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Department of Telecommunications
Telecom Engineering Centre
Khursheed Lal Bhawan, New Delhi - 110001

**First Report of the Committee on
Telecom Knowledge Repository**

Dec 26, 2013

A committee was constituted vide DOT HQs letter No. 100-47/2012-STG-I dated April 9, 2013 to finalise the methodology and timelines for setting up a comprehensive repository in NTIPRIT for disseminating telecom field related information, standards, benchmarks, resources, programme curriculum etc. The committee comprised of the following members:

S/Shri A K Mittal,	Sr DDG (TEC)	Chairman
Sunil Purohit,	DDG (S), TEC	
S K Jain,	DDG (Skill Dev), DOT HQs	
Neeraj Verma,	GM (Trg), BSNL	
Devinder Yadav,	Director (Skill Dev) (<i>replacement of Sh Jitendra Khare</i>)	
S K Bhalla,	Director (NTIPRIT)	Convener

Shri Arun Gupta, DDG (T&A) NTIPRIT and Shri Prasoon Chandra, Director (CDD), NTIPRIT were co-opted in the committee as additional members.

2. Deliberations of the committee

In the first meeting of the committee, it was agreed that setting up of Knowledge Repository requires two broad categories of resources:

- Content (Information & its Sources, Formatting, Upload methodology, Administration of the content etc), procedures and specifications.
- Web-Hosting platform, i.e. Hardware, Software & Applications etc. for which the specifications/ requirements needs to be formulated.

Based on the broad categories of resources, two Sub-committees were constituted to deliberate and prepare detailed recommendations on above issues. After receipt of reports of the Sub-committees, the concluding meetings of the committee were held on 10th, 11th, 13th, 17th and 26th Dec 2013. The committee has taken note of the observations of the two Sub-committees while arriving at the recommendations for the Knowledge Repository Platform.

3. Content for the Knowledge Repository (KR)

The committee deliberated on the approach to be followed for developing a Telecom KR in the perspective of the National Telecom Policy-2012, and has considered the following areas in respect of KR content:

- Content categorisation
- Sources of Information
- Model of Content Administration
- Content development and formatting

The committee has prepared the 'first list' - broadly identifying the components under which Content of Telecom KR could be broadly categorized, and the sources of content. However, this is not an exhaustive listing, and will keep on evolving:

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3.1 Content Categories

- Acts
- Rules
- Regulations
- Technology & its Deployment
- Statistics
- Licensing
- Standards : International/Indigenous
- Policy Framework
- Patents
- Litigations & Case Studies
- Courses' Curriculum
- Skills & Manpower Database
- Industry & Related Information
- Manufacturers/ Product Information
- Service Providers/ Product Information

3.2 Content Sources

The information can be sourced from the following organizations and their portals:

- Various divisions of Department of Telecommunications
 - Licensing Divisions
 - Economic Research Unit
 - Security Divisions
 - NT Cell
 - PG Cell
 - PIP Cell
 - IR and Training Division
 - USOF
 - etc...
- Telecom Regulatory Authority of India
- Telecom Dispute Settlement Appellate Tribunal
- Academic Institutions (IITs/IISc/NITs etc.)
- NTIPRIT
- Telecom Engineering Centre
- International Standardisation Organisations such as ETSI, ITU etc.
- Patents office and Research bodies (CDOT, CDAC, Research bodies in the Private Sector etc)
- Department of IT/ CERT-In
- Test laboratories in India & abroad
- Law enforcement agencies
- TERM Cells
- CCAs
- Telecom Industry
- Operator and Manufacturer Associations
- Cross Industry sources and Sector Skill Councils
- NKN and related portals of MHRD

3.3 Model of Content Administration

A designated Content Administrator should be responsible for managing access permissions to folders and files, usually accomplished by assigning access rights to user groups or roles. Administrator may also assist and support users in various ways. Committee noted that when the levers of control are strongly centralized, content management systems are capable of delivering an exceptionally clear and unified brand message. Moreover,

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centralized content management governance structures allow for a large number of cost-savings opportunities in large enterprises, realized, for example, (1) through avoidance of duplicated efforts in creating, editing, formatting, repurposing and archiving content, (2) through process management and the streamlining of all content related labor, and/or (3) through an orderly deployment or updating of the content management system. The committee opines that - to start with - a centralized model may be adopted. For better efficiency, two layered approach for repository content may be followed. All new content will be uploaded by authorized users. However its access to public may be enabled by a Content Administrator in NTIPRIT after screening and validation as applicable.

3.4 Content development and formatting:

Content in KR may fall in following categories:

- Content developed by other organizations/ Outsourced content
- In-house content developed by NTIPRIT

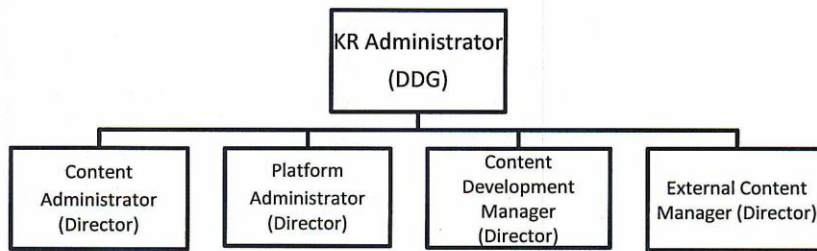
Above content may require formatting, rewording and authentication - including source authentication - etc. before upload. Standard Operating Procedures (SOPs) will need to be framed in this regard.

In either case, cross references, i.e., relational database, has to be developed which requires study of content for generating keywords, search tags and primary sections for hosting the content.

This work can be entrusted to Content Development Manager who can have a small team of full time executives supported by standing Subject Matter Expert (SME) members from core divisions of NTIPRIT. The formatting job can be outsourced.

3.5 Human Resources for Content Administration and Development:

The committee proposes that a Content Administration team would be required to be constituted at NTIPRIT - broadly on following lines:



SOPs will have to be framed for various activities and functions dealt by NTIPRIT for consistent and efficient operations. These SOPs will define processes, procedures, roles and escalation levels for all types of activities.

The following is a list of broadly identified functions for which Human Resources will be required for Development and Administration of KR platform:

- Content Development Lab
- Hardware experts

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- Programming/ Software Expert
- Database experts
- Subject Matter Experts (SMEs)
- Content formatting professionals
- Animation experts
- Developing and complying with SOPs
- Officers for liaison with Content partners and other stakeholders
- IPR and legal experts
- Data Entry Operators and Multi-tasking Staff

As far as SMEs are concerned, a small pool of them is already available with NTIPRIT - this can be expanded and if required, some specialised requirements may be met through deputations.

Regarding the remaining functions listed above, keeping in view the nature of jobs and evolving nature of workload, most of the staff may be outsourced from NICS, which is a Government Agency under Dept. of IT.

Further, for the management and supervision functions, each Director may be assisted by 2 ADGs and 2 ADs/JTOs. Some more skilled staff may be taken on deputation from DEITY/ other ministries/ PSUs to the extent not available internally. Exact requirement can be worked out once the broad framework suggested by the committee is approved. The same HR resources will be used in the operation and management of KR subsequently.

- 3.6 The committee considers the above is a starting framework and is adequate for getting the things off the ground. However this is not an exhaustive framework and there can be no 'perfect' model for such repository. To the extent possible, appropriate content development in Hindi and other regional languages will also be desirable. The framework will evolve with the experience of administrators and feedback from users.

4 Hardware and Software Platform

4.1 Assumptions:

While arriving at its recommendations for the KR Platform, the committee has made the following assumptions:

- NTIPRIT has been assigned the responsibility of skill building and training also, and associated training & skill building documents, exercises, case studies, interactive learning aids and video lectures etc. would have to be part of this repository.
- The Knowledge platform should be hosted on a single server initially. The single hardware can cater to the Web-server, Application server and the Database server.
- The need for dedicated servers for these applications may emerge in near future. However, the timeline for the same is difficult to be predicted by the committee at this juncture.
- The initial dimensioning has been done for 50 concurrent users with an average download speed of 100kbps.
- Assumptions related to content sizing:
 - One hour video lecture in MPEG4 format may require 200 MB of disk size (www.nptel.iitm.ac.in).
 - Assuming an average course will consist of 25 sessions of one hour each, the size of one course material consisting of PDF documents and PPT with static images may vary from 20 MB to 50 MB (Reference: www.ocw.mit.edu).
 - The number of courses being hosted on the platform may be 100 based on the National Occupation Standard (NOS)/ NVEQF for Telecom Sector with each course

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having at least 10 video lectures, 20 interactive multimedia demonstrations and reading material.

Thus the total disk storage space comes out to be approximately 250 GB. A start-up space of 50 GB is considered adequate which may be incremented subsequently in a phased manner. Above space is considered sufficient in the initial years to include non-course contents as well.

- The development of the courses and their content will be a continuous process, but a critical mass can be created in around two to three years.
- Major academic and research Institutions like IIT, IISc etc. also have lot of telecom related course material on their portals which may be made accessible as per policy to be defined in this regard taking due care of IPR issues.

4.2 Hardware Platform requirements

(a) Requirement for launch:

To start with a single server of the configuration, 2 Quad Core CPU on load sharing basis running with at least 2 GHz clock, atleast 4GB RAM (scalable to 32 GB) and 50 GB storage (scalable to 250 GB), shall suffice the requirement of Web server, Application and the Database server. However, the configuration of the server must be scalable to multi-processor, higher RAM & database space, load sharing etc. as per need – till the long-term solution as recommended in next para is in place - to take care of higher traffic & storage. The initial configuration can be easily met through outsourcing model, and dedicated infrastructure may not be required.

(b) Long-term requirement:

However, considering the scope of repository as indicated in the assumptions above, hosting space requirement are likely to go up once a critical mass of knowledge and information is established, and a dedicated set-up may be needed in the long run. Apart from scalability and security, a dedicated managed hosting will also allow full control over resources.

Configuration of the Repository in the long run was accordingly deliberated by the committee, and the recommended long-term architecture with dedicated set up is placed at Annex-I. In view of fast advancements in Cloud computing and Data Centre Technologies, the option to host it in own premises/ collocation model or managed outsourcing or fully hosted model can be decided at the time of proposal to switch-over to dedicated hosting.

✓ The need for switch-over to the dedicated hosting architecture may be assessed on the basis of traffic and user-experience after the launch of the repository.

(c) Security aspects of hosted model can be taken care by availing services of NIC or BSNL data centre.

4.3 Connectivity

To start with, assuming a distribution of 50:50 between static and video download, and accordingly an average bandwidth requirement of approx 100 kbps per user (as observed from empirical data), initially Internet bandwidth of 8 Mbps may be extended to the portal; and the same should be scalable to 100 Mbps. The bandwidth may be reviewed from time to time – specially as and when volume of video streaming applications is increased.

Further, in future, there should be provision for (a) MPLS VPN for administrative & upload purpose and (b) sufficient Internet Bandwidth for users need to be ensured.

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4.4 Software Platform

- (a) The software platform may preferably be configured on any open source Content Management System. Many such solutions are available and selection may be left to Application Provider selected to develop the KR application. The Knowledge portal should be developed as a combination of the vertical portal and a corporate/ enterprise portal which shall be supporting the services of a horizontal portal providing the connectivity to the users accessing the system through a myriad of access technologies in a seamless manner. The portal should be based on platform supporting Model View Controller (MVC) allowing the separation of user interface from knowledge processing/ presentation and Knowledge storage. The portal should be capable of supporting the teaching as well as research roles being performed by NTIPRIT.
- (b) The portal should support the Unified Content API (Application Programming Interface) which will assist in speeding up the development of portal applications. The knowledge portal should be designed to support the process flow for collection, Management, refinement, storage & Retrieval and dissemination of the information as per the Knowledge Repository Platform framework indicated at Annex II.
- (c) KR Portal should integrate the training management function also. Training application has to offer creation & modification of training calendar, registration & approval of nominations, assigning coordinator roles, issue of roll numbers, conduction of online exams, tracking of trainee progress, issuing of certificates, verification of issued certificates, etc. The committee feels that any open source Learning Management system may be utilized by the Solution Provider selected for development of KR application. Separate hardware platform configuration may be required for conducting online exams which will depend on the number of concurrent users appearing for exam.
- (d) PHP may be the preferred language for web portal development.
- (e) Document types supported in the repository should include, but not restricted to:
 - Word, PDF, spreadsheets, etc.
 - Multimedia files
 - Multilingual content

Direct uploading and downloading of these documents should be supported using email, Secure FTP etc.

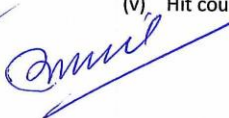
4.5 Portal Management

- (a) The portal should have facility to create any number of user accounts. The web portal should support role based security architecture. The portal should support configuration of multiple roles. These roles should be assignable to any user and there should not be any limitation on the number of users who can access the portal.
- (b) The portal should have https user sessions for specified types of traffic.
- (c) Content management system security level should have:
 - General Users: No user id and password
 - Users with basic security: Id and password
 - Users with Advance security: Dual Authentication
 - Access to download the data: Free/restriction based download
 - Access to upload the data
 - Access to create schedule, courses, users and rights
- (d) The portal should be accessible over prominent web browsers like Opera, Chrome, IE, and Mozilla running over any OS like windows, Linux, Android, iOS and their variants for fixed access device as well as mobile access device.

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- (e) The Portal should support the following feature for providing a user friendly experience:
- automatically present its users with the information appropriate to the user's role
 - suggest additional information to the user, and/or allow the user to voluntarily personalise the information presented by the portal
 - allow the user to search for information that was not previously known to be relevant to the user's role, but which may be available through the portal
- (f) The Portals should provide task management services that can help users take part in and/or manage formally defined processes like generation of information based on collective knowledge, group discussion etc. The portal should provide a user the opportunity to subscribe to active information sources (such as newsfeeds and periodically updated reports) and ask to be alerted when documents are updated.
- (g) The portal should support the integration of information from disparate sources which the user shall be able to use optimally.
- (h) Portal should support IPv4 and IPv6 access.
- (i) Portal source code must be compliant to latest w3c standards.
- (j) Software should offer IP address restrictions for users with upload rights. In addition, it should have provision for hardware token/one time password for users having upload rights.
- (k) Portal should have multi-level approval hierarchy for the content uploaded by authorized users. It should be possible to define categories of information content and corresponding approving authorities. The content initially uploaded will be visible to public only after approval by the highest level assigned to that particular content category.
- (l) Portal intelligence utilization should have:
- Context based Searching
 - Content Indexing (Multi level)
 - Ontology -Information Science
 - Link redirection
 - Mobile access
- (m) Portal should offer mail server integration, event calendar programming, auto mail notification service to registered users, RSS feed etc. This feature may be required when events such as webinars are scheduled.
- (n) The portal should support Knowledge management and groupware to ensure that the required information is stored in the appropriate location and in the appropriate mode.
- (o) Portal should have its own video streaming application.
- (p) Portal must comply with Govt. of India guidelines for government portals.
- (q) Portal should have provision for integrating payment gateway as and when required.
- (r) Portal should deploy appropriate security solutions such as Firewall, IPS/IDS and Data centre should follow the best industry practices in this regard.
- (s) Access tracking module should have mechanism to log user IP address, pages visited, time of access, duration of access etc. and offer comprehensive reporting on various aspects of portal such as category/section wise downloads, access from mobile devices, Various report formats will be defined by the KR Administrator in the beginning.
- (t) Long term agreement may be made with the Solution Provider for comprehensive Operation & Maintenance of Hardware & Software of the repository.
- (u) The selected Data-centre should offer load sharing and disaster recovery service for the repository.
- (v) Hit counter should have appropriate mechanism to track unique users.

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- (w) Repository portal should have provision to integrate with SMS gateway for sending SMS alerts.
- (x) The developed portal should have a user as well administrative interface offering ease of handling requiring minimal technical expertise.
- (y) Selected Solution Provider may be asked to provide:
 - Complete software documentation for the source code as per international standards with IPRs vesting with DOT
 - User manuals
 - Hardware configuration & maintenance training to four officers (minimum 2 days)
 - Software configuration & maintenance training to four officers (minimum 5 days)
 - User training to ten officers (minimum 2 days)

4.6 Database Platforms: The choice of database platform, whether proprietary or open source, can be decided in mutual consultation with the Application Developer. While proprietary platform will have licensing cost implications, Open source platforms may require either in-house expertise to maintain it or entering into a maintenance contract.

4.7 Committee believes that KR is an evolving project and it is difficult to assess & freeze the hardware & application specifications to meet long term requirements. To take care of this aspect, Committee opines that long term project partnership with **hardware, software & bandwidth experts** in government domain such as NIC, CDAC and BSNL etc. would be the best approach.

5. Roadmap and Timelines

5.1 Exploratory discussions on the hosting platform have been held with NIC and BSNL Data Centre franchisee. An indicative BOM has been prepared and is placed at **Annex III**. The costing of Web hosting services of NIC is placed at **Annex IV**.

5.2 Regarding hardware platform, In view of deliberations in the Apex Body on Skill Development headed by Hon'ble MOC&IT – minutes issued vide DOT No. 21-3/2013-SD dated 14th Nov 2013 - the portal may be hosted on NIC servers. The initial launch of KR may be on NIC platform, however, BSNL being a major content contributor for KR and a major stake holder for implementing skill development initiative, their Data Centre may be kept as another option in the long run.

5.3 Regarding Application Provider, the committee considers CDAC - an autonomous organization under DeTy - has the required know-how and the expertise. Keeping in view the observations at para 4.7 above, CDAC may be the first option for a long term arrangement. In case agreement with CDAC does not materialise, the option of Application Developers empanelled with NIC may be considered along with further option of an open EOI with requirements as at para 3 above.

Freezing of base document detailing Software Requirement Specifications (SRS) will require extensive deliberations with the Application Provider.

5.4 Bandwidth requirements may be met from existing pooled bandwidth of NIC, or alternatively from BSNL/ MTNL depending on technical requirements.

5.5 Selection of Application provider & development of application has a direct bearing on the Roll out of project. However some activities have been identified and an indicative Chart showing sequencing of activities and their dependency relationship is placed at Annex V. Action points for initial launch of KR as at para 4.2(a) above need further detailing like – phasing of action points, listing of initial content etc. Notwithstanding the above, proper equipage of KR division at NTIPRIT in terms of staff, tools, accommodation & other resources will be a pre-requisite for taking up the project in right earnest.

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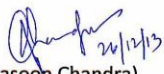
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6. Recommendations


- 6.1 The committee recommends the technical set-up for the Telecom domain Knowledge Repository as at para 4 above. Further, the KR may be implemented in two phases. It may be launched with a single server of the configuration as at para 4.2(a), and may be migrated to long-term architecture with the proposed configuration indicated in Para 4.2(b)/ Annex I. The need for switch-over to the dedicated hosting architecture may be assessed on the basis of traffic and user-experience after the launch of the repository.
Security, redundancy and disaster recovery aspects of hosted model can be taken care by availing services of NIC.
- 6.2 The Single Server platform may be initially connected to the Internet over a bandwidth of 8 Mbps which may be periodically reviewed for up-gradation; and the long-term requirement may go upto 100 Mbps.
- ✓ 6.3 The recommendations in respect of Content development and management are at para 3. In view of the mandate of the Advisory Groups and in the spirit of directions from the Apex Body, content development may involve all the stakeholders, and hence, this may be deliberated further in the Advisory Group on Content.
- 6.4 The committee opines that KR is an evolving project hence a long term project partnership with hardware, software & bandwidth experts in government domain such as NIC, CDAC and BSNL may be established for efficient roll out of the platform and its Operation & Maintenance. This may be deliberated further in the Advisory Group on Capacity Building. ✓
- 6.5 Initial KR administration structure as proposed in Para 3.5 above with associated support staff may be assigned exclusive responsibility of Knowledge repository. The structure will have to be reviewed for expansion when decision is taken to migrate the Knowledge Repository to long-term Architecture.
- 6.6 Broad contours of the commercial issues have also been identified and listed at para 5 above. The committee feels that these issues need further detailing. Depending on the approval for technical set-up required for the Telecom Domain KR as at para 6.1 and 6.2 above, detailed estimates will be prepared by NTIPRIT and the roadmap and timelines to launch the KR – including the issues listed at para 5 - will be deliberated in further detail by the committee.



(Prasoon Chandra)
Director (CDD), NTIPRIT

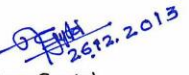

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DDG (T&A), NTIPRIT


(A K Mittal)
Sr DDG TEC

Proposed configuration of DOT Knowledge Repository in the Long run

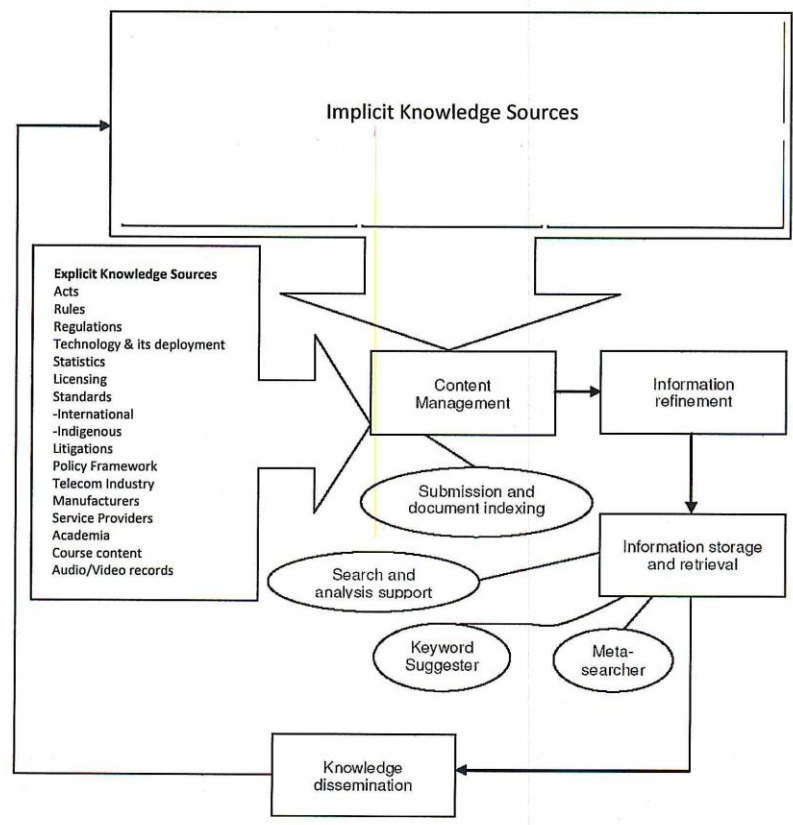
Item	Description	Quantity
Web & Application Server	Dual CPU, 6 -Core, 16 GB RAM,2 X 600GB SAS Drive	1+1 Configuration
Data Base Server	Dual CPU, 6 -Core, 16 GB RAM,2 X 600GB SAS Drive	1+1 Configuration
Back-up Server	Dual CPU, 4 -Core,4 GB RAM,500 GB HDD	1
Storage	300 GB SAN Storage on RAID-5	1
Colocation Space	Colocation Space for Servers and Storage with all necessary infrastructure Requirement	1
Tape Library	Tape Library for Back up	1
Network / Router	Network / Router Switch Port- 10G Fibre with atleast 12 Port	1+1
Load Balancer	Load Balancer	2
Firewall	Firewall with appropriate Throughput	1
OS License	As proposed by the Solution Provider	
DB License	As proposed by the Solution Provider	
Clustering	Server Clustering as proposed by the Solution Provider	
Back-up Software	Back-up Software for 300 GB of Storage	
SSL Certificate	SSL Certificate	2
Antivirus	Antivirus	5
OS Management	OS Management support	
DB Management	DB Management support	








Illustrative Framework for Knowledge Repository



Annex II
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DATA CENTER INFRASTRUCTURE - Primary Site
 Primary Site - BSNL IDC Faridabad (Haryana)

BOM: DOT Knowledge Repository		Qty	One Time Charges	Unit Monthly Price	Total One Time Charges	Total Annual Recurring Charges
Item						
Application Server	Growth Plan- Dual CPU, 6-Core, 16 GB RAM, 2 X 600GB SAS	2		INR 38,800		INR 9,31,200
Data Base Server	Express Plan- Dual CPU, 6-Core, 16 GB RAM, 2 X 600GB SAS	2		INR 38,800		INR 9,31,200
Back up Server	Express Plan- Dual CPU, 4-Core, 4 GB RAM, 500 GB HDD	1		INR 30,550		INR 3,66,600
Storage	300 GB SAN Storage on RAID-5	1		INR 50,000		INR 6,00,000
Colocation Space	Colocation Space for Storage (1/2 Racks with 1.5 KVA Rated Pd	1		INR 30,000		INR 3,60,000
Tape Library	Tape Library for Back up	1		INR 1,12,500		INR 13,50,000
Cabling	Inter Rack Cabling Between Server Rack & Network Rack (Fibre	1	INR 1,88,900		INR 1,88,900	
Network / Router	Racking & Stacking Support (with in Rack) Fibre Cabling	12	INR 17,800		INR 213,600	
Load Balancer	Network / Router Switch Port- Nexus 10G Fibre	2		INR 1,00,000		INR 2,00,000
Firewall	Load Balancer	2		INR 40,550		INR 81,100
	Firewall -Supreme Plan, 1000Mbps Throughout	1		INR 10,000		INR 1,20,000
OS License	Microsoft Windows 2008 R2 Enterprise Edition	4		INR 52,200		INR 208,800
DB License	Database- MS SQL 2008 Standard Edition	2		INR 7,110		INR 14,220
Clustering	Server Clustering	2		INR 35,000		INR 70,000
Back up Software	Back up Software for 300 GB of Storage	1		INR 1,600		INR 1,600
SSL Certificate	SSL Certificate	2		INR 250		INR 500
Antivirus	Antivirus	5		INR 3,950		INR 19,750
OS Management	OS Management - L3 Support for Windows	5		INR 16,670		INR 83,350
DB Management	DB Management- L3 Support for SQL Server	5		INR 4,000		INR 20,000
Back UP	Managed Services for Back UP- OS	5		INR 4,000		INR 20,000
Network Management	Large Network Element Management- L3 Support	2		INR 3,440		INR 6,880
Security Management	Security Element Management- L3 Support	1		INR 19,110		INR 19,110
Storage Management	Storage Management- L3 Support	1		INR 2,670		INR 2,670
Replication	SAN Replication- L3 Support	1		INR 2,330		INR 2,330
Server Management	L3 Support for Server Management	4		INR 1,160		INR 4,640
DR Drill	DR Drill - Twice in Year	0		INR 1,11,100		INR -
Application Development &		1	INR 1,00,00,000	INR 2,50,000	INR 1,00,00,000	INR 30,00,000
					INR 1,02,06,700	INR 1,50,96,840

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**National Informatics Centre
Data Center & Web Services Division (DC&WS)**

Web Hosting Services of NIC

NIC is providing web hosting services to the various Indian Government Ministries/ Departments / Organisations / Institutions as well as State Government Departments and District Administrations.

1. Web Hosting Infrastructure

NIC has setup a huge web hosting infrastructure in its state of the art IDC (Internet Data Centre) which includes a large number of performance tuned, hi-end and secured servers connected to a state of art SAN (Storage Area Network). The Data Centre is connected to Internet on a high speed/bandwidth (4 gbps).

Network load balancing and clustering solutions are also implemented on the infrastructure to effectively manage the heavy load on the websites/ portals during peak-hours and to ensure a high degree of availability and performance.

2. Domain Name

There are around 4000 Domain Names already registered in NIC.IN Domain, used by the Web Sites/ Portals/ Web Applications belonging to various Union/ State Government Ministries/ Departments/ organizations etc. As the domain name space under NIC.IN is owned by NIC, NIC offers Domain Name Registration under NIC.IN free of charge as a part of its hosting services.

The web hosting services are also extended on other domains like GOV.IN, ORG.IN, .AC.IN, .COM, .EDU, .ORG etc... If the site has to be hosted on any of the abovementioned Domains, the User Department has to get the Domain Name registration / renewal done through Domain Registrar. However the NIC officials will extend necessary technical support for the above mentioned task. Once the registration process is over, the site will be hosted on the desired Domain Name.

3. Hosting Platform

Web Hosting services are offered on Linux & Windows Platforms and the servers are powered with the state-of-the-art web technologies such as CGI, Perl, PHP, ASP, ASP.NET, JSP, and Servlet etc. All popular Databases like MS SQL, MySQL & PostgreSQL are also supported.

Windows hosting platform Support

	Service	Software	Tech. Support
1	Web-Application	IIS 6.0, IIS 7.5	ASP, ASP.Net (Framework 2.0,3.0,3.5,4.0)
2	Reporting Service	SQL-Reporting	SQL 2005 Server Reporting
3	Database	SQL Server	SQL Server 2005, SQL Server 2008

Linux hosting platform Support

	Service	Software	Tech. Support
1	Web-Application	Apache (2.2.15) & Tomcat (6)	PHP (5.3.3), Perl (5.10.1), Java version 1.6.2 gcj (open JDK)
2	Database	PostgreSQL MySQL	PostgreSQL 8.4.9 MySQL 5.1.5.2

4. **Security Audit of the hosted Web Contents:** All web sites hosted on NIC's servers are audited for content security. As a part of this security audit, the procedure /programs used inside the concerned website/ application are checked for any security vulnerability and appropriate remedial measures are suggested. To ensure utmost security, no website can be hosted on the NIC web servers without undergoing the mandatory Security Audit.
5. **Remote Publishing Facility:** This facility allows you to update and maintain your site at your own convenience from the comfort of your office or any other remote location through VPN (Virtual Private Network).
6. **Value Added Services:** Following value added services are also provided as a part of the NIC's Hosting services,
- 6.1 **Email Accounts:** Web based POP E-mail accounts are also offered with all Hosting Plans (refer point #6.) on the same domain as of your Web Site. The number of accounts are as per the hosting plans. For example 5 accounts with 25 MB, 10 accounts with 200 MB and so on.
- 6.2 **Search Engine:** It helps in facilitating a comprehensive and powerful search facility on your website to help the visitors locate the desired information quickly. This search facility not only allows the visitors to search HTML Documents, but also allows them to search wide variety of documents published on your website such as PDF, DOC, RTF, PPT, etc....
- 6.3 **WebStat:** It provides access to on-line analysis of the traffic received at your web site. It not only gives daily/ monthly/ yearly hit analysis reports of the sites, but also provides information on most popular pages, most often downloaded documents, least popular pages, top referrers/ search engines, geographical distribution of visitors etc... and many more reports which helps you in developing effective strategies for your Web Site.
- 6.4 **WebCast:** Streaming Media Services facilitates you to live webcast of the important Events, Conferences, Seminars etc... and it also allows you to stream pre recorded audio/video clips as a part of your website.
- 6.5 **Publicity/ Enhancing the visibility of the Website:** To increase the popularity and enhance the visibility of your website, it will be announced in the following popular web portals/ directories under suitable sections by providing links and by placing banners (for a specific period)
- India Image (http://indiaimage.nic.in):* A gateway to the Indian Government information on the Web, which is extremely popular among netizens and it, also receives 15 million hits every month.
- GOI Directory (http://goidirectory.nic.in):* A comprehensive directory providing information about websites of India Government including all its entities such as Ministries, Departments, States/Union, Territories, District Administrations Organisations, Institutions etc.
7. **Hosting Charges:** NIC's Web Hosting charges, are announced in the blocks of 5/ 10/ 15/ 25MB etc. with certain assumption of traffic (amount of data transferred) generated by the site. The various Hosting Plans and their charges along with the number of Email accounts provided are as listed below.

7.1 **Hosting Plans & Charges:**

Hosting Plan	Disk Space	Email accounts	Hosting Charges (yearly)
I	5 MB	1	Rs.4,500

II	10 MB	2	Rs.6,500
III	15 MB	3	Rs.8,000
IV	25 MB More than 25 MB up to 100 MB (Additional space in the units of 5 MB)	5	Rs.12,000 Rs.12,000 + Rs.1,100 (for Additional 5 MB)
V	200 MB More than 200 MB up to 500 MB (Additional space in the units of 100 MB)	10	Rs.43,000 Rs.43,000 + Rs.2,600 (for Additional 100 MB)
VI	600 MB More than 600 MB up to 1 GB (Additional space in the units of 100 MB)	10	Rs.70,000 Rs.70,000 + Rs.2,600 (for Additional 100 MB)
VII	2 GB More than 2 GB up to 1000 GB (Additional space in the units of 1 GB)	20	Rs.1,43,000 Rs.1,43,000 + Rs.10,000 (for Additional 1 GB)

7.2 Terms & Conditions:

The following terms & conditions are applicable to all the **Shared Hosting Plans**

- User Department owns, updates & maintains the Content
- The User Department has to update the relevant files/ folders and transfer the updated contents to the server using the given Remote Updation Facility
- Regular Backup facility will be provided
- The E-mail accounts offered with Hosting Plans will be under the same domain of Web Site and they are Web based POP accounts
- The user department can report the errors/problems related to the hosted Web Site in Web Based Support center available at webservices.nic.in.

7.3 Billing Cycle: All the rates are applicable for one financial year. New users will be charged pro-rata on monthly basis from the month of commencement of service till the end of that financial year for the first year. Second year onwards the billing cycle shall be from financial year to financial year.

8. Contact Details: Users are advised to forward his request for Web Site Hosting as well as associated services through their NIC Coordinator or the concerned officer from NIC. If the User Department comes under some Union Government Ministry/ Department/ Institute etc..., please visit webservices.nic.in/flash/sectors.pdf to get the contact details of NIC Coordinator for the respective Ministry/ Department.

For more details, please visit webservices.nic.in

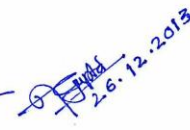










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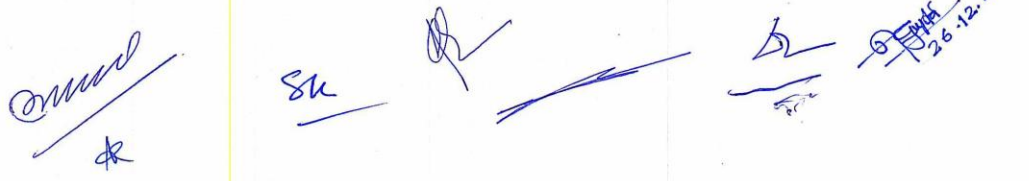


An indicative Chart showing Sequencing of activities for setting up the KR

Activity																			
1. Establishment of empowered Project Management office with resources	█																		
2. Finalisation of functional and technical specification, and BOM	█																		
3. Project Estimate approval	█																		
4. Funds grant		█																	
5. Selection of Application provider		█																	
6. Finalization of hosting platform			█																
7. SRS finalization with Application Provider			█	█															
8. Framing of SOPs			█	█	█	█	█												
9. Application development as per SRS					█	█	█	█											
10. Registration of domain name								█											
11. Testing of application									█										
12. Testing of application on production server										█									
13. Validation & security audit										█	█	█							
14. Handing over KR for O&M																			█
15. Initial KR content for 3 training modules				█	█	█	█												
16. Initial Content collection, tagging, summary generation				█	█	█													
17. Hiring of project staff	█	█																	
18. MoU draft for content partners (BSNL, IITs, IIMs, Universities, R&D etc.)	█	█																	
19. MoU with content partners			█	█															
20. Initial Content supply by partners				█	█														

1 The above chart is only for sequencing of activities, and time frames need further deliberations. All activities may have many sub activities e.g. Initial content development for training modules requires setting up of expert panel, drafting of content, type-setting, animation, video session etc.)

2 Signing of MoU with content partners may require prior discussions with prospective partners in a workshop.



 Several handwritten signatures and dates are present at the bottom of the page. From left to right: a signature that appears to be 'Omved', a signature 'SK', another signature, a signature with a horizontal line through it, and a signature with the date '26.12.2013' written below it.