to create a brief Management by Objectives parameter and generate bi-monthly MIS reports for the Commission as a tool for self-assessment. After the project has been fully implemented, the Commission may consider external audit as indicated above in the section "**Project Assessment Framework**". However, simultaneously, in-house IT professionals can be gradually trained to monitor day-to-day project development and performance.

**viii. Change management**

E-governance projects tend to redefine power equations within departments. Stakeholders outside the organization are also often impacted. Some people lose power, some people gain. This leads to stresses and strains within and outside the organization, which if not managed with finesse, lead to early demise of the project. The first challenge is to clearly identify all internal and external stakeholders in a project, their goals, the extent to which these can be harmonized and factored in, the likely impact on all stakeholders and their likely reaction. This forms the basis of a credible and effective change

management plan. This exercise is typically in the domain of Human Resource Development professionals. A few workshops can be arranged after adequate passage of time after project implementation (say 6 months from the start) to tackle change management aspects.

### **Strategy management of e-governance**

**Strategic management** is the conduct of drafting, implementing and evaluating cross-functional decisions that will enable an organization to achieve its long-term objectives. It is the process of specifying the organization's **vision** and **objectives**, developing policies and plans, often in terms of projects and programs, which are designed to achieve these objectives and then allocating resources to implement the policies, plans, projects and programs.

In terms of the E-governance initiative of the Commission, there is a special need for careful strategic management which would govern the overall approach and for **management by objective (MBO)** for repetitive, day-to-day processes.

The general experience with ICT roadmaps and strategy is that it should not be made very long term. This is because of rapid pace of technological advancements as well as inherent organic growth path of organizations. It is seen that with passage of time, the number of parameters or externalities affecting the pace and progress of any project increases exponentially.

To explain by example, IPv6 is the next generation internet protocol just being introduced. Therefore it makes sense to develop all new server based applications so that they are IPv6 compatible. But it is expected that a newer IP version 8 may come out in near future. Similarly, provisions relating to "Dawn Raids" given in the Competition Act 2002 have never been evoked till date. New requirements of application of ICT may emerge as the Commission conducts a few Dawn Raids.

This unpredictability introduces redundancies in any strategy that is very long term. Therefore, for ICT strategies, it is best to keep them relatively short term, i.e. not exceeding 3-5 years. They should also have a strong inbuilt mechanism to make them dynamic and responsive to even short to medium term organizational needs. This can be achieved by adopting an Annual **Rolling Plan (ARP)**. This approach is explained in more detail later on.

To start with, the most important step is to clearly define the “Vision” and the “Objective”.

**Vision:**

In the context of e-governance initiative, the vision of the Commission is

Short term (1 -2 years)

- Computerise its internal and external business processes
- Redesign the web portal to make it contemporary, dynamic, interactive, user-friendly and capable of knowledge sharing
- Change management

Medium term (2-5 years)

- Stabilise and improve the initial applications and systems
- Assess required improvements and perceived shortcomings
- Effect suitable corrective and quality enhancing measures
- Capacity building
- Enabling BPR

**Objective:**

Short term (1-2 years)

Accordingly, the short term objective recommended is to get started as quickly as possible on the road to e-governance by acquiring an IT partner who would

- be the umbrella agency to develop the initial ICT environment including software design, web portal redesign, applications, networking architecture, connectivity requirement, system security, data back-up, disaster management and recovery, document digitization, data warehousing etc. with comprehensive onsite and off-site support
- web content management
- provide initial training for practical access and usage of applications
- assess future requirements in terms of systems, in-house manpower, capacity building, web design, security, networking and connectivity
- give professional advice on all aspects of ICT including procurement, recruitment, training, security, technology upgradation etc.
- conduct regular project management self-assessment and design and submit concise and self explanatory MIS reports for internal review
- provide full onsite and offsite maintenance

Medium term (2-5 years)

As the Short term objectives are achieved, there would be a natural emergence of newer requirements as well as increase in the Commission's in-house capacity to formulate clearer objectives for the medium term. However, from start the following objectives should be made a base for the Medium term.

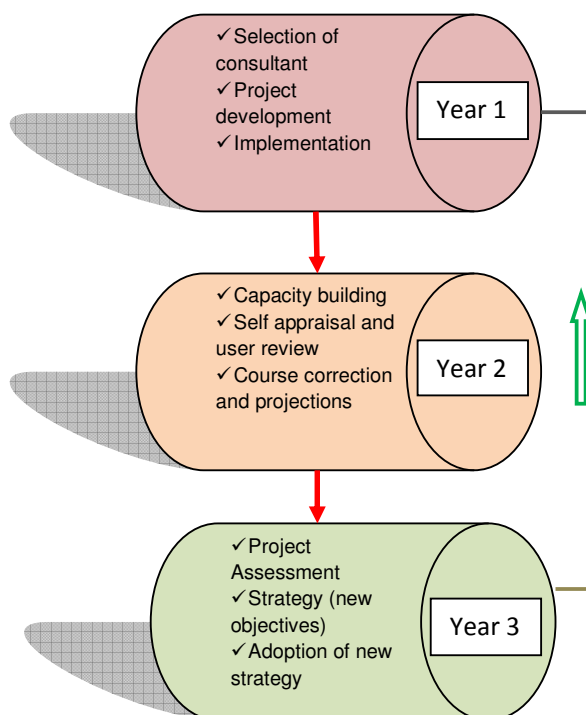
- Conduct an assessment under E-governance Assessment Framework of DIT
- Security audit by third party
- Have in place in-house core group of IT professionals to interact with the consultant, translate the needs of the Commission in terms of ICT requirements for the vendors / consultants
- This in-house IT team would also prepare future tender documents, evaluate them and help the Commission select future vendors / consultants

- Based on the discussions between the IT team, consultant and the CCI functional staff, a BPR exercise should be carried out to streamline activity flow, improve documentation, knowledge sharing, data access etc. so as to align activities with technology.

### Annual Rolling Plan

Annual Rolling Plans allow for revisions and adjustments. More properly, in rolling plans the review of a plan becomes a continuous exercise. The effect of changed circumstances and the changed technology can be incorporated in the plan. No doubt in fixed plans, annual reviews are made, but the reviews merely get information regarding the progress of the projects. In contrast, in case of rolling plans, the yearly reviews are such that they form the basis for the revised new plan for the next 3-5 years every year.

It is therefore recommended that the Commission take a 3 Year cycle for **Modified Annual Rolling Plan (MARP)** for e-governance. A **Business Process Modelling (BPN)** map explaining this recommendation is placed below.



## PART 2

### Suggested Way Forward

#### What is needed

In the previous section captioned General guidelines this paper discussed the broad parameters to be kept in mind by the Commission in its e-governance initiative. This section gives some specific suggestions.

In this age and state of technological advance, the need is

- **Business Process management**
  - Workflow Management
  - E Governance
  - Web based Intranet Portal & Interactive Website
  - Email Collaboration
  
- **Add Ons**
  - Web-based Document Management,
  - Paperless Office solution,
  - Business Process Management, and
  - Document digitization
  - Human Resource & Payroll Management,
  - Administrative information

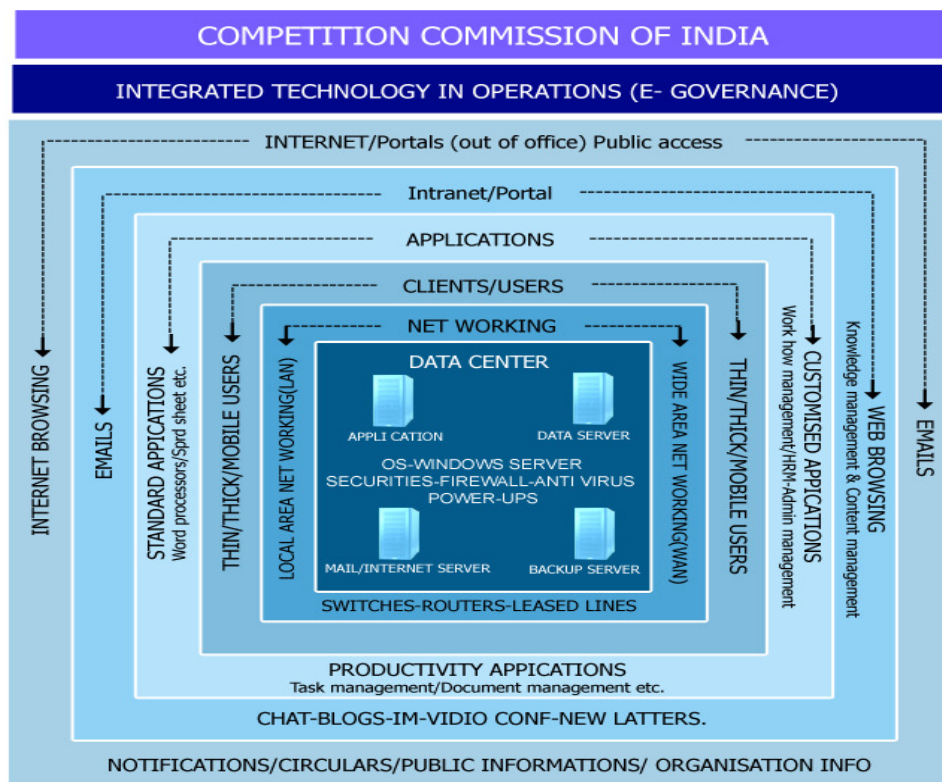
This initiative would help the Commission gain new agility in responding to citizens and requirements of its internal processes. The solutions would allow the Commission to enhance citizen service by reducing cycle time of query



handling, increase coordination with various divisions, reduce errors and improve responsiveness to citizens. The idea is to combine deep Government domain expertise and thought leadership in technology and provide services.

### iTOp –Integrated Technology in Operations

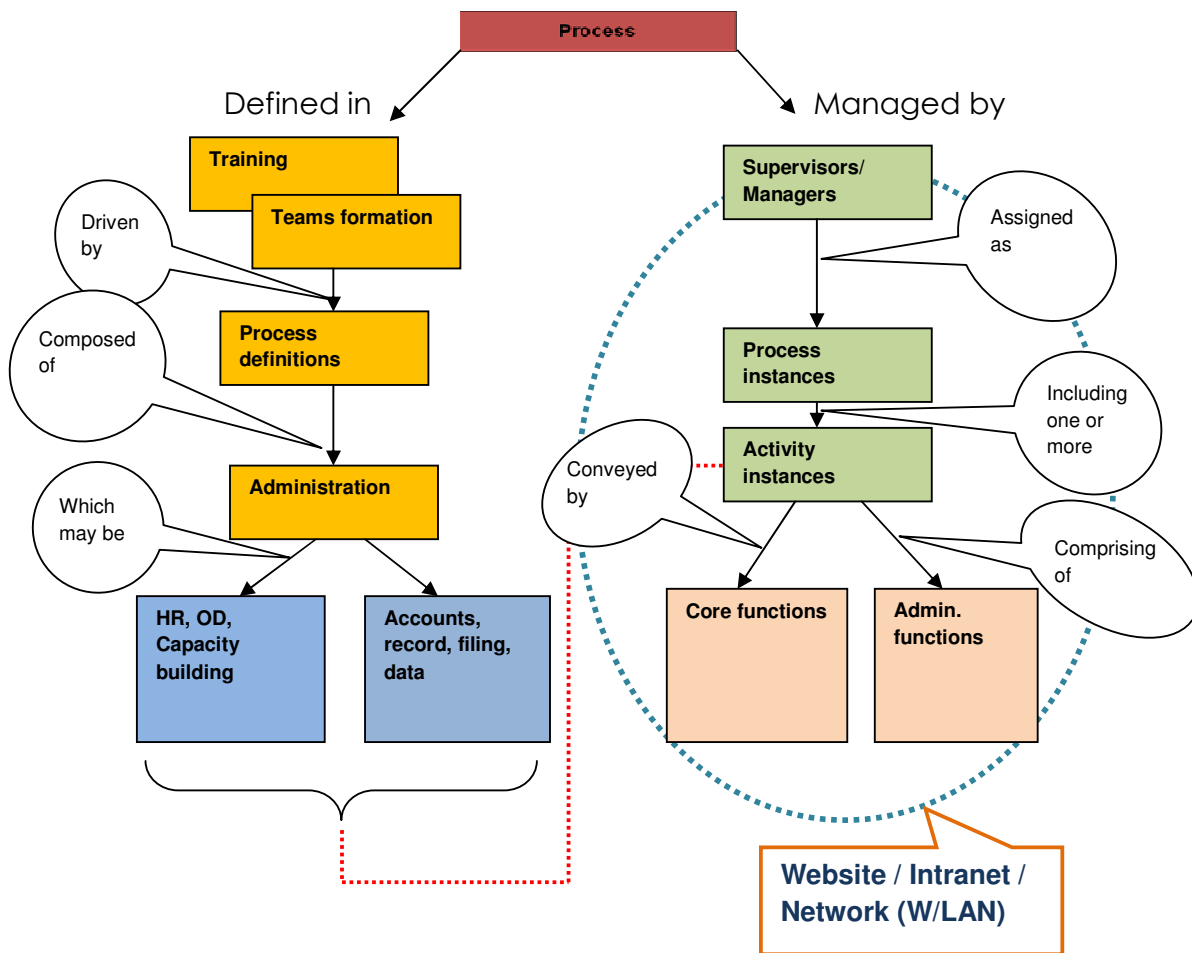
The Commission should launch a Mission Mode initiative for e-governance that would completely integrate ICT with work flow and operations. We can call this “Project **iTOp**”: Integrated Technology in Operations. The main elements of **iTOp** are given in the following concentric Business Process Management (BPM) Service Pattern map.



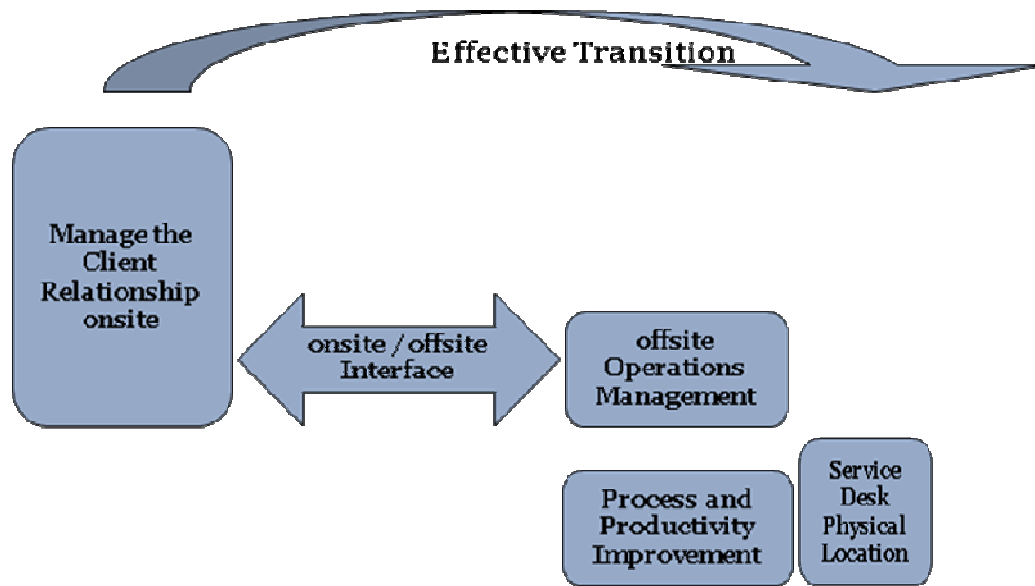


## Process Engagement as conceived

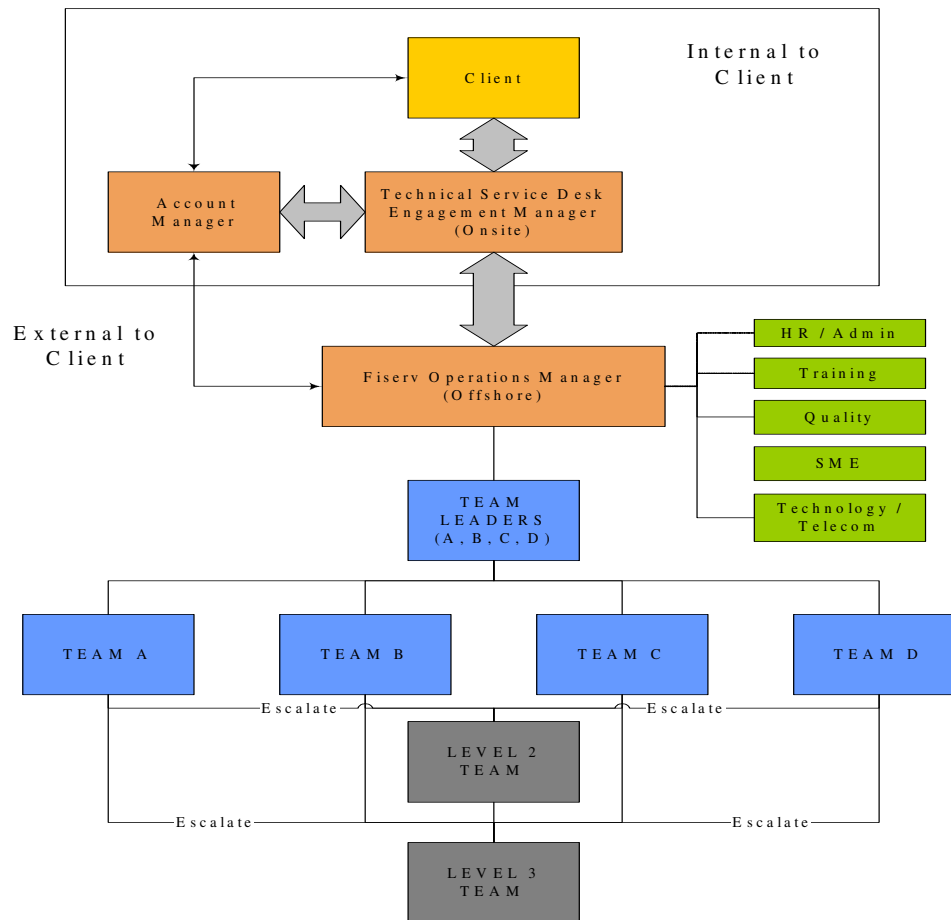
### Core and Non Core functions



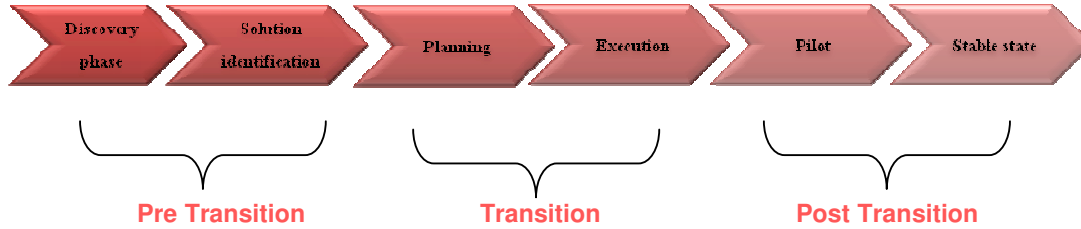
## Engagement Model desirable in vendor / consultant



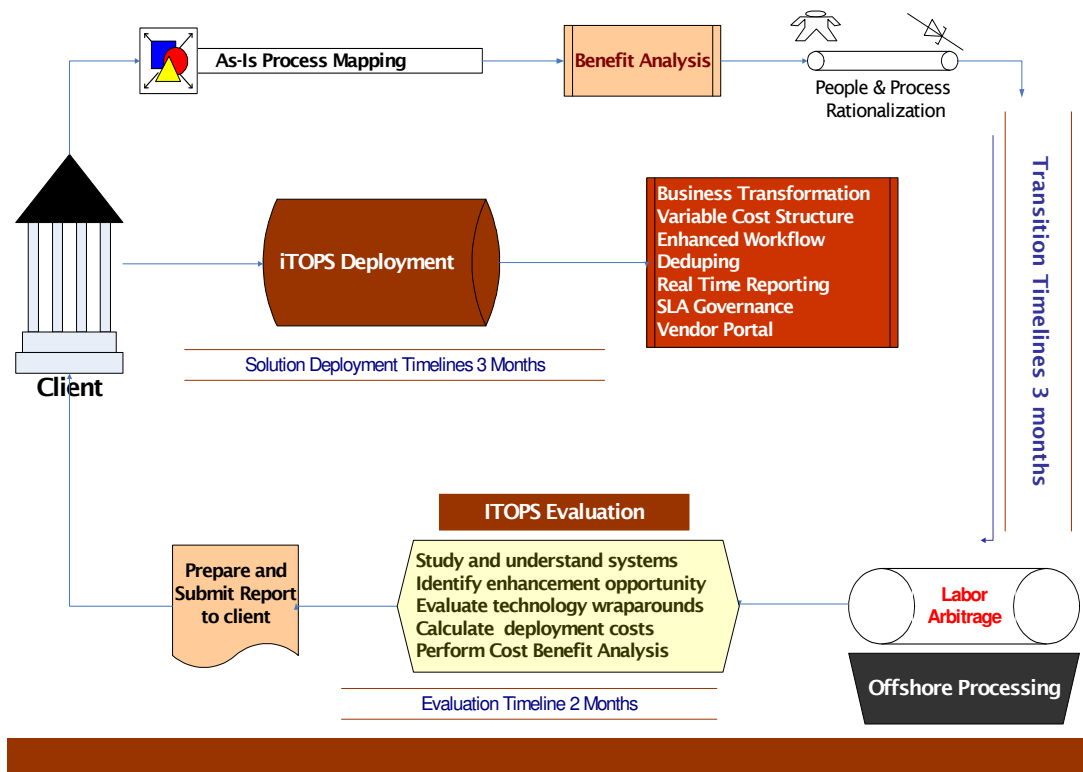
## Model of team structure for vendor



# Approach



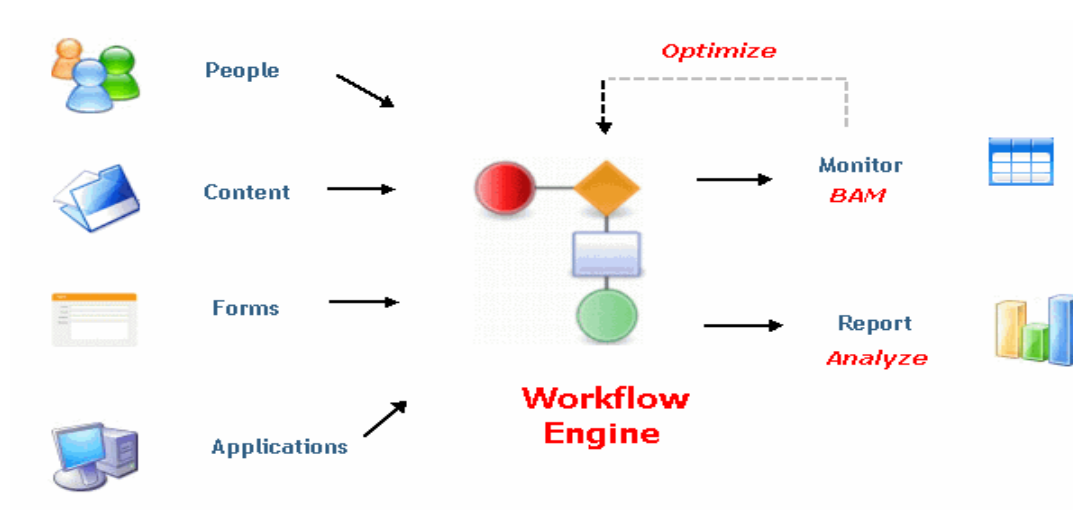
## Road Map



## Work flow Functionality

Workflow / BPM provides a simple yet dynamic application to automate processes:

- Single interface to design and deploy
- Single model to save all process information
- Single parameterized workflow engine to execute



**BPM:** Business Process Model

**BAM:** Business Activity Monitoring

Note: Workflow Engine shown is only thematic representation through **BPMN** (Business Process Modelling Notifications)

## Main components of proposed e-governance in CCI

### i. Document Management Solutions

- Document management software to be designed to
  - Seamlessly connect people, ideas, and processes to satisfy
  - collaboration,
  - compliance, and
  - process requirements.
- The DMS should work with Microsoft® Office®, Microsoft® Windows® and Linux®.

### ii. Process Modeling

The vendor / consultant must develop a robust process modelling which is an important requirement of Business Process Management. BPM should include a powerful and easy to use graphical Process Designer that makes it easy for developers and business analysts to collaborate on design of business processes. Ideally the process modelling designer should have the following attributes

- 100% thin, web-based process modeller
- Visually model, create, update and maintain electronic workflow processes
- Study Hardware Requirement / arrangement
- XPD L standard based [The **XML Process Definition Language (XPDL)** is a format standardized by the Workflow Management Coalition (WfMC) to interchange Business Process definitions between different workflow products, ie between different modeling tools and management suites. **Workflow Management Coalition (WfMC)** is a consortium, formed to define standards for the interoperability of workflow management systems. XPDL defines an XML schema for specifying the declarative part of workflow / business process. **XML (Extensible Markup Language)** is a set of

rules for encoding documents electronically. It is defined in the XML 1.0 Specification produced by the W3C and several other related specifications; all are fee-free open standards.]

- Support for decision nodes, sub-processes, exception handling, forks and joins allows execution of process flows of almost any complexity.
- Built-in Business Rule Engine
- Assign task by users, groups and roles
- Support for queues
- Dynamic task allocation based on user preference
- Powerful scripting support
- Built-in Organization Chart builder for routing based on reporting hierarchy
- Support for Alerts, Reminders and Escalation
- Integrated with your email system for notifications

### iii. **E- Form designing**

This would be extremely useful for existing / future statutory (or optional) forms used by the Commission (e.g. Form of notice with the Commission pursuant to Section 6(2) of the Competition Act, 2002). The Forms Designer solution allows design of rich web forms for users to interact within process actions. The Form Designer uses a unique web-based and extensible design environment that allows developers to create rich user forms with little to no IT involvement.

- Rich WYSIWYG (**WYSIWYG** is an acronym for **What You See Is What You Get**, used in computing to describe a system in which content displayed during editing appears very similar to the final output, which might be a printed document, web page, slide presentation or even the lighting for a theatrical event)HTML form editor (**HTML**, which stands for **Hyper Text Markup Language**, is the predominant markup language for web pages).
- Support for all form inputs — Text, Numbers, Dates, etc.



- Support for repeat tables / dynamic grid
- Built-in support for data lookups, user lookups, document attachments and cascading drop-down lists
- Extensive field Validation support
- Image Embedding
- Excel like formula builder
- Integration of form elements with external data sets
- Auto number generation feature
- Built on X-Forms standard
- Multi-lingual support
- Easily extensible to add custom events

#### **iv. Monitoring Portal**

End users would interact with the workflow system through the portal, which should be fully customized depending on the user rights and preferences. The user can easily:

- Initiate a new request
- Monitor his on-going requests
- Perform an action that has been assigned to him and forward the eForm.
- Search information on recent, closed or archived requests
- Delegate his actions to a colleague
- View reports, metrics and statistics related to processes
- Get access to content/documents related to the process
- **Email collaboration:**
  - Powerful email server
  - Email on every desk

- Email availability in absence of internet
- Email groups
- Email privileges on users
- Vigilance on inbound and outbound emails
- Emails access from anywhere for designated users
- compliance with BlackBerry or such handheld device
- Email download prioritization
- Email sending priority
- Compliance with generic mail clients like MS Outlook, Outlook
- Email backup
- Register like report on inbound and outbound emails

**v. MIS Reporting**

BPM Server should offer compelling reporting and dashboard capability. It should allow wizard driven design of charts and reports to enable real-time view of business metrics in a self-updating dashboard as well as user designed reports. Its features should include

- Wizard driven report design
- Support for summary report, matrix report, roll-up report and charts
- Ability to export data to Excel or PDF
- Apply interactive filters to slice-and-dice data
- Personalized to the specific users based on their access rights
- Report drill-down to the process instance data
- Ability to integrate custom reports

**vi. Alerts and Notifications**

- Users participating in a workflow should get real time notification during the course of the process. They should receive fully customized emails advising them of:
  - actions assigned to them,
  - actions they are requested to assign,
  - requests that have been closed,
  - actions overdue or cancelled.
  - Controlling officers should receive emails at the completion of a certain milestone even if they are not participating in the process.
- Email templates can be customized with form data and triggered when a task is overdue, due tomorrow, accepted, rejected, etc. Users can click on the link in the email to access the portal at any time to check the status of their requests via a comprehensive real-time audit trail.

#### **vii. Integration**

- The BPM system can be seamlessly integrated into an existing IT infrastructure.
- Existing directories are leveraged through synchronization with user management database (AD/LDAP: **Active Directory / Lightweight Directory Access Protocol**, are application protocols for querying and modifying directory services running over TCP/IP. ).
- Built-in form features enable lookup to external databases for real-time data retrieval
- At any stage in the workflow engine, calls to web services or custom wrapper URLs can be configured for real-time data import/export.
- Integration with Document Management System is built-in to enable storage and management of content / documents uploaded as part of the process

#### **viii. Document Management Implementation Services**

- In addition to providing guidance in the planning and installation phases of the Document Management Software, the consultant /

vendor should be available to provide specific customizations, consulting, technical project management and training for all users.

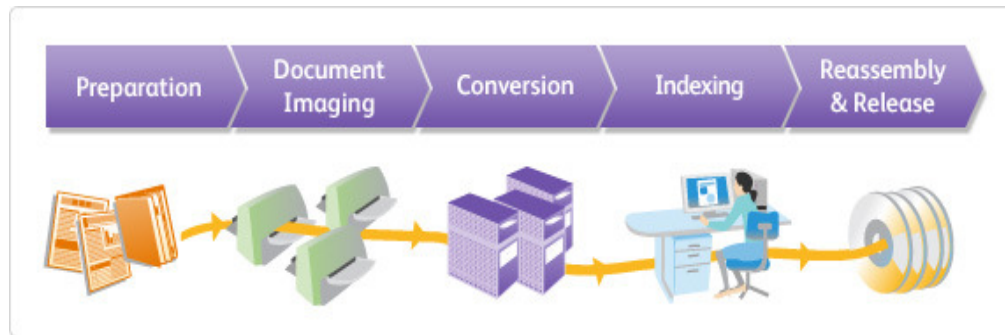
- As part of the implementation, the following tasks are performed
  - Assessment and Planning
  - Installation and Configuration
  - Customizations and Configuration
  - Directory structures, meta-data and data import strategy
  - Rollout strategy for the Commission
  - Integration strategy with other systems (if needed)
  - Training for administrators and end-users

#### **ix. Document Imaging Services**

This would take place at an advanced stage of iTOp implementation.

- **On site:** An on-Site document imaging service is a convenient way for the Commission to satisfy its document imaging needs – especially if some document collection cannot leave the physical premises due to security / confidentiality reasons.
- Initially, a team of document scanning specialists can travel to CCI office, set-up its document imaging equipment and then scan the documents in a timely manner as per requirement. Later, the necessary hardware can be procured on advice of the consultant / vendor and staff can be trained by them to do the necessary imaging work in-house.
- **Off site:** Bulk imaging such as voluminous research papers / reports / orders that have to be placed in public domain can be outsourced off site if required. The vendor would guide the process.

A work flow of the process is envisioned below.



**x. Document Retention and Storage**

There should be a clear system of document warehousing worked out in consultation with the vendor / consultant. It is preferable to store the original hard copies at secure premises of CCI while the DMAT copies should reside at least 2 different locations. The consultant would guide the Commission through this process.

**xi. Knowledge Management**

- The vendor should enable Knowledge Management within the Commission. A Knowledge Manager enables classification of an organization's knowledge base using a Knowledge Map and allows creation of organizational and individual knowledge repositories.
  - Supports user -to -user document routing and tracking of documents
  - Support for escalation and notifications
  - Creation and management of knowledge assets
  - Individual and team knowledge spaces
  - Collaborative working through discussion forums, Q&As, bulletin boards, chat, message Boards, as well as facilitating user subscription for specific content access and notifications.
  - Full text search on documents, categories etc.

**xii. Authentication Management**

There is need to establish a user protocol and access level management. This is done through AM (Authentication Manager)

- Authentication Manager uses Light Weight Directory Access Protocol (LDAP) or its more secure version LDAPS (Secure LDAP) to communicate with the Directory Service. Directory service provides the common repository of resources available in the network. Use of the users/groups available in the Directory Service is made. The user is authenticated against the domain in the Directory Service.
- Features of Authentication Manager
  - Synchronization: Directory Information like users, groups and group memberships is imported in the cabinet
  - Domain Authentication: User credentials such as user name and password are validated against a domain supported on a Directory Server rather than the cabinet. Authentication for Non-Domain User: User credentials are validated with the cabinet only
  - Single Sign On: Using Single Sign On (SSO), a single action of user authentication and authorization can permit a user to access all computers and applications available under the domain
  - Secure Protocol: Authentication management supports interaction with the Directory Service via two protocols namely LDAP and LDAPS
  - Configurable import of user properties: The mapping of the user properties from domain to the cabinet is configurable i.e. the user can specify which user property in the domain corresponds to a property in cabinet

### **xiii. Mail and Web content management**

- Mail is an add-on component, which extends the capabilities. It not only enables enterprises to manage and maintain their voluminous e-mails but also provides a collaborative tool for business communication. In addition, Mail management packs in comprehensive capabilities such as defining access -control policies for restricted access, defining retention and disposition policies, and logging comprehensive details using audit logs for organizations to achieve compliance. Mail management provides a Web-based interface accessible through standard Web browsers.

- A Web Content Management System is implemented as an add-on. It facilitates users to publish documents over third party web sites. It is a web-based solution associated with. Using Web Content Management, user can publish a document through proper approval workflow.

Some salient features of web content management are as follows:

- Simple and familiar user interface for users
- Configurable and re-useable workflow model
- Simplified content authoring by managing publishing properties
- Access rights for contents to be displayed
- Discussion groups
- Blogs
- Online linkage to CCU library
- Paid access to reports
- A presentation layer based on a set of graphical templates

#### **xiv. Records Management**

- Records capture all the transactions, official communication and processing that happens in an organization and act as a reference point for all the operations and activities in the organization. In addition, records are also necessary for external obligations mandated by law such as fulfilling compliance requirements and legal discovery requirements.
- Most, if not all, organizational activities result in creation of new records or updating of existing records. Crunched under the massive volume of records, organizations are always on the lookout for record management solutions, which efficiently manage the records, both electronic and paper-based, and provide quick and easy access to these records.
- Records in an organization might exist in various formats such as Office documents (Excel, Word files), images, certificates designed in various graphic applications, e-mails, database, and so on. A records management solution must not only cater to records existing in various

formats, but also manage the records that are often spread across departments, processes and functions.

- Records Manager Tool (**RMT**) is powerful tool for acquiring/creating, classifying, storing, maintaining, retrieving and finally disposing/archiving records of an organization.



The key capabilities of RMT should be as represented below



**xv. Functionality Modules – Human Resource Management System (HRMS)**

**HRMS** refers to the systems and processes at the intersection between human resource management (HRM) and information technology. It merges HRM as a discipline and in particular its basic HR activities and processes with the information technology field, whereas the programming of data processing systems evolved into standardized routines and packages of enterprise resource planning (ERP) software. There is a strong requirement to have a robust HRMS in place right from the start.

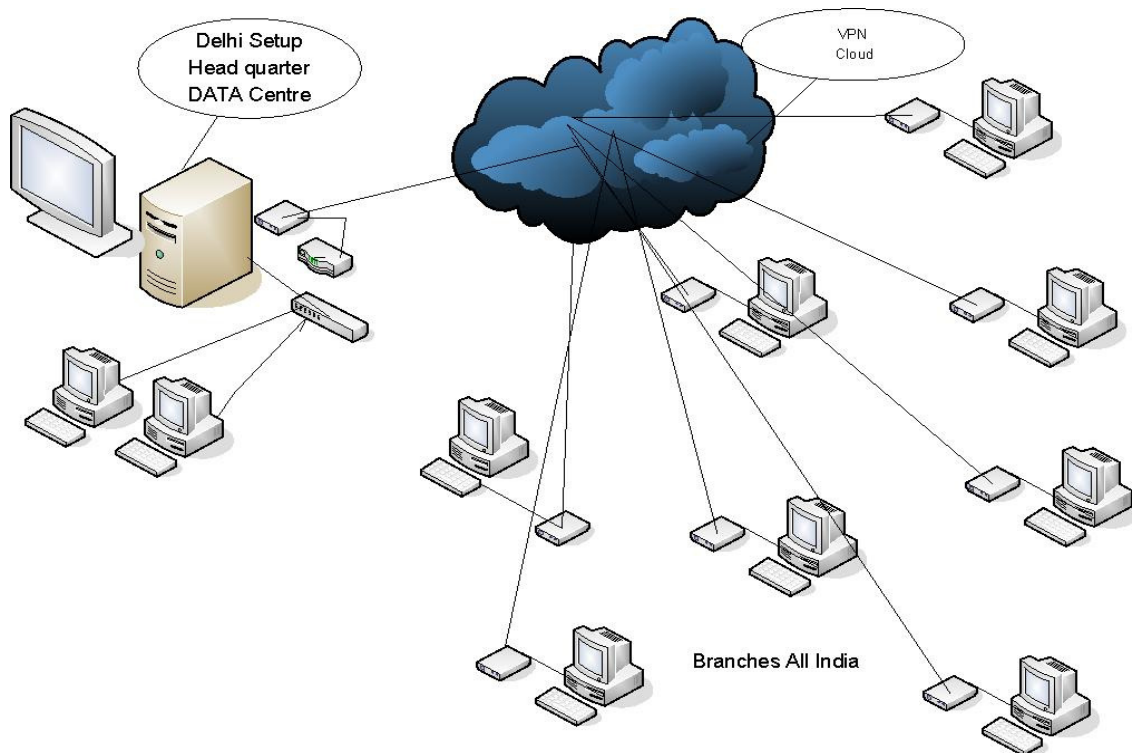
- Document management for HRMS refers to the process for handling distributed or centralized repositories of electronically stored documents, images, and forms. Due to the historically paper-intensive nature of the HR function, a document management system should seek to reduce the reliance on paper-based processes, allow for revision control over critical forms, and enable the organization to easily access and disseminate information to various stakeholders. While most modern solutions provide functionality that enables the storage and retrieval of electronic documents and images, governments with more extensive document management requirements can assess the ability of their HRMS solution to work with a third-party document management vendor specializing in this area.
- A comprehensive HR function includes a "broader set of activities performed jointly by personnel officers and managers and with the strategic objectives of the organization clearly in mind."HRMS is much more than a compilation of employee data in a software package; as a "system" it includes elements such as processes, policies, and staff.

Given the scope, an effective HRMS must address a range of administrative, statutory, functional and technological requirements, enabling the HRMS to support the partnership between HR professionals, program managers, finance staff, executives, and employees, while also providing accurate, reliable information for organization-wide planning and decision-making.

- HRMS must be developed to benefit Leave \* Salary \* Accounting \* Tax/Payroll Action \* Recruiting/ Enrolment among other relevant things.

### Envisioned network architecture

This takes into account future branch offices.

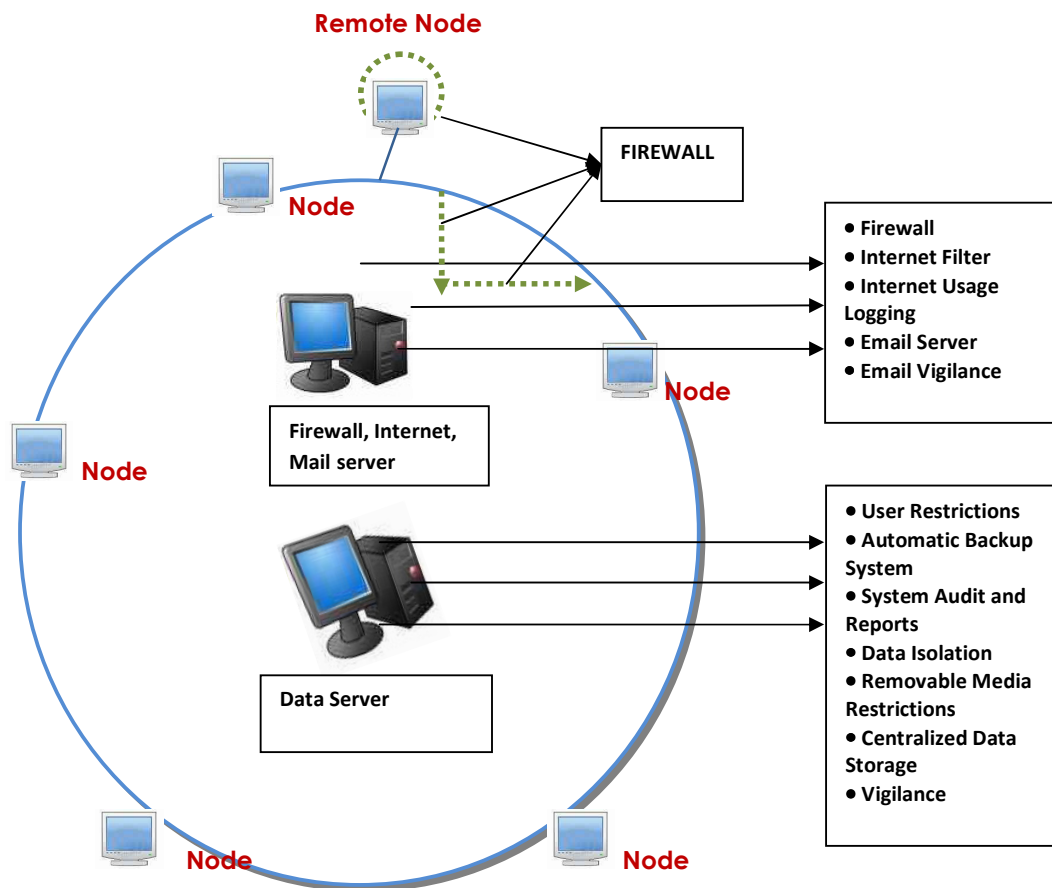


## Security and Requirements

- **Internet Security Aspects:**
  - Firewall,
  - Internet Restrictions Server
  - Inbound / Outbound traffic monitoring
  - User privileges on internet access
  - Reports on internet activities by users
  - Bandwidth allocation by users
  - Multiple bandwidth management
- **Software Environment**
  - Centralized data storage
  - Automatic backup of users' documents
  - Automatic backup of users' email data
  - No possibility of data theft by Pen drives, Removable Media
  - Complete control on software to be used by users
  - Complete control on giving permissions to users on certain documents, folders, printers\
  - Comprehensive EDP Audit Centralized data storage
- **Productivity Software**
  - Microsoft Office or alternative
  - Work flow management system
  - Business process automation with approve, reject, review, escalate, postpone etc action
  - Document management system for digitizing physical documents
  - Search engine to locate right document

- Document repository with access rights to users – read, write, modify, delete
- Intranet portal with content management
- Employee self service intranet
- Payroll software
- Document Management System, Work Flow
- Management System

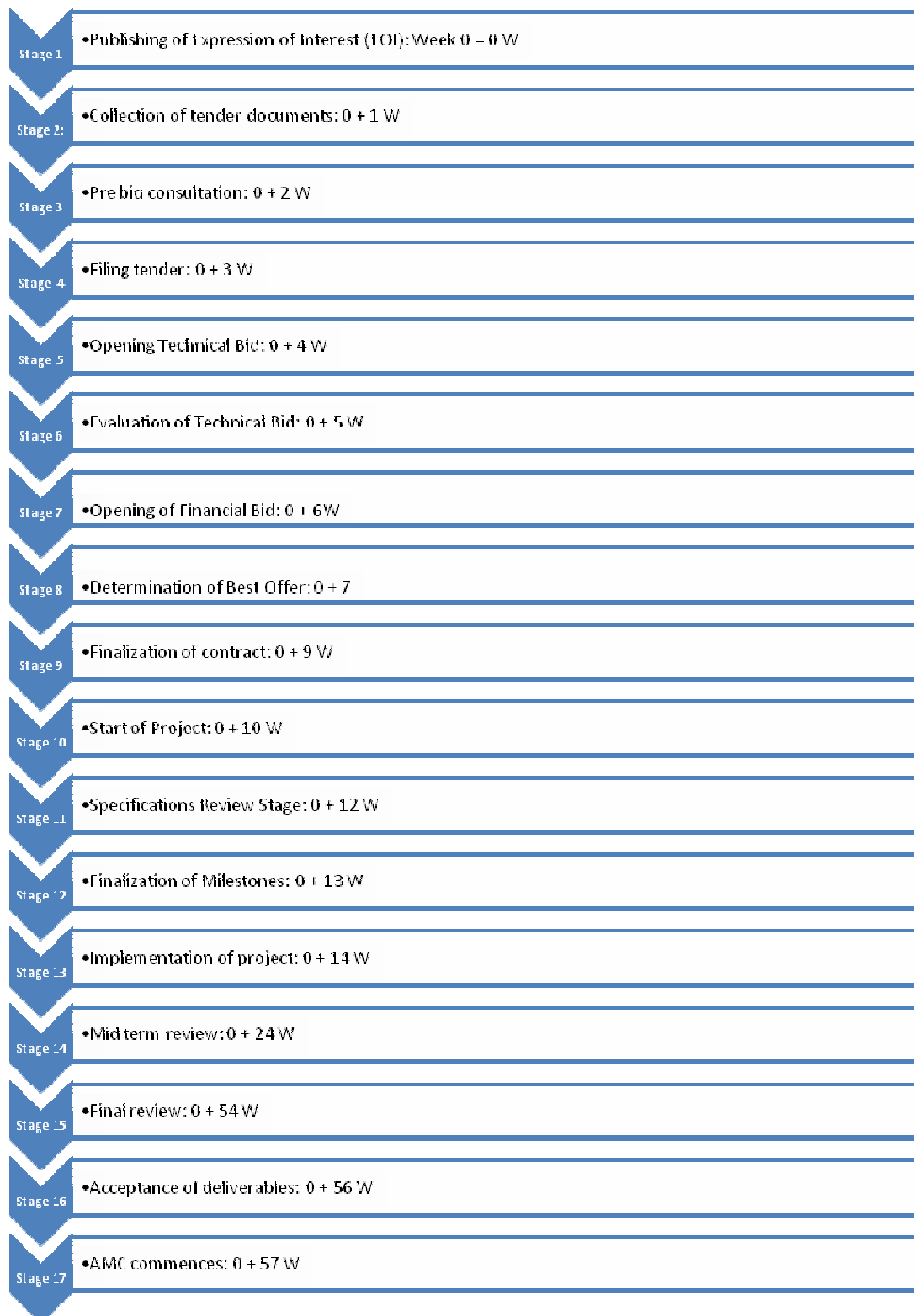
### Conceptual Internet Security and Network Architecture requirement





### **Proposed timelines till AMC commencement**

The proposed timeline is 57 weeks. A margin of +/- 8 weeks can be kept.



## Things to do

- i. The Commission examines and approves the Roadmap. It may also suggest modifications.
- ii. In case of approval, the Consultancy Evaluation Committee (CEC) may also approve the proposed RFP (with modifications, if any).
- iii. Post selection of consultant, the CEC may be reconstituted as Consultancy Monitoring Committee (CMC).
- iv. It is pointed out here that the **draft RFP does not include website redesign / maintenance aspect of the Roadmap**. This is because the Commission has already taken a decision to hire a technician for content upload from NICS. Furthermore, the Commission is also in the process of hiring a professional content managing / web designing firm to change the look and feel of the existing website. It is therefore advisable to treat website redesigning as a separate project. There would be greater clarity on concepts and design that would emerge during the correction / improvement of the existing website over the next 5-6 months.
- v. However, the vendor / consultant would give advice on re-design / re-development of the website and indicate the stage at which the Commission should go in for complete overhaul / re-design. It would also assist in the process of selection of a vendor for website revamping when the time comes.
- vi. The approved Roadmap should form part of RFP to give a holistic picture of requirements to bidders.
- vii. The selection and event milestones given in the previous section may be followed (with modifications as desired).
- viii. The Roadmap envisages following a Modified Annual Rolling Plan. Therefore the commercial bid would consist of 3 parts: 1<sup>st</sup> being quote for development & implementation, 2<sup>nd</sup> being AMC for Year One and 3<sup>rd</sup> being AMC for Year 3. Upon satisfactory performance, the contract may be renewed / re-negotiated for AMC of sets of 3 years. However, normally, such renegotiation should remain within a



limit of 15% increase above the AMC for the final year of the previous AMC.

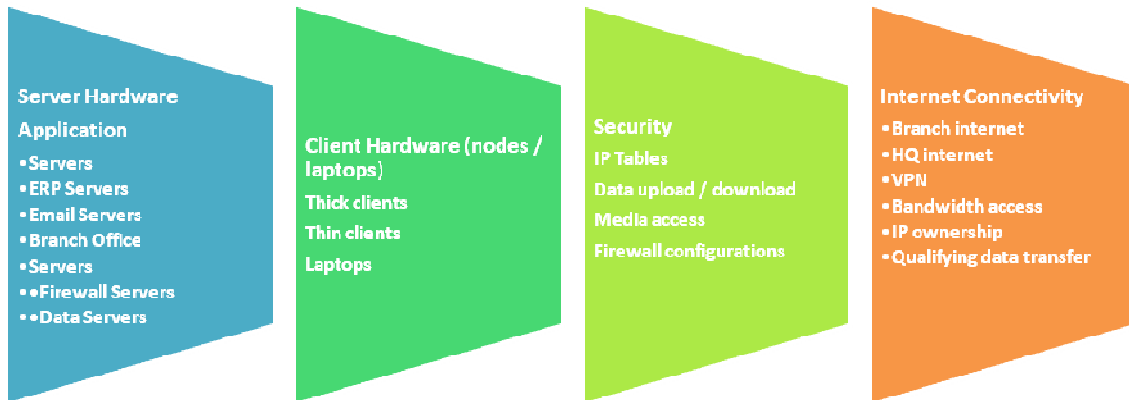
- ix. A CIO (Chief Information Officer) of sufficient seniority should be appointed by the Commission at this stage.
- x. The vendor / consultant would be responsible for programming, development of applications, capacity building and other aspects of IT consultancy indicated in the foregoing passages.
- xi. Procurement of hardware / proprietary software (like OS for system, PCs, servers, routers, etc.) would be done as per advice of the consultant from DGS&D as far as possible. The consultant would design tenders and evaluate them for items not available in DGS&D rate contract.
- xii. The consultant itself would not be eligible to supply any of the above items to avoid conflict between procurement and consulting activity.
- xiii. The vendor / consultant would impart in-house on-site training for its applications. For any other kind of training needs, it would help the Commission in devising the training programs that do not pertain to applications / packages developed by it. E.g. general level training in MS Office / Internet / Scanning etc. can be done by some outside institute (NIIT etc.). The vendor / consultant would guide the Commission / CIO / Administration in selection of the trainer and evaluate its impact.
- xiv. The Commission would be recruiting IT professionals as per approved rules. The consultant would assist in evaluating the applications.
- xv. In the SRS stage the consultant would interact intensively with officers / staff of the Commission to understand exact work processes, functions, segmentation, documents, level of training required etc. This is the stage where the + / - variations of 8 weeks in timelines may be negotiated.

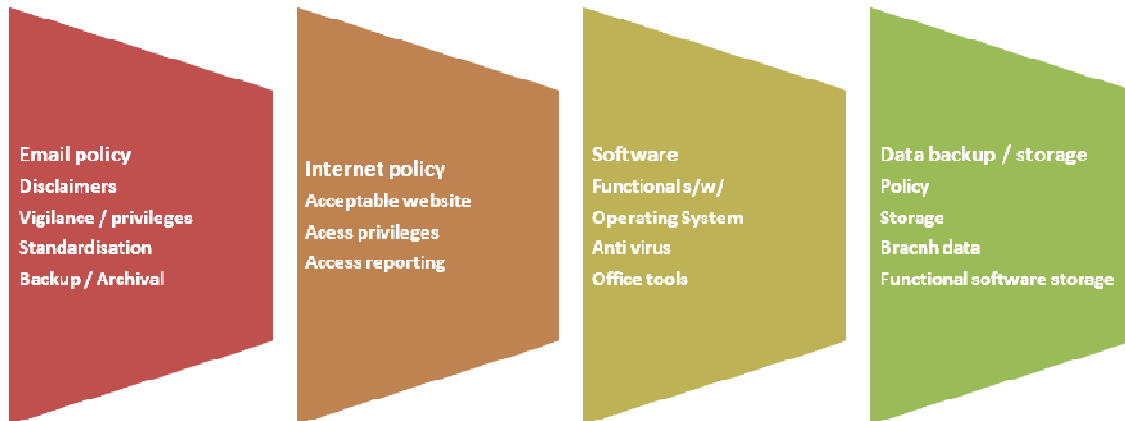
- xvi. The mid-term review and final review would be carried out under the overall supervision of the CIO who may be aided by any other staff the Commission designates. It is hoped that by that time there would be a rudimentary in-house IT team.
- xvii. Acceptance of the project or evoking the penal provisions for delays would also be done in the supervision of the CIO assisted by designated staff.

### Summary

Scope of IT policy will cover 8 major components of Information Technology infrastructure in which CCI has invested and will invest in future. These components will further be detailed while policy making.

<b>1. Server Hardware</b>	<b>2. Client Hardware (nodes / laptops)</b>	<b>3. Security</b>	<b>4. Internet Connectivity</b>
<b>5. Emailing Policy</b>	6. Internet Policy	7. Software	8. Data Backup and Storage





## ADDENDUM

### Special attention to Information Technology Act of India

It extends to whole of India associated directly or indirectly with usage of Information Technology. It requires organizations to own responsibility of internet activities done on behalf of organization. This has extended immense responsibility on organizations using internet for information exchange, emailing, data transfer, business to business and business to customer applications.

CCI requires secondary system which accounts every bit of data or information on inward or outward point. It requires to have a centralized system which becomes ideal client server architecture to control clients through server policies. Such systems should necessarily identify each client in LAN, WAN, VPN or public network by IP address /MAC address / user id and password. There is an important role to be played by a competent consultant who can understand possible requirements of users for data / information transfer in terms of internet browsing, access to files servers through File Transfer Protocol (FTP), inbound requests to access shareable data. Having understood such requirements, consultant can implement such system which is based on various privileges to client users.

There need be system which can profile users based on internet access rights, FTP rights, database access rights through LAN, WAN, VPN and public networks. Such profiling can be translated by consultant in configurability of internet / firewall server. This should allow users to work in hassle free manner as well as it should make it extremely difficult if user intends to exploit the internet resources beyond privileges granted to user.

CCI is envisaged to be using emails as means of its internal communications as well as its communication with outside world. It can make significant difference in its drive towards paperless office. Any email activity done from or towards CCI networks, must be logged, reported and vigilance-capable. System must be capable of accounting every inbound and outbound email.

Data theft by means of attachment, BCC is the challenge. The email system must be capable of preventing such incidents without causing any inconvenience to the users. Email system should also be compatible with email clients which are not falling under IP value and licensing mode. The consultant should be capable of understanding user requirements. Consultant should also be capable of translating email related policies. This email system should be reasonably proof from any serious virus attack or worm attack. There must be single location antivirus process which in turn distributes emails to nodes.

#### **General services by vendor / consultant**

Consultants should also give valuable inputs on procuring, implementing a standard antivirus software and its policy configuration. CCI envisages use of hand held email clients in near future. The email system must be capable of giving email access to privilege users from internet, blackberry, nokia pushmail services.

Email is an important communication which need be preserved for future reference. There must be adequate facility to backup the email data of users. Email is convenient mode of communication. It needs to be archived and archives should be seamlessly accessible to email client used by users. The email system must have archival procedure which works by users inputs and alerts for archival.

The consultant will have an important role to play in configuring such emails system, maintain it and upgrade it when required. CCI will need to work around software licensing cost owing to software licenses, network size, operating system licenses, database license etc. Consultant has to be necessarily knowledgeable of software licensing terms of various providers and should propose the most cost – effective and scalable strategy.

CCI will have centralized data storage system. The software environment will make users compulsorily store data on central servers. CCI will have client server technology which will allow control from server and client will inherit any new policy or change in policy. Consultant needs to understand software related requirements of every use at CCI. The service provider must provide one stop solution on following important processes.

1. Understanding of software environment privileges
2. Devising users policies while they are logged in

3. Ongoing support on any software related issue
4. Implementation of policy on every user

CCI also needs an expert consultant who is responsible for auditing IT system of CCI on reasonable frequency and verify internet privileges, email systems, software environment, data backup, data restore etc.

Users working for CCI will create large volume of data in terms of documents, spreadsheets, presentations, emails, downloads, digitized documents, work flow application data. There should be smart backup system. Consultant has to play an important role to devise backup strategy on versioning basis. There need be detailed documentation on backup strategy.

Consultant is expected to provide inputs on auxiliary equipment like UPS, peripherals, rack, air conditioning for servers, and many other relevant issues. Consultant must estimate processing load for various IT activities and suggest optimum configuration of servers, clients, laptops and hand held devices. Framework for computerization of processes Consultant is expected to develop a framework which can be scalable and reusable for computerizing various business processes of CCI. Consultant will understand business processes which are performed manually and suggest best possible way to use computers to complete such processes by experience. This will be implemented in the framework. Consultant will be responsible to train users to use such customized applications on common framework.

