

# ANNUAL REPORT

## 2013-2014



सी-डॉट  
C-DOT

Centre for Development of Telematics



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सी-डॉट  
C-DOT

# C-DOT Management

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## Governing Council

### Chairman

Minister of Communications & IT

### Vice-Chairman

Minister of State for Communications & IT

### Members

Scientific Advisor to the Defence Minister

Chairman, Telecom Commission & Secretary (T)

Member (Technology), Telecom Commission

Member (Finance), Telecom Commission

Secretary, Department of Electronics and Information Technology

Chairman & Managing Director, BSNL

Executive Director, C-DOT

Directors, C-DOT

## Steering Committee

### Chairman

Chairman, Telecom Commission & Secretary (T)

### Vice-Chairman

Member (Technology), Telecom Commission

### Members

Chairman & Managing Director, ITI Ltd.

Director (Planning), BSNL

Sr. DDG, Telecom Engineering Centre

DDG (TPF), Department of Telecommunications

Sr. Director, Department of Electronics and Information Technology

Executive Director, C-DOT

Directors, C-DOT

## Project Board

### Chairman

Executive Director, C-DOT

### Members

Directors, C-DOT

## Overview

C-DOT, India's premier telecommunications R&D centre, has been a pioneer and a nation builder. Committed to providing a wide range of indigenously developed, cost-effective, state-of-the-art total telecom solutions, it has come a long way since its inception 30 years ago.

In the eighties, C-DOT developed rural telecommunication products ideally suited to Indian conditions. Able to work without air conditioning, the C-DOT Rural Automatic Exchanges (RAXs) acquired legendary status for their ruggedness and reliability. Starting from the single mission of providing a dial tone, C-DOT has grown, over the last 29 years, to the level of a National Centre for Research and Development in communication technology in many areas viz. Digital Switching, IN, ATM, GPON, NMS, Wireless Broadband (BBWT), NGN and Mobile Systems.

Our ATM technology is in use for onboard communication in Indian Navy ships. The Data Clearing House (CLH) solution of C-DOT is commercially deployed for reconciling the GSM roaming records between BSNL and MTNL.

C-DOT's cutting-edge technology called Gigabit Passive Optical Network (GPON), significantly contributing to National Optic Fibre Network (NOFN) project, is eminently suited to playing a lead role in bringing broadband pipes to rural India.

C-DOT's Broad Band Wireless Terminal (BBWT) provides a cost-effective solution for extending IP connectivity to remote and rural areas through

wireless network. It can also be used for Backhaul links for Wi-Fi hot spots, cellular base stations and base station controllers, ATMs, Database servers etc.

There is a huge amount of information available on the Internet. Unfortunately, the rural population of India is not able to benefit from the available technology because of various limiting factors including illiteracy. Now empowering rural India with simplified broadband internet access is possible with CDOT's DRAX (Data Rural Application Exchange). The Shared GSM Radio Access Network (SG-RAN) product, based on sharing of active GSM infrastructure, can bring affordable mobile telephony to the rural market.

The MAX-NG is breathing fresh life into the fixed line infrastructure of the country by bringing new service features to POTS (Plain Old Telephony Service) along with Voice over Internet Protocol (VoIP) and broadband access to C-DOT's MAX/RAX subscribers.

C-DOT has also been active in the area of providing telecom software solutions. C-DOT's umbrella NMS (Network Management System) solutions have made it possible to manage heterogeneous networks with elements from multiple vendors.

C-DOT is also entrusted with the projects of national importance like Central Monitoring System for telecom security and Secure Network for strategic applications.

The state-of-the-art R&D facilities at C-DOT's Delhi and Bangalore campuses are Comparable with the best in the world.

## ACCOMPLISHMENTS AND ACTIVITIES DURING FY 2013-2014

FY 2013-2014 witnessed significant progress in the development of state-of-the-art cutting edge technologies, technology trials, efforts in the commercialization of technologies, which include signing of MoUs with manufacturers, technology promotions/ showcasing to prospective vendors, building requisite IPR assets, etc. Some of the major technology achievements are summarized below.

- **Communication and security research and monitoring:** Development enhancements in the Centralized Monitoring System (CMS) and commencement of CMS roll-out in the field, which include completion of data centre build-up up to 70% capacity, installation of 4 ILDs and installation in progress for the remaining 6 ILDs.
- **Rural technologies:** Development and testing of spectrum sharing functionality to enhance the capabilities of SG-RAN system in a shared active infrastructure - BSS, installation of SG-RAN system installed at Hosur, Tamil Nadu, enhanced with GPRS functionality.
- **Broadband technologies:** Upgradation of routing platform Hardware to 600 Gbps throughput (full duplex), and successful completion of field trials at IIT Kanpur and NTR0 Delhi.
- **Next generation mobile technologies:** Demonstration of voice, data and video services on femto eNodeB prototype and development for core network platform for fixed and mobile convergence.
- **Carrier networks transport technologies for transport and access networks:** Technology development ongoing for Next Generation Passive Optical Network (NG-PON) technology - 32G PON and 100G Optical Core Network; signing of Transfer-of-Technology (ToT) agreement with 6 manufacturers - ITI, BEL, HFCL, VMC, UTL and Tejas.
- **Telecom services and applications:** Integration of Unified Network Management System (UNMS) with Telecom Asset Management System (TAMS) and deployment as pilot in the National Optical Fibre Network (NOFN) trial block.
- **Secure wireless and wire line networks:** Completion of Wireless Phone Secure (WiPS) tablet design.
- **Technology field implementation/trials:** Installation of 164 Broadband Wireless Terminal (BBWT) systems in the NOFN blocks for horizontal wireless connectivity, and completion of SG-RAN system trial at Sakalwada with BSNL and ongoing trial with 3 operators at Hosur, Tamil Nadu.
- **Joint R&D development:** Signing of agreement with Defence Electronics Application Laboratory (DEAL), Dehradun, under DRDO, for joint R&D development of satellite-based hub baseband development.

Through these indigenous developments and the support of indigenous manufacturers, C-DOT offers complete solutions required for urban, rural, north-east and strategic sectors such as defence and security. Besides, C-DOT also provides life-time support to its technology in the TSPs' network with continuous technology upgradation, value addition, bug-fixing and providing alternate designs to address

component obsolescence.

Achievements and progress made in the various schemes of technical projects are discussed in the following sections.

**Communication and security research and monitoring**

The progress under this development scheme includes development, enhancements, software customization and progressive roll-out of the technology in the field.

Major development activities and enhancements completed include Centralized Monitoring System (CMS), Law Enforcement Monitoring Function (LEMF), LEMF alarm viewer, helpdesk, ISDN PRI LEMF, Intelligence Manager for LEMF, encryption-decryption tool, etc.

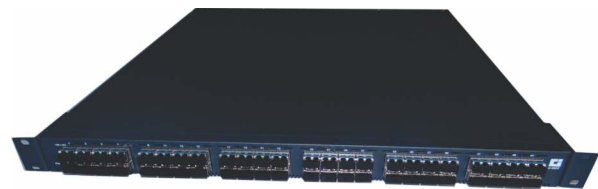
Technology roll-out for CMS commenced and progressively completed various activities such as data centre build-up up to 70% capacity, ISF installation in 8 LSAs integrated with pilot RMCs, installation for 4 ILDs. Technical evaluation of the tender has also been started for main CMC infrastructure installation up to 60% capacity, finalization of RMC-DC layout for 17 LSAs, etc.

**Rural technology**

GPRS functionality implemented over Shared GSM Radio Access Network (SG-RAN) and also integrated in the field release installed at Hosur, Tamil Nadu.

**Broadband technology**

Broadband technology development includes terabit router (commercial grade multi-terabit routing system) and routing platform for the National Knowledge Network (NKN), required for building a high capacity network addressing the application needs of Defence networks, Secure networks, NKN, etc.



C-DOT Router

The routing platform hardware for NKN was upgraded to achieve 600 Gbps throughput and field trial successfully completed at IIT, Kanpur and NTRO, Delhi. The activity for the multi-terabit router also progressed significantly with completion of design of its hardware, terabit router software (developed for 1U-chassis) adaptation for multi-terabit router, packet filtering feature implementation, and software adaptation for IMS (IP-Multimedia Subsystem), etc.

**Next generation mobile technology**

Activities on next generation mobile technology comprise of development for Long Term Evolution-Advance (LTE-A), 4th generation mobile technology and fixed-and-mobile converged platform





for delivery of services to fixed and mobile subscribers.

LTE-A technology development activities accomplished during the year include integration and testing of femto system with Evolved Packet Core (EPC) from other vendors, femto solution demonstration for voice, data and video services, and proto-type femto eNodeB system piloting.

Besides, development has also been completed for core network platform for fixed and mobile convergence. This platform is ready for field trial with softswitch and access node suitably enhanced to support copper access node.

### Carrier networks transport technologies for transport and access networks

Activities on carrier networks transport technologies are planned to address the needs of the emerging applications that are data-centric, demanding high bandwidth, large data rate for flow of information, and require transport/backhaul, metro aggregation, and access networks to evolve with upcoming technology trends.

The technology development is going on for Optical Aggregation and Access System (OAAS), with a focus on next generation PON - 32G PON technology based on Wavelength Division Multiplexing. Under the OAAS project, the development was completed for some GPON variants, namely, Optical Network Termination (ONT-R), Bhawan Damini 3 (BD-3) (OLT for residential

use), Optical Time Domain Reflectometer (OTDR), etc. catering to various requirements, like, ring topology, fibre cut localization, residential building, etc. ToT agreements were signed with six manufacturers for the GPON variants.

Technology development for Optical Core Network (OCN) - a 100G DWDM transport network system is also in progress.



C-DOT OLT: Chatur Damini



C-DOT ONT: Titli Damak

The achievements include completion of system specifications and architecture design. Besides, specifications were also finalized for major components like multiplexers, de-multiplexers, amplifiers, etc. Controller card hardware design has been completed and software design is in progress. Hardware testing of 100G multiplex-ponder card is ongoing.

### Telecom services and applications

This development scheme focuses on software intensive services and applications catering to changing technology trends towards convergence of applications, networks, contents and value-added services creating differentiation.

UNMS (Unified network Management system) software release has been integrated with TAMS (Telecom asset Management System) and deployed as pilot in the NOFN trial block. The UNMS release for Proof-of-Concept (PoC) demonstration on Indian Army's Network for Spectrum (NFS) has been partially made ready with the completion of the application module.

Technology development for Customized Platform for Rural Services (CPRS) is in progress and during the year, client hardware system engineering has been completed. Services and features like user feedback collection, e-notice board, etc. have been completed and demonstrated on pilot site.

#### **Power efficient and Green telecom technology**

Technology development for high efficiency RF amplification technology to improve the efficiency of legacy power amplifier used in existing and future BTS (such as in LTE) especially in the remote/rural areas, has been completed. System integration and testing activities have been completed. Power amplifiers of 120W for 1800 MHz and 900 MHz for GSM BTS have been developed and have undergone field trial.

#### **Secure wireless and wire-line networks**

Activities under this technology scheme aim at creating intra and inter department secure communication networks within various ministries of the government. Under the scheme, project WiPS (Wireless Phone Secure) is ongoing for design and

development of a secure mobile wireless network including development of secure handset using standard wireless technologies, like, 3G, WiFi. During the year, integration testing of secure table (ver.1) has been completed with C-DOT's secure core network and its field testing has also been completed. Further, the development has also been completed for client and core software for WiPS as well as integration of hardware and software.

#### **Enhancements, new features, upgradations, adaptations and technical support for developed technologies including the North-East program**

The existing developed/deployed technologies in the network are being constantly enhanced through value additions, technology upgradations, bug-fixes, alternative solutions against component obsolescence etc. Besides, field/ pilot trials are also being carried out at multiple locations to fulfil the requirements of technology applications for various networks. Some of the technologies requiring regular support include Main Automatic Exchange (MAX), Asynchronous Transfer Mode (ATM), Shared GSM Radio Access Network (SG-RAN), Next Generation MAX (MAX-NG), IP Multimedia Subsystem (IMS)-compliant MAX-NG, Gigabit Passive Optical Network (GPON), Broadband Wireless Terminal (BBWT), Secure and Dedicated Communication Network (SDCN) and Network Management System (NMS). The major accomplishments in these areas are as follows:

- SG-RAN system trials were completed at Sakalwara with BSNL, and trials with three operators (Tata, Reliance, BSNL) are ongoing at

Hosur. GPRS and EDGE functionalities have also been integrated in base system. SG-RAN technology has also been enhanced with design and development of a small outdoor poll-mounted BTS and a small 10W Tower Mounted Amplifier (TMA) to address uncovered areas of GSM network for low density and small count of subscribers. Testing for these elements are in progress. ToT support was provided to BEL for assembly of 5 large capacity systems. Discussions were also initiated with ITI for manufacturing.

- 164 BBWT systems were installed in Parwada, Panisagar and Arain blocks of NOFN. Trials were completed for IISc and MSRIT for campus applications. Pilot trial of CORAL-3P system has been successfully completed in C-DOT campus.
- SDCN VoIP phone field issues related to heating up of earphone, receiver signal strength etc. have been resolved.
- Regular on-site and off-site technology support is being provided.
- Requirements specifications and architecture design were completed for NOFN DCN (Data Communication network) NMS. Integration of NOFN network elements with NOFN GPON EMS was successfully completed for IPv6 support. Tender for NOFN NMS test-bed has been floated and the test-bed is ready. Technology evaluation for Network Operation Centre (NOC) setup at Delhi and Bangalore has been completed.
- Integration of MAX-NG system and BSNL's Clarity system for provisioning has been successfully completed. The MAX-NG subscriber

provisioning at Katpadi is now done through Clarity system. PoC for the inter-operational testing between C-DOT's softswitch and BSNL's IP-TAX has been done successfully at Gurgaon. Testing of lawful interception has been successfully demonstrated to BSNL AT team. Inter-working testing between C-DOT's SSP and Tekelec's SSTP server for the Mobile Number Portability (MNP) over IP has been completed.

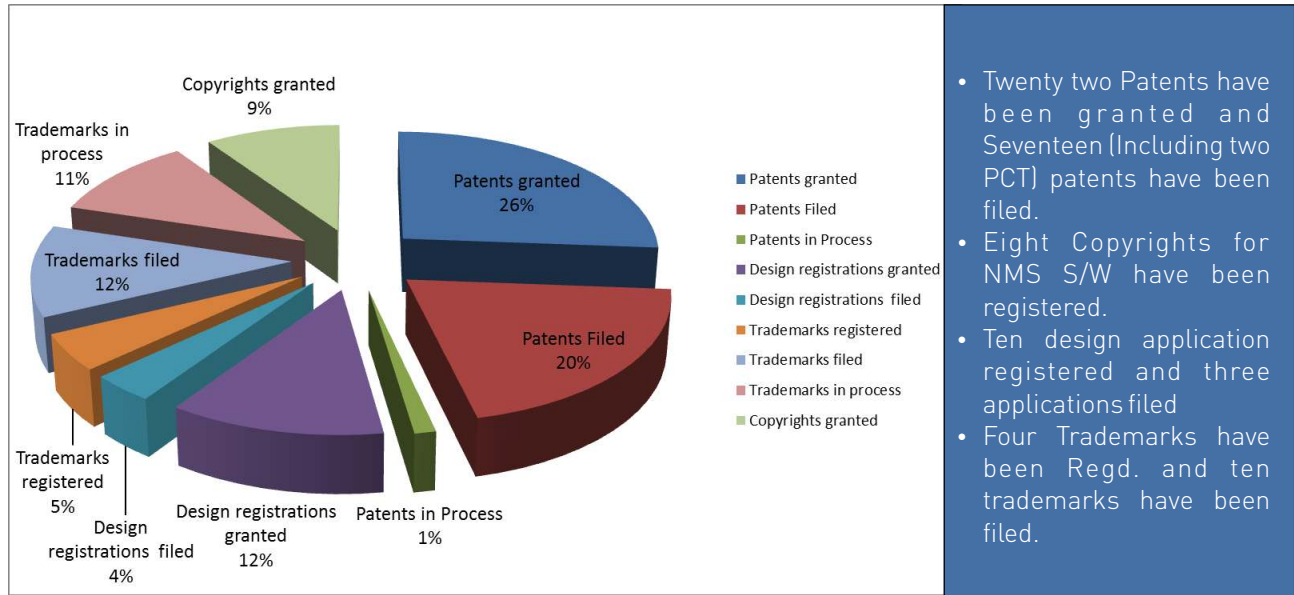
- Technologies like MAX-NG, IMS, BBWT etc. have been proven in field and are ready for roll-out. Activities accomplished for technology roll-outs include:
  - Completed tendering for the purchase of MAX-NG component, core network site preparation, receipt of advance P.O. for MAX-NG roll-out;
  - C-DOT NGN core operational in MTNL Delhi and Mumbai networks, migration of some IN services to NGN-IN services, voice over FTTH services commercially operational in MTNL network (Delhi and Mumbai) based on C-DOT NGN solution;
  - Internet Protocol- Managed Lease Line Network (IP-MLLN) in MTNL network, acceptance testing.

### Enabling technologies and telecom network

As per the MoU signed with USOF (Universal Service Obligation Fund Administration), various activities have been completed that include the tentative number of BTSs required to cover the uncovered part of the country, technical specifications for the infrastructure required for provisioning of cellular mobile coverage to uncovered villages, demographic-based statistical reports with details viz. total no. of villages covered, their population, etc.

### IPRs, papers presentations and publications

IPR Distribution in C-DOT:



Intellectual Property Asset	No.	Subject invention	
Patents filed	1	Apparatus capable of controlling interference in densely packed autonomous, large area WiFi radio networks.	Patent filing in process
	2	Efficient Marker based Gesture Recognition	Patent filing in process
Papers presented in the national and international conferences and seminars	1	Java Card for PayTV Application: International Journal of Computer Science and Information Security (IJCSIS), Jun-2013.	
	2	Efficient Marker Based Gesture Recognition technique: International Journal of Computer Applications (IJCA), Nov-2013.	

## IPRs filed for:

## a. Cable management enclosure for customer premises equipment



Design Class	Design Subclass	Application No	Date of filing
13	3	260302	12.02.2014

## d. Tablet PC



Design Class	Design Subclass	Application No	Date of filing
14	3	260303	12.02.2014

Sl.No.	Job Type	Total No.
1.	Patent Granted	22
2.	Patents Filed	17
3.	Patents in Process	1
4.	Design Registrations granted	10
5.	Design registrations filed	3
6.	Trademarks registered	4
7.	Trademarks filed	10
8.	Trademarks in process	9
9.	Copyrights granted	8
	Total	84

### Campus infrastructure

Construction activity of hostel and dwelling units at C-DOT Campus is awaiting statutory approval.

### Process improvement

By the end of FY2012-2013, essential preparations for High Maturity processes (CMMI level 4 and 5) were completed, which included study of the four new Process Areas and procurement and training on the statistical analysis and modelling tools and process definitions had started. Additionally, the level 2 and 3 practices were continued to sustain the CMMI level 3 appraisal achieved earlier.

In Q1 of FY2013-2014, the process definitions, process performance baselining and process performance modelling for the organization were completed and released for implementation. Performance metrics were derived from the organization's Business Goals for statistical monitoring and innovative improvement. Implementation of these High Maturity processes along with the level 2/3 practices continued till end of Q3 along with regular internal audits, process improvements and stabilisation. Towards the end of Q3, spot checks were conducted for certified external Assessor. In Q4, it was followed by Pre-Appraisal by external Assessor, readiness check and necessary preparations for the SCAMPI-A Appraisal for CMMI level 5. All these were successfully completed. The final appraisal by the external Assessor was scheduled in Q1 of FY2014-2015 to include the performance of the projects till end of Q4 of FY2013-2014 in the final appraisal.

### Business Promotion

During the year 2013-14 significant efforts were made for the promotion of C-DOT's technologies. These included arranging Proof of Concept (PoC) trials, pilots, signing of agreements and submission of proposals, live demonstrations and showcasing of technologies at various exhibitions, seminars and in-house events. These efforts are summarized below:

- Purchase order received from BSNL for supply of 168 BBWT systems to provide horizontal connectivity using C-DOT BBWTs for providing e-governance services in government institutions by NIC/DeitY.
- C-DOT signed agreement with DEAL, Dehradun under DRDO for joint development of Satellite-based Hub baseband system and Carrier Grade Hub baseband system.
- Project agreement signing process initiated with BBNL for NMS development for PAN-India GPON deployment of NoFN
- Successful trial of GPON technology at Military College of Telecommunication Engineers (MCTE) at MHOW, Indore.
- Successful PoC of C-DOT GPON solution conducted on Naval Ship at Mumbai
- Successful PoC of C-DOT BBWT solution conducted at (i) Naval Dockyard, (ii) at IGNOU campus and (iii) as part of NMEICT project
- Conducted successful demo of DRAX for Gujarat's e-Gram project
- Bid submitted for Router Hardware Platform Development for ANURAG, DRDO

- Signed agreement with Indian Navy for consultancy services for design of communication network.
- BBWT equipment supplied to NDMC, CPRI and MSRIT
- Proposal to CBI for LEMF and its integration with CMS
- Proposal sent by C-DOT to USOF for pilot trial of SGRAN
- Trial of IMS compliant NGN in MTNL network initiated.
- Field support for C-DOT MAX in progress.
- DoT had authorized C-DOT as the coordinating agency for installation, commissioning and maintenance of ISP monitoring systems nationwide on commercial basis. Work is in progress.
- Many delegations and officials from organizations visited C-DOT who were updated with current C-DOT technologies through demonstrations.

### MoUs, Agreement and contracts

S. N.	TYPE OF AGREEMENT	DATE OF SIGNING (dd/mm/yy)	PARTNER	PURPOSE
1.	MoU	24/10/13	Bharat Sanchar Nigam Ltd. (BSNL)	Technical support for C-DOT technology based products in BSNL Network
2.	MoU	28/10/13	Centre for Artificial Intelligence and Robotics (CAIR), DRDO	Deployment, Maintenance of IMS-NETRA and Integration with Centralised Monitoring System (CMS)
3.	MoU	27/12/13	Bharat Sanchar Nigam Ltd. (BSNL)	Civil and Electrical related infrastructural works for RMC Data Centres required for CMS Project
4.	MoU	30/01/14	Mahanagar Telephone Nigam Ltd. (MTNL)	Civil and Electrical related infrastructural works for RMC Data Centres required for CMS Project
5.	MoU	04/03/14	National Informatics Centre (NIC)	Services on National Knowledge Network
6.	Project Agreement	19/08/13	Communications Research Centre, Canada	Collaborative research and development in the WCBJ CORAL Platform Development

7.	<b>Project Agreement</b>	07/11/13	C-DOT Alcatel-Lucent Research Centre Pvt. Ltd. (CARC)	Design, development, validation and test automation of Fixed Mobile Convergent Platform (FMCP) Service Provisioning Subsystem for IMS based NGN solution of C-DOT
8.	<b>TOT Agreement</b>	30/08/13	Tejas Networks Ltd.	ONT4 (including WiFi version) and ONT 7
9.	<b>TOT Agreement</b>	31/08/13	ITI Limited	6 slot chassis based OLT and ONT 9
10.	<b>TOT Agreement</b>	02/09/13	Bharat Electronics Ltd. (BEL)	6 slot chassis based OLT and ONT 9
11.	<b>TOT Agreement</b>	06/09/13	VMC Systems Ltd.	6 slot chassis based OLT and ONT 9



## OTHER ACTIVITIES

### EVENTS @ C-DOT

#### C-DOT celebrates Foundation Day 2013:



C-DOT celebrated its Foundation Day on 23rd and 24th August 2013 at C-DOT Campus, Mehrauli, New Delhi. The function started with addresses of Dr. R Chidambaram (Principal Scientific Advisor to the Govt. of India), Shri M F Farooqui (Secretary, Department of Telecommunications) and Shri V V R Sastry (executive Director, C-DOT). It also witnessed lectures by Prof. Anant Agarwal (MIT, USA) and Smt Tessa Thomas (Project Director, Agni-V programme, DRDO) on the same day. On the second day, a technical seminar on broadband technologies was organized. It was attended by all C-DOTians, Government and PSU officials, representatives from the armed forces, telecom equipment manufacturers and academia. The seminar contained sessions on Wireless broadband, Next Generation Networks, and



Foundation Day 2013 Exhibition and Seminar at C-DOT, Bangalore

Optical Networks. Each session was having addresses of Government Dignitaries, Industry experts, Academia and C-DOT's senior technologists. The interactive and informative sessions were appreciated by the audience.

#### C-DOT celebrates WTISD 2013

The World Telecommunication & Information Society Day was celebrated on 17th May 2013 at C-DOT Delhi and Bangalore. The theme for the event was "ICTs and Improving Road Safety". We had an insightful talk by Mr. Lokesh Hebbani, Transportation Program Manager, Centre for Infrastructure, Sustainable Transport and Urban Planning (CiSTUP) Indian Institute of Science, Bangalore. He covered briefly on the road safety aspects and his experiences in his research work at Georgia USA. It was followed by

stimulating talk by Dr. M A Saleem, IPS, ACP (Bangalore Traffic) and Mr Ravindra A Retd. Chief Secretary, Karnataka. Then we had a brief poster session where we had displayed C-DOT's diverse technologies.

### C-DOT celebrates women's Day



C-DOT celebrated Women's Day at its Delhi office on 10th March 2014 presided over by Ms. Annie Moraes, Member (Finance), Commission.

## EXHIBITIONS AND CONFERENCES

### India Telecom 2013

C-DOT participated in India Telecom 2013 held at Vigyan Bhawan, New Delhi from 5th December to 7th December, 2013.

C-DOT showcased its technologies like GPON, NGN, LTE, BBWT, D-RAX, NMS, SG-RAN, and Tele Plan net



solution. Dignitaries from Government departments and industries visited the C-DOT's stall and appreciated the showcased technologies.

### DefExpo 2014

C-DOT participated in DefExpo 2014 organised at New Delhi from 6th February 2014 to 9th February 2014 and showcased its technologies like NGN, GPON, SG-RAN, NMS, etc exhibiting their strategic relevance to the critical needs of the Defence sector. Many industrial veterans and eminent academicians from all over the world visited our stall and discussed the prospects of mutual business and growth opportunities.

### Participation in FTTH Council Asia Pacific Conference & Exhibition:

C-DOT delegation comprising Shri Vipin Tyagi, Director and six others participated in annual FTTH Council Asia Pacific Conference 2013. The conference was held in Auckland, New Zealand from 19th to 21st May, 2013.

The conference attracted delegates from around the world. It represented a significant opportunity for business involved in Fiber to the Home (FTTH) and other interested parties to network, exchange and share information vital to the future growth of FTTH industry.



Shri Vipin Tyagi, Director, C-DOT delivered a talk during the conference on 19th May 2013. The topic of his talk was, "Broadband over fiber India: For rural development and inclusive growth" which was well received by the audience from around the world.

### SES 2013

C-DOT participated and showcased our products in the Strategic Electronics Summit 2013 (SES 2013) for the Defense and Aerospace segment which was held on the 2nd August 2013 in the HAL Convention Centre, Bangalore, India. The high profile event was organized by ELCINA and included events like conference sessions, mini-exhibitions and one-to-one business meetings for the participants.

### IMPORTANT VISITS:

#### Visit by Secretary (DoT)

Shri M.F Farooqui, Secretary DoT and Chairman C-DOT Steering Committee visited C-DOT Delhi on 17th September 2013. He reviewed C-DOT projects and visited various important labs and held discussions with C-DOT Board and senior management.

#### Visit by ACOM (IT&S), Indian Navy

Rear Admiral S R Sarma, ACOM (IT&S), Indian Navy visited C-DOT campus Delhi on 8th May, 2013. A presentation was given to him on C-DOT's endeavor in indigenization of Telecom Technology especially in the field of secure and strategic networks.

#### Visit by Chief Controller (R&D), DRDO

Shri Sundaram, Chief Controller (R&D), DRDO visited C-DOT Campus, Delhi on 26th June 2013.

A presentation was organized on C-DOT's contribution in current technologies. He visited various product labs viz. GPON Lab, NGN Soft Switch Lab, LTE Lab, MAX-NG lab and Router Lab. He appreciated C-DOT's strides in the field of telecommunication.

#### Visit by Ms. Rita Teatota, Additional Secretary, DoT

Ms. Rita Teatota, Additional Secretary, DoT visited our C-DOT Campus on 28th February 2014. A presentation was given on C-DOT's contribution to current technologies followed by the lab visit.

#### Visit by Claude Bélisle, VP, CRC Canada

Claude Bélisle, Vice President, Strategic Program Development, Communications Research Centre (CRC), Canada visited our campus and appreciated our wide product repertoire.

#### Visit by Shri Ram Yagya, Advisor DoT (Operations)

Shri Ram Yagya, Advisor DoT (Operations) visited C-DOT Bangalore on 19th July 2013. A brief presentation on C-DOT and C-DOT Projects/Products was given before the visit to various labs such as SGRAN, LTE, BBWT, MAX NG/NGN, Router, PP, DRAX.



**Shri R.K. Bhatnagar, Advisor (Technology), DoT**

Shri R.K. Bhatnagar, Advisor (Technology), DoT visited C-DOT Delhi Campus and labs on 12th April 2013. He held exhaustive discussion with C-DOT technical teams on key emerging areas of Telecom R&D

**TRAINING PROGRAMMES**

A constant effort is being made to enhance the skill sets of existing employees. For this C-DOT employees are encouraged to participate in various seminars and conferences. Also various trainings are arranged for the employees on both technical and soft-skill areas. The trainings are arranged on areas like High speed network design, JAVA, IPv6, Apache Hadoop developer, MS Excel, PMI certification, Broadband technology etc.

C-DOT has taken memberships of various associations like APNIC, PTC, ELCINA, FTTH, AIMA, APT etc. Currently the number of memberships is 15 A Digital Knowledge Centre has been established in order to enable the users to browse the e-journals, digital library collections, e-books and other online journals. This facility is available in the library intranet. IEEE and ACM Digital libraries are being subscribed by the C-DOT library since 2005 for both locations i.e. Delhi and Bangalore through memberships of MCIT consortia. The MCIT consortia negotiates the subscription pricing for all its members and then distributes the cost based on the simultaneous access (SIMOs) required by them.

**PROMOTION OF INSTITUTION TRANSPARENCY AND RTI IMPLEMENTATION:**

The setup in C-DOT for implementation of RTI Act 2005 consists of one First Appellate Authority (FAA), the Chief Public Information Officer (CPIO), two Assistant Public Information Officers (APIO) – one each for Delhi and Bengaluru offices and one

Transparency Officer (TO) for promotion of institutional transparency within the Public Authority through proactive and effective implementation of the provisions of section 4 of the RTI Act, 2005. These include effective record management, digitization of records, networking and incremental proactive disclosures.

During the year 2013-14, 45 requests for information were received, out of which, forty three (43) were accepted and the information was provided within the stipulated time-limit. Out of these, further appeal was made to the First Appellate Authority in eleven (11) cases. All the appeals were heard and decisions given.

**HR INITIATIVES IN C-DOT**

During the year 2013-14, C-DOT recruited 102 fresh engineers from Computers and Electronics and Communication streams through campus recruitment from IITs, NITs and other reputed engineering colleges. C-DOT also recruited 6 experienced engineers, 5 Field Support Engineers and an Executive (HR) during this period.

**Women Empowerment**

C-DOT's Management has always been sensitive to gender issues and has consistently worked towards creating organizational culture reflecting gender equality. Presently, about 31.5% of staff in C-DOT are women.

**Existing Policies:**

All female staff members are allowed to avail up to 180 days maternity leaves and up to 90 days leaves subsequent to that (270 days inclusive of 180 days maternity leave). For miscarriage/abortion, leave of a total of 45 days in the entire service span is

permissible. Child Care leave has also been implemented. This leave has been granted to eligible female staff on their applying for the same as per laid down policy.

C-DOT offers accommodation and transport benefits to all its women employees with different options that maybe availed as per individual needs. This ensures the safety and security of all women employees in the company.

Reimbursement for residential telephone expenses is admissible to about 100% of the women staff.

Multifunctional allowance is admissible to 36% of the women employees.

Career growth opportunities are available to women employees in C-DOT. In the last financial year, 26 % of the total employees promoted to higher grades were women.

In management cadres (Team Leaders, Group Leaders, Technical Experts and Sr. Technical Experts) about 17% are women.

In order to address issues relating to Sexual Harassment of women staff at work place, a committee has been constituted by C-DOT Board to take a fair and justified view of the cases and recommend suitable action on the same.

#### **Employees' Welfare:**

For the purpose of coverage for hospitalization expenses, C-DOT has taken a tailor-made group medi-claim insurance from National Insurance Company Ltd. Staff members (and their families) in executive cadres have coverage of Rs. 5 Lakhs with the facility of opting for Rs. 7.5 Lakhs and staff in non-executive cadres have been covered for Rs. 3.5 Lakhs with the facility of opting for Rs. 5. Lakhs. The Group Medi-claim policy has been made effective from 01 April 2006.

Grievance procedure has been introduced for C-DOT staff to provide the employees with an easy and readily accessible machinery for prompt disposal of their day-to-day grievances.

#### **Recruitment of SC/ST and persons with disabilities:**

For recruitment of persons with disabilities and candidates belonging to SC/ST category, C-DOT follows government rules providing for reservation in jobs in C-DOT.

C-DOT has a system in place to look after the welfare of persons belonging to these categories and address any problems / complaints that may come up.

#### **Benefits for persons with disabilities:**

C-DOT follows guidelines issued by Government of India with respect to reservations in jobs for persons with disabilities.

The C-DOT Campus at Delhi has been constructed in such a manner so as to ensure barrier free environment for the persons with disabilities. The main entrance/exit can be approached through a ramp together with stepped entry. Even elevators connecting the various working areas have been installed in way to facilitate persons with disabilities to move around freely from one wing to another.

#### **PROMOTION OF HINDI IN C-DOT:**

C-DOT is making serious efforts to ensure compliance to the Official Language Policy of Government of India. To create awareness among the employees, C-DOT organizes different programmes throughout the year. Many innovative programmes have been initiated at both Delhi and Bangalore centres of C-DOT in this regard. Hindi workshops are held regularly on topics of relevance.



One of the finest actors of the Indian theatre and cinema, Shri Om Puri was invited for "Inse Miliye..." on 6th May 2013. A rendezvous with the veteran actor gave C-DOTians a chance to meet a person who has made his mark in a highly competitive and ruthless world of cinema purely by his dedication, self-motivation and goal oriented hard work. The programme was very inspiring and motivating.

A team of officers from the Department of Telecommunications inspected the implementation and progress of Official Language in C-DOT on 12th July 2013 and found everything up to the mark and satisfactory.

Hindi Utsav 2013 was celebrated at C-DOT offices from September 12-27, 2013 (Bangalore) and September 14-30, 2013 (New Delhi). The Utsav began



*Noted Journalist- Shri Om Thanvi*



*New Edition of the Hindi House- Journal "C-DOT Bharti" was released during Hindi Utsav Celebrations.*

with an interactive programme "Samvad". The noted journalist Shri Om Thanvi, Principal Editor, Jansatta was invited to share his knowledge and experiences with us.

During the fortnight, many competitions and events were organized to motivate C-DOTians to do their day-to-day work in Hindi. An audio-visual Quiz was also organized in Hindi which was liked by one and all. The highlight of the Utsav was a dramatic presentation of four famous Hindi stories. The ace theatre personality Dr. Devendra Raj "Ankur" directed the play "Adhi Sadi". It had been very successful in leaving a great impact on everyone and motivated people to once again connect to the literature and books.

C-DOT participated in the meetings of the Hindi Advisory Committee of Department of Telecommunications under the chairmanship of Hon'ble Minister of State, C&IT on 13th August, 2013 and 10th December, 2013 successfully.

### GRANTS AND EXPENDITURES DURING 2013-14

The grants in aid received during the financial year were Rs. 224.25 Crores. The total expenditure on various schemes / projects upto 31st March 2014 is Rs. 247.54 Crores.

# Statements of Accounts 2013-14

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## Report of the Auditors on the Accounts of C-DOT for the Year ended 31<sup>st</sup> March, 2014 and Management's Replies thereto

To: The Members of  
Centre for Development of Telematics (C-DOT)

Sl.No.	Auditor's Observations	Management's Replies thereon
1.	<p><b>Report on the Financial Statements</b></p> <p>We have audited the accompanying financial statements of Centre for Development of Telematics (hereinafter referred to as 'C-DOT' or Centre) which comprise the Balance Sheet as at March 31, 2014, the Statement of Income and Expenditure account for the year then ended, annexed thereto, in which are incorporated the accounts of the units of the Centre audited by us and a summary of significant accounting policies and other explanatory information.</p>	<p>Factual position stated.</p>
2.	<p><b>Management Responsibility for the Financial Statements</b></p> <p>Management is responsible for the preparation of these financial statements that give a true and fair view of the financial position and the financial performance of the Centre in accordance with the Generally Accepted Accounting Principles in India. This responsibility includes the design, implementation and maintenance of internal control relevant to the preparation and presentation of the financial statements that give a true and fair view and are free from material misstatement, whether due to fraud or error.</p>	<p>Factual position stated.</p>



Sl.No.	Auditor's Observations	Management's Replies thereon
3.	<p><b>Auditor's Responsibility</b></p> <p>Our responsibility is to express an opinion on these financial statements based on our audit. We conducted our audit in accordance with Standards on Auditing issued by the Institute of Chartered Accountants of India. Those Standards require that we comply with ethical requirements and plan and perform the audit to obtain reasonable assurance about whether the financial statements are free from material misstatement.</p> <p>An audit involves performing procedures to obtain audit evidence about the amounts and disclosures in the financial statements. The procedures selected depend on the auditor's judgment, including the assessment of the risks of material misstatement of the financial statements, whether due to fraud or error. In making those risk assessments, the auditor considers internal control relevant to the Centres' preparation and fair presentation of the financial statements in order to design audit procedures that are appropriate in the circumstances. An audit also includes evaluating the appropriateness of accounting policies used and the reasonableness of the accounting estimates made by the management, as well as evaluating the overall presentation of the financial statements.</p> <p>We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinion.</p>	<p>Factual position stated</p>

Sl.No.	Auditor's Observations	Management's Replies thereon
<b>Basis of Qualified Opinion</b>		
<b>a.</b>	<b>Fixed Assets</b>	Noted for Compliance
<p>In the absence of physical verification of Fixed Assets and reconciliation between the physical and financial records with the regular periodicity, the effect of the differences, if any, on the financial statements to that extent cannot be ascertained.</p>	<b>b. Investments and Loans</b>	
i.	<p>No provision has been made by the Centre for decline in value of investments of Rs. 52 Crores in the Equity Shares of the Joint Venture Company namely C-DOT Alcatel Lucent Research Centre Private Limited on account of total erosion of its net worth (Refer Note No. 3 of Part A – Schedule No. 16).</p>	<p>Management in consultation with the Government is engaged in deciding on takeover or merger of the Joint Venture. Appropriate accounting treatment for erosion in the net worth of the Joint Venture, loan and interest thereon will be made, once the plan in consultation with the Government is decided upon.</p>
ii.	<p>The Centre had advanced a sum of Rs. 18.46 Crores as loan to C-DOT Alcatel Lucent Research Centre Private Limited. As per the agreement, the Joint Venture Company has not only defaulted in the repayment of installments but also defaulted in repayment of interest. However, no provision has been made by the Centre even when the recoverability of the said amount is under doubt.</p>	
<b>c.</b>	<b>Claims Recoverable</b>	<p>The amounts under Claims recoverable are considered good for recovery as they are mainly due from Government of India Telecom service provider.</p>
<p>In the absence of confirmation and reconciliation of claims recoverable amounting to Rs. 1978.41 lakhs, we are unable to comment on their recoverability and provision required against them, if any,</p>		

SI.No.	Auditor's Observations	Management's Replies thereon
	and consequent effect thereof on the financial statements.	
d.	<p><b>Change in Accounting Policy</b></p> <p>Attention is drawn to Note No. 1(b) of Part A-Schedule no. 16 regarding change in the Accounting Policy on Fixed Assets. However, this change has no substantial financial impact on the Income and Expenditure Account and Balance Sheet of the Centre.</p>	Factual position. Hence, no comments.
	<p><b>Qualified Opinion</b></p> <p>In our opinion and to the best of our information and according to the explanations given to us, except for the effects of the matter described in the Basis of Qualified Opinion paragraph, the aforesaid financial statements give the information required by the Act in the manner so required and give a true and fair view in conformity with the accounting principles generally accepted in India:</p> <p>(a) in the case of the Balance Sheet, of the state of affairs of the Centre as at March 31, 2014 and</p> <p>(b) in the case of the Income &amp; Expenditure account, of the deficit of the Centre for the year ended on that date.</p>	Factual position. Hence, no comments.

For M/s. Shiromany Tyagi & Co.  
Chartered Accountants  
(FRN006117N)

Sd/-  
(CA. Sunil Kumar Rastogi)  
Partner  
M. No. 501378

Place: New Delhi  
Date: 31.07.2014

For Centre for Development of Telematics

Sd/-  
Jayant Bhatnagar  
Executive Director

**BALANCE SHEET AS AT 31<sup>ST</sup> MARCH...**

(In Rupees )

	Schedule no.	2014	2013
<b>CORPUS / CAPITAL FUND AND LIABILITIES</b>			
Corpus/Capital Fund	1	3,245,032,891.67	2,928,449,665.94
Reserves & Surplus	2	0.00	23,658,685.67
Current Liabilities & Provisions	3	697,172,028.47	571,380,215.04
<b>TOTAL</b>		<b>3,942,204,920.14</b>	<b>3,523,488,566.65</b>
<b>ASSETS</b>			
Fixed Assets	4		
Gross Block		5,347,520,014.45	5,090,481,473.63
Less :- Depreciation		4,309,704,516.96	4,100,616,755.11
Net block		1,037,815,497.49	989,864,718.52
Assets in transit	4	0.00	16,533,070.77
Capital Work in Progress	5	4,459,882.00	4,459,882.00
Investments-Long Term	6	520,000,000.00	520,000,000.00
Current Assets, Loans & Advances and Deposits	7	2,379,929,540.65	1,992,630,895.36
<b>TOTAL</b>		<b>3,942,204,920.14</b>	<b>3,523,488,566.65</b>
Significant Accounting Policies	15		
Notes on Accounts	16		

Schedules 1 - 16 form an integral part of the Financial Statements

For and on behalf of the  
Centre for Development of Telematics

Sd/-  
G. Mukundan  
Chief Finance Officer

Sd/-  
Jayant Bhatnagar  
Executive Director

In terms of our report of even date  
For M/s. Shiromany Tyagi & Co  
Chartered Accountants  
Firm Regn. No. FRN006117N

Sd/-  
CA. Sunil Kumar Rastogi  
Partner  
M.No. 501378

Place: New Delhi  
Date: 31.07.2014

## INCOME AND EXPENDITURE ACCOUNT

for the year ended 31<sup>st</sup> March...

[ In Rupees ]

	Schedule no.	2014	2013
<b>INCOME</b>			
TOT, Royalty, FSR and Publications	8	331,335,749.68	314,384,091.13
Interest Earned	9	58,354,330.52	43,288,134.28
Other Income	10	67,466,319.57	9,641,687.43
<b>TOTAL(A)</b>		<b>457,156,399.77</b>	<b>367,313,912.84</b>
<b>EXPENDITURE</b>			
Establishment Expenses	11	1,292,134,287.00	1,287,582,366.12
Operational Expenses	12	500,906,162.06	387,554,424.47
Other Administrative Expenses	13	322,232,207.18	202,326,898.20
Depreciation	4	293,682,259.26	289,593,437.05
<b>TOTAL(B)</b>		<b>2,408,954,915.50</b>	<b>2,167,057,125.84</b>
Excess of expenditure over income for the year C = (B-A)		1,951,798,515.73	1,799,743,213.00
Add/less(-):- Adjustments pertaining to earlier years	14	-25,881,741.46	200,922,835.50
<b>Balance being excess of expenditure over income</b>		1,925,916,774.27	2,000,666,048.50
Add:- Excess expenditure over income of earlier years		15,034,003,496.18	13,033,337,447.68
<b>Balance being deficit carried to Corpus Fund/Capital Fund</b>		<b>16,959,920,270.45</b>	<b>15,034,003,496.18</b>
Significant Accounting Policies	15		
Notes on Accounts.	16		

Schedules 1-16 form an integral part of the Financial Statements

For and on behalf of the  
Centre for Development of TelematicsSd/-  
G. Mukundan  
Chief Finance OfficerSd/-  
Jayant Bhatnagar  
Executive DirectorIn terms of our report of even date  
For M/s. Shiromany Tyagi & Co  
Chartered Accountants  
Firm Regn. No. FRN006117NPlace: New Delhi  
Date: 31.07.2014Sd/-  
CA. Sunil Kumar Rastogi  
Partner  
M.No. 501378

**SCHEDULE 1**
**CORPUS / CAPITAL FUND**

( Forming part of the Balance Sheet as at 31<sup>st</sup> March... )

(In Rupees )

	2014		2013	
<b>Grants from Dept. of Electronics (Presently Dept of Information Technology)</b>				
Accumulated balance	335,200,000.00		335,200,000.00	
<b>Grants from Dept. of Telecommunication</b>				
Balance at the beginning of the year	17,627,253,162.12		16,127,253,162.12	
<b>Add:-</b> Contributions towards Corpus/ Capital Fund during the year	<u>2,242,500,000.00</u>	20,204,953,162.12	<u>1,500,000,000.00</u>	17,962,453,162.12
<b>Less:-</b> Balance of net expenditure transferred from the Income and Expenditure Account		16,959,920,270.45		15,034,003,496.18
<b>TOTAL</b>		<b>3,245,032,891.67</b>		<b>2,928,449,665.94</b>

**SCHEDULE 2**
**RESERVES & SURPLUS**

 ( Forming part of the Balance Sheet as at 31<sup>st</sup> March... )

( In Rupees )

	2014		2013	
<b>General Reserve</b>				
Balance at the beginning of the year	23,658,685.67		23,658,685.67	
Less: Provisions withdrawn during the year	<u>23,658,685.67</u>	0.00	<u>0.00</u>	23,658,685.67
<b>TOTAL</b>		<b>0.00</b>		<b>23,658,685.67</b>

**SCHEDULE 3**
**CURRENT LIABILITIES & PROVISIONS**

[ Forming part of the Balance Sheet as at 31<sup>st</sup> March...]

(In Rupees)

	2014		2013	
<b>CURRENT LIABILITIES</b>				
1. Sundry Creditors				
a) For Goods	154,574,915.68		101,811,949.57	
b) Others	<u>67,692,570.00</u>	222,267,485.68	<u>63,720,112.32</u>	165,532,061.89
2. Advances received				
- For Funded Projects		40,879,631.60		29,571,954.60
3. Statutory Liabilities		28,857,157.00		17,560,386.00
4. Other Current Liabilities		116,635,287.19		80,586,772.55
<b>Sub-total(A)</b>		<b>408,639,561.47</b>		<b>293,251,175.04</b>
<b>PROVISIONS</b>				
1. Gratuity	0.00		2,518,225.00	
2. Leave Salary	<u>288,532,467.00</u>		<u>275,610,815.00</u>	
<b>Sub-total(B)</b>		<b>288,532,467.00</b>		<b>278,129,040.00</b>
<b>TOTAL(A+B)</b>		<b>697,172,028.47</b>		<b>571,380,215.04</b>



**SCHEDULE 4**
**FIXED ASSETS**

 (Forming part of the Balance Sheet as at 31<sup>st</sup> March, 2014 )

(In Rupees )

	G r o s s B l o c k			D e p r e c i a t i o n			N e t B l o c k		
	As on 01.04.2013	Additions	Adj./Write-off	As on 31.03.2014	As on 01.04.2013	For the year	Adj./Write-off	As on 31.03.2014	As on 31.03.2013
Land -Free Hold	120,000,000.00	0.00	0.00	120,000,000.00	0.00	0.00	0.00	120,000,000.00	120,000,000.00
Building -Office	570,180,967.65	0.00	0.00	570,180,967.65	323,299,938.12	24,688,102.95	0.00	347,988,041.07	222,192,926.58
Building-Residential	23,627,434.00	0.00	0.00	23,627,434.00	13,639,786.23	499,382.39	0.00	14,139,168.62	9,987,647.77
R & D Equipment	1,772,521,115.32	156,381,130.88	(62,016,295.26)	1,866,885,950.94	1,472,194,073.48	67,818,404.07	(57,430,816.33)	1,482,581,661.22	384,304,289.72
R & D Computers	1,914,839,401.56	178,591,684.68	(31,116,255.09)	2,062,314,831.15	1,798,662,762.24	174,471,464.52	(27,098,197.63)	1,946,036,029.13	116,278,802.02
Office Equipments & Appliances	346,345,485.56	3,380,516.61	(66,876.00)	349,659,126.17	260,012,134.32	13,479,376.85	(64,706.45)	273,426,804.72	76,232,321.45
Furniture & Fixtures	285,914,660.23	11,680,825.00	0.00	297,595,485.23	175,755,651.41	12,520,941.48	0.00	188,276,592.89	109,318,892.34
Library Books	57,052,409.31	204,587.00	(777.00)	57,256,219.31	57,052,409.31	204,587.00	(777.00)	57,256,219.31	0.00
<b>Total</b>	<b>5,090,481,473.63</b>	<b>350,238,744.17</b>	<b>(93,200,203.35)</b>	<b>5,347,520,014.45</b>	<b>4,100,616,755.11</b>	<b>293,682,259.26</b>	<b>(84,594,497.41)</b>	<b>4,309,704,516.96</b>	<b>1,037,815,497.49</b>
<b>Assets in transit</b>									<b>0.00</b>
<b>Previous year's total</b>	<b>4,716,713,731.69</b>	<b>380,198,240.30</b>	<b>(6,430,498.36)</b>	<b>5,090,481,473.63</b>	<b>3,620,399,389.23</b>	<b>289,593,437.05</b>	<b>190,623,928.83</b>	<b>4,100,616,755.11</b>	<b>989,864,718.52</b>
									<b>1,096,314,342.46</b>

**SCHEDULE 5**
**CAPITAL WORK IN PROGRESS**

 ( Forming part of the Balance Sheet as at 31<sup>st</sup> March, 2014 )

( In Rupees )

	As at 01.04.2013	Additions	Transfer to Fixed Assets	As at 31.03.2014
<b>Campus -Delhi</b>				
1) Campus-Residential Complex	4,459,882.00	0.00	0.00	4,459,882.00
<b>Total</b>	<b>4,459,882.00</b>	<b>0.00</b>	<b>0.00</b>	<b>4,459,882.00</b>
<b>Previous Year Balance</b>	4,459,882.00	0.00	0.00	4,459,882.00

**SCHEDULE 6**
**INVESTMENTS - LONG TERM**

 ( Forming part of the Balance Sheet as at 31<sup>st</sup> March... )

( In Rupees )

	NO. OF FULLY PAID EQUITY SHARES	FACE VALUE PER SHARE (Rs.)	2014	2013
<b>UNQUOTED (At cost)</b>				
<b>JOINT VENTURE COMPANY</b>				
C-DOT ALCATEL-LUCENT RESEARCH CENTRE PVT. LTD. (CARC)	52,000,000	10	520,000,000.00	520,000,000.00
<b>TOTAL</b>			<b>520,000,000.00</b>	<b>520,000,000.00</b>

**SCHEDULE 7**
**CURRENT ASSETS, LOANS & ADVANCES AND DEPOSITS**

 [ Forming part of the Balance Sheet as at 31<sup>st</sup> March... ]

[ In Rupees ]

	2014		2013	
<b>A. CURRENT ASSETS</b>				
1 Inventories (As taken, valued and certified by the Management)				
a) Inventory	347,557,075.56		264,050,361.69	
b) Inventory in transit	<u>45,489,419.93</u>	393,046,495.49	<u>1,789,924.95</u>	265,840,286.64
2 Sundry Debtors				
a) Debts outstanding for a period exceeding six months	433,647,969.48		422,492,877.30	
b) Others	<u>256,997,928.16</u>		<u>151,177,963.20</u>	
	690,645,897.64		573,670,840.50	
Less:-Provision for Bad & Doubtful Sundry Debtors	<u>68,990,982.00</u>	621,654,915.64	<u>68,990,982.00</u>	504,679,858.50
3 Bank Balances				
a) With Scheduled banks				
On Deposit Accounts	327,285,906.00		385,656,570.00	
On Saving Accounts	<u>71,235,753.69</u>	<u>398,521,659.69</u>	<u>68,458,649.09</u>	<u>454,115,219.09</u>
<b>TOTAL (A)</b>		<b>1,413,223,070.82</b>		<b>1,224,635,364.23</b>
<b>B. LOANS &amp; ADVANCES</b>				
1 Loans				
a) Staff	8,052,038.00		2,820,701.00	
b) CARC Pvt Ltd	<u>184,578,500.00</u>	192,630,538.00	<u>184,578,500.00</u>	187,399,201.00
2 Advances and other amounts recoverable in Cash or in kind or for value to be received.				
a) Contractors & Suppliers	254,932,033.58		22,464,503.25	
b) Employees	3,676,700.00		2,184,566.90	
c) Prepaid expenses	<u>12,464,611.00</u>	271,073,344.58	<u>9,074,542.50</u>	33,723,612.65
3 Interest Accrued				
a) On Staff Loan	908,394.28		829,101.82	
b) On Bank Deposits	3,568,691.90		8,382,905.89	
c) CARC Loan	<u>59,858,060.00</u>	64,335,146.18	<u>39,923,577.00</u>	49,135,584.71
4 Claims Recoverable		197,925,312.35		198,957,159.35
5 Tax Deducted at Source		148,617,329.44		197,327,964.44
6 Disputed Income tax		81,031,283.31		81,031,283.31
7 Cenvat credit receivable		<u>4,357,100.97</u>		<u>13,985,730.67</u>
<b>TOTAL (B)</b>		<b>959,970,054.83</b>		<b>761,560,536.13</b>
<b>C. DEPOSITS</b>				
a) Office Building	40,500.00		40,500.00	
b) Others	<u>6,695,915.00</u>		<u>6,394,495.00</u>	
<b>TOTAL (C)</b>		<b>6,736,415.00</b>		<b>6,434,995.00</b>
<b>TOTAL (A)+(B)+(C)</b>		<b>2,379,929,540.65</b>		<b>1,992,630,895.36</b>

**SCHEDULE 8**
**INCOME FROM TOT, ROYALTY, FSR AND PUBLICATIONS**

 [ Forming part of Income & Expenditure Account for the year ended 31<sup>st</sup> March...]

( In Rupees )

	2014	2013
1) Income from Royalty	0.00	2,491,323.00
2) Income from Transfer of Technology (TOT)	800,000.00	20,200,000.00
3) Field/Technology Support Receipts	330,260,136.93	291,604,046.00
4) Income from Publications	275,612.75	88,722.13
<b>TOTAL</b>	<b>331,335,749.68</b>	<b>314,384,091.13</b>

## SCHEDULE 9

### INTEREST EARNED

( Forming part of Income & Expenditure Account for the year ended 31<sup>st</sup> March... )

( In Rupees )

	2014	2013
1) On Term deposits with Scheduled Banks	27,384,688.24	12,774,304.04
2) On Saving Account with Scheduled Banks	3,569,213.06	8,045,485.64
3) On Loans to Employees/Staff	758,930.22	318,922.60
4) On loans to Others	22,149,422.00	22,149,422.00
5) Others	4,492,077.00	0.00
<b>TOTAL</b>	<b>58,354,330.52</b>	<b>43,288,134.28</b>

## SCHEDULE 10

### OTHER INCOME

( Forming part of Income & Expenditure Account for the year ended 31<sup>st</sup> March... )

( In Rupees )

	2014	2013
1) Profit on Sale/disposal of Assets	1,720,011.31	57,073.68
2) Miscellaneous Income	30,243,523.72	6,020,162.24
3) Gain due to foreign exchange translation	1,263,573.54	150,279.51
4) Income from rent	34,239,211.00	3,414,172.00
<b>TOTAL</b>	<b>67,466,319.57</b>	<b>9,641,687.43</b>

**SCHEDULE 11**
**ESTABLISHMENT EXPENSES**

 ( Forming part of Income & Expenditure Account for the year ended 31<sup>st</sup> March... )

( In Rupees )

	2014	2013
a) Salaries and Wages	894,163,643.00	978,564,865.00
b) Bonus	825,506.00	832,126.00
c) Contributions to Provident Fund	84,104,653.00	66,579,096.00
d) Contributions to other Funds	6,313,842.00	5,818,200.00
e) Gratuity provided for employees	77,014,042.00	32,518,225.00
f) Staff Welfare expenses	196,996,672.00	179,820,884.70
g) Rent on residentials and Maintenance Expenses	17,204,825.00	16,150,153.00
h) Recruitment and Training Expenses	15,511,104.00	7,298,816.42
<b>TOTAL</b>	<b>1,292,134,287.00</b>	<b>1,287,582,366.12</b>

**SCHEDULE 12**
**OPERATIONAL EXPENSES**

 ( Forming part of Income & Expenditure Account for the year ended 31<sup>st</sup> March... )

( In Rupees )

	2014	2013
a) R &D Components & Consumables	251,334,204.50	243,389,953.17
b) Freight & Forwarding Charges	11,545,546.04	11,405,419.38
c) Repair & Maintenance-R&D & Office Equipments	51,483,977.52	78,460,664.20
d) Design, Development & Technology support Expenses	146,989,391.00	26,036,763.50
e) Consultancy Expenses	38,977,913.00	27,282,443.00
f) Testing Charges	575,130.00	979,181.22
<b>TOTAL</b>	<b>500,906,162.06</b>	<b>387,554,424.47</b>

**SCHEDULE 13**
**OTHER ADMINISTRATIVE EXPENSES**

( Forming part of Income & Expenditure Account for the year ended 31<sup>st</sup> March... )

(In Rupees )

	2014		2013	
a) Travelling and Conveyance expenses		28,660,329.25		29,921,260.40
b) Vehicle hire charges		3,509,079.00		2,990,380.00
c) Rent, Rates & Taxes		52,696,073.50		2,046,516.00
d) Interest Paid		22,217,671.00		27,116.00
e) Electricity & Water Charges		82,870,711.08		70,910,707.00
f) Repairs & Maintenance-Others		65,589,584.00		42,537,015.00
g) Newspaper , Periodicals, Journals & CDs		8,638,619.00		1,842,937.57
h) Insurance Charges		749,539.00		864,105.00
i) Printing, Stationery, Photocopy & Admin Consumables		8,747,397.74		12,734,026.67
j) Postage, Telephone and Communication Charges.		15,678,152.99		16,177,576.51
k) Exhibition, Advertisement & Publicity Expenses		13,321,248.00		10,565,090.00
l) Expenses on Conference/Seminar/Membership Fees		4,567,166.45		3,953,671.60
m) Legal, Professional fees & Honorarium		3,760,413.54		4,282,136.00
n) Patent fees		1,130,768.00		1,280,335.00
o) Remuneration to Auditors				
Audit Fees	300,000.00		300,000.00	
Out of pocket expenses	<u>254,701.00</u>	554,701.00	<u>137,475.00</u>	437,475.00
p) Hospitality/Entertainment Expenses		73,429.00		224,299.00
q) Bank Charges		1,251,868.46		1,351,993.02
r) Loss due to foreign exchange translation		5,816,301.32		173,935.43
s) Miscellaneous Expenses		206,730.31		6,323.00
t) Loss on sale of Assets		2,192,424.54		0.00
u) Provision for Bad & Doubtful Debtors		0.00		0.00
<b>TOTAL</b>		<b>322,232,207.18</b>		<b>202,326,898.20</b>



**SCHEDULE 14**
**ADJUSTMENTS PERTAINING TO EARLIER YEARS (NET)**

 ( Forming part of Income & Expenditure Account for the year ended 31<sup>st</sup> March... )

( In Rupees )

	2014		2013	
	Debit	Credit	Debit	Credit
<b>INCOME</b>				
TOT, Royalty, FSR and Publications	0.00	30,010,417.67	178,000.00	0.00
Interest Earned	0.00	0.00	0.00	0.00
Other Income	0.00	0.00	1,457,007.00	0.00
<b>EXPENDITURE</b>				
Establishment Expenses	1,928,466.00	0.00	1,056,862.00	0.00
Operational Expenses	2,158,374.50	0.00	6,067,079.99	0.00
Other Administrative Expenses	5,818,934.00	0.00	1,405,910.00	0.00
Depreciation	0.00	5,777,098.29	190,757,976.51	0.00
<b>TOTAL</b>	<b>9,905,774.50</b>	<b>35,787,515.96</b>	<b>200,922,835.50</b>	<b>0.00</b>
<b>Net Debit/Credit</b>		<b>25,881,741.46</b>	<b>200,922,835.50</b>	

## Schedule 15

### **SIGNIFICANT ACCOUNTING POLICIES**

[ Forming part of the accounts for the year ended 31<sup>st</sup> March, 2014 ]

#### **1. Accounting Method**

- a) The financial statements are prepared on accrual basis of accounting under historical cost convention in accordance with Generally Accepted Accounting Principles and Standards in India and provisions of the Societies Registration Act, 1860.
- 

#### **2. Use of estimates**

- a) Preparation of financial statements require estimates and assumptions to be made that effect the reported amount of assets and liabilities on the date of financial statement and the reported amount of revenues and expenses during the reporting period. Differences between actual results and estimates are recognized in the period in which the results are known/materialized.
- 

#### **3. Fixed Assets**

- a) Fixed Assets are stated at cost less accumulated depreciation and any impairment in value. Cost of fixed assets comprises the purchase price and any directly attributable cost of bringing the asset to its working condition for its intended use.
- b) Asset, the individual cost of each of which is Rs. 5,000 or less is also capitalized and depreciated in the year of acquisition itself at 100% value reduced by one rupee.
- c) Library books are capitalized irrespective of the individual values thereof.
- d) Subsequent expenditure related to an item of fixed asset is added to its book value only if it increases the future benefits from the existing asset beyond its previously assessed standard of performance.
- e) The Management conducts physical verification of fixed assets and their reconciliation with financial records. Such exercise is undertaken, taking into account the nature/size of activities of the Centre.

#### 4. Depreciation

- a) The provisions of Appendix I to the Income Tax Rules, 1962 (The Rules), as amended from time to time, are applied with the exceptions indicated below
    - i. Assets put to use anytime during the year are depreciated at the full rate prescribed by the Rules.
    - ii. Library books purchased during the year are depreciated fully in the same year.
    - iii. Assets, which are sold or discarded or lost or disposed off during the year, do not suffer depreciation for that year.
- 

#### 5. Inventory Valuation

- a) Stores and Spares (including machinery spares) are valued at cost. The cost is calculated on weighted average method. Cost comprises expenditure incurred in the normal course of business in bringing such inventories to its location and includes, where applicable, appropriate overheads.
  - b) Obsolete, slow moving and defective inventories are identified at the time of physical verification of inventories and, where necessary, provision is made for such inventories.
- 

#### 6. Investments

- a) Current investments are valued at lower of cost & fair market value.
  - b) Long Term Investments, including in Joint Ventures, are carried at cost. Where necessary, provision is made to recognize decline, other than temporary, in valuation of Long Term Investments.
- 

#### 7. Accounting for Grants-In-Aid

- a) Grants-in-aid received from the Government are treated as towards "Corpus / Capital Funds".
- b) The Grants-in-aid are treated as accrued when sanction memos are issued by the Administrative Ministry.

## 8. Revenue Recognition

- a) In respect of projects undertaken by the Centre for Telecom Operators and other agencies, the expenses and income in relation to these, are accounted for as expenditure/income respectively, only upon completion of the milestones related to project. Where the milestones/acceptances are not completed, the balances available in the Project account are shown as advances/recoverable on the balance sheet date.
  - b) Revenue is recognized to the extent that it is possible to estimate/ascertain that the economic benefits will accrue to the Centre and the revenue can be realistically measured. When the Centre is unable to assess the ultimate collection with reasonable certainty, revenue recognition is postponed and is recognized as revenue when the collection is reasonably certain.
- 

## 9. Foreign Currency Transaction

- a) Foreign currency transactions are accounted at the exchange rate prevailing on the date of transaction and the difference between the date of transaction and payment/receipt/accrual are accounted for as income or expenditure, as the case may be.
  - b) Monetary Current Assets and current liabilities denominated in foreign currency are translated at the exchange rate prevailing as at the year end and the resultant gain/loss is adjusted to revenue account. Advances paid to foreign suppliers for materials/services are treated as non-monetary assets and consequently are reported using the exchange rate at the date of transaction.
  - c) Contingent liabilities denominated in foreign currency are translated at the exchange rate prevailing as at the year end.
- 

## 10. Retirement and other employee benefits

- a) The Centre operates defined benefit plan for Gratuity to its employees. The costs of providing benefits under this plan are measured on the basis of actuarial valuation at the end of each year using projected unit credit method. Actuarial gains or losses for the defined benefit plan are recognized in full in the period in which they occur in the statement of profit or loss.
- b) Provisions for compensated absences are accounted for based on actuarial valuation using the projected unit credit method at the year end.

**11. Adjustments pertaining to earlier years**

- a) Adjustments necessitated during the current year due to errors/omissions pertaining to one or more previous years are treated as prior period items only when the value in each such case exceeds Rs. 5,000/-
- 

**12. Provisions and Contingent Liabilities**

- a) The Centre creates provision when there is a present obligation as a result of an obligating event that probably requires an outflow of resources and a reliable estimate can be made of the amount of outflow.
  - b) A disclosure for a contingent liability is made when there is a possible obligation or a present obligation that may, but probably will not, require an outflow of resources. Where there is a possible obligation or a present obligation in respect of which the likelihood of outflow of resources is remote, no provision or disclosure is made.
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## Schedule 16

### Notes on Accounts

( Forming part of the Accounts for the year ended 31<sup>st</sup> March, 2014 )

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## PART - A : Balance Sheet

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### 1.0 Fixed Assets

- a. Fixed assets include land at New Delhi measuring 40 acres (Previous Year- 40 acres ) was acquired in 1993 from Government of India. This land has been considered free hold, even though no formal conveyancing has been done in favour of the CENTRE.
- b. From the current year, assets costing Rs. 5,000 or less are capitalized and after providing depreciation are carried at a value of Re. 1. Till last year, these assets were not capitalized and were charged to revenue in the year of acquisition itself. This change has no significant impact on the Income & Expenditure and Balance Sheet of the Centre.

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### 2.0 Capital Work-in-Progress

- a. This represents the cumulative expenditure, incurred since 2008-09, on the proposed Housing facility at the Campus at New Delhi, amounting to Rs. 44.60 lakhs as at 31.03.2014. (Previous Year - Rs. 44.60 lakhs)
- b. The expenditure under this head will be capitalized appropriately under "Fixed Assets", upon completion of the Housing Facility.

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### 3.0 Investments

- a. The aggregate of the investments in the equity of a Joint Venture Company engaged in Research & Development in the field of Telecommunications was Rs. 5200.00 lakhs as at 31.03.2014. (Previous Year - Rs. 5200.00 lakhs)

- b. As one of the promoters of the Company, C-DOT is exploring the possibility of reviving that company by takeover or merger. Hence, no provision has been made in these accounts in respect of the erosion of the net worth of that company as at 31.03.2014.

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#### 4.0 Current Assets, Loans, Advances and Deposits

- a. Inventory of Components includes
- i. An amount of Rs. 134.11 lakhs as at 31.03.2014, (Previous year Rs. 145.87 lakhs) being components which remained unmoved for more than three years on the balance sheet date. The Management is of the view that these components may still be used in the current and future R&D programmes of the Centre.
  - ii. The value of Components, which were purchased in the past years, issued to the indentors, treated as consumed in the accounts of the year of issue, but part of which were returned to the stores during the current year by the indenting groups unconsumed – Rs. 18.82 Lakhs as at 31.03.2014 (Previous Year - Rs. 15.41 lakhs).
- b. Sundry Debtors amounting to Rs. 6906.46 lakhs includes :
- i. On account of TOT & Royalty dues of Rs. 2331.43 lakhs as at 31.03.2014 (Previous Year - Rs. 2331.43 lakhs) due from the concerned licensee has been fully met by the value of the land and buildings at Bangalore belonging to that licensee taken over / occupied by the Centre since 2005.
  - ii. On account of Royalty dues of one of the licensees, the same are being received in installments. The balance as at 31.03.2014 was Rs. 398.90 lakhs (Previous Year - Rs. 508.90 lakhs)
  - iii. On account of TOT dues from other licensees, the balance as at 31.03.2014 was Rs. 102.36 lakhs (Previous Year - Rs. 93.37 lakhs).
  - iv. On account of dues for other services rendered to Telecom companies Rs. 3042.91 lakhs as at 31.03.2014. (Previous Year - Rs. 2113.10 lakhs)
  - v. On account of rent receivables from Telecom Companies / Research Academy - Rs. 340.95 lakhs (Previous Year Rs. Nil)
  - vi. The balance amount of Rs. 689.91 lakhs as at 31.03.2014 (Previous Year Rs. 689.91 lakhs) provision has been made in these Accounts.

- c. Claims Recoverable :
- i. The aggregate of the amount realizable by the Centre as at 31.03.2014, on account of projects undertaken by it for the other organizations/expenses incurred by it, on reimbursement of cost basis, was Rs. 1979.25 lakhs (Previous Year - Rs. 1989.57 lakhs). All these amounts, which are included under "Claims Recoverable", are considered good for recovery. Hence, no provision has been made in respect thereof, while making these accounts.
- 

#### 5.0 Contingent Liability not provided for

- a. On account of unexpired letters of credit issued by bankers in respect of purchase orders for procurement of components and equipment – Rs. Nil lakhs as at 31.03.2014 (Previous Year - Rs. 106.25 lakhs)
- b. On account of bank guarantees given by / on behalf of the Centre of Rs. 8.80 lakhs as at 31.03.2014 (Previous Year - Rs. 8.80 lakhs).
- c. On account of pending legal cases, the amount outstanding is Rs. 20.87 lakhs. (Previous year Rs. 20.87 lakhs).
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## PART - B: Income & Expenditure Account

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### 1.0 Expenditure :-

- A. Employees' Benefits :-
- i. Gratuity :-

The value of liability of the Centre on account of Gratuity in respect of all employees on rolls at the end of the year on actuarial valuation basis was Rs. 3364.34 Lakhs (Previous year Rs. 2451.22 lakhs). The net expenditure recognized in the Income & Expenditure account for Gratuity in the current year was Rs. 770.14 lakhs (Previous Year Rs 325.18 lakhs). The Gratuity Trust, which is managed by a separate Board of Trustees comprising of employees, is discharging the liability on this account.



ii. Earned Leave (EL)

As per Rules of the Centre, Earned Leave is encashable by serving employees as well as by those leaving the services, either on superannuation or otherwise. The provision for liability, estimated on actuarial valuation basis, in respect of Earned Leave of employees as at 31.03.2014, was Rs. 2885.32 lakhs (Previous Year Rs. 2756.11 lakhs).

B. Bonus

Ex-gratia payment to eligible employees of the Centre, as per applicable policy from time to time is treated as expenditure of the year on an estimate basis. The estimated expenditure provided on account of bonus for the year 2013-14 is Rs 8.26 lakhs. (Previous Year 8.32 lakhs)

C. Consumption of Components

i. As per the practice followed consistently, the value of consumption is arrived at by reducing the value of closing stock from the aggregate of the values of opening stock and the purchases made during the year.

ii. Accordingly, the value of components consumed during the year was Rs. 2513.34 Lakhs. (Previous year Rs. 2433.90 Lakhs)

D. Rent, Rates & Taxes

Rent, rates and taxes include Rs. 497.02 lakhs paid as short deposit arrears on Property tax w.e.f. FY 2004-05 to FY 2013-14, as assessed by South Delhi Municipal Corporation. The matter is under appeal with the Municipal Taxation tribunal. Due to the uncertainty associated with the outcome, the same has been charged to revenue.

E. Interest paid

Interest expenses include Rs. 222.11 lakhs paid as Interest on short deposit arrears on property tax w.e.f. FY 2004-05 to FY 2013-14 as assessed by South Delhi Municipal Corporation. As referred in para above, the matter is under appeal with Municipal taxation Tribunal. Due to the uncertainty associated with the outcome, the same has been charged to revenue.

F. Foreign Exchange Fluctuations :-

- i. The net result of the fluctuations in Foreign Exchange on account of the transactions during the year was a loss of Rs. 45.53 Lakhs (Previous Year - loss of Rs. 0.24 Lakhs).
- ii. The gains and losses on account of such fluctuations are distinctly disclosed in Schedule 10 and 13 respectively.

G. Adjustments Pertaining to earlier years (Net) :-

Income and Expenditure under this head (refer Schedule 14), includes income of Rs. 300.10 lakhs (Previous year Rs. (-) 16.35 lakhs) and expenditure of Rs. 41.29 lakhs (Previous year Rs. 1992.88 lakhs).

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**PART – C : General**

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- a. The nature of activities of the Centre is such that these have been assumed to be not resulting in any 'manufacture' and 'sale' of products. As a consequence, the provision of the statutes relating to taxation on manufacture and Sale of Products are not deemed to apply in the case of the Centre. However, some of the technical services rendered by the Centre have been recognized as services attracting the levy of service tax. In such cases, applicable taxes have been either paid or admissible credits therefor availed, in making these Accounts.
- b. Previous year's figures have been regrouped or rearranged, wherever necessary.

Sd/-  
G. Mukundan  
Chief Finance Officer

Sd/-  
CA. Sunil Kumar Rastogi  
Partner  
M/s. Shiromany Tyagi & Co  
Chartered Accountants  
M.No. 501378  
FRN006117N

Sd/-  
Jayant Bhatnagar  
Executive Director

## Our Bankers

### Canara Bank

C-DOT Campus, Mehrauli,  
New Delhi-110 030

### Syndicate Bank

Corporate Finance Branch  
6, Sarojini House, Bhagwan Dass Road,  
New Delhi-110 001

### Canara Bank

Electronic City-I, Hosur Road,  
Bengaluru-560 100

### Central Bank of India

Sona Towers, 71/1, Millers Road,  
Bengaluru-560 100

## Our Statutory Auditors

### Shiromany Tyagi & Co.

Chartered Accountants  
18, Netaji Subhash Marg,  
Daryaganj,  
New Delhi-110 002

## Our Offices

### C-DOT

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### C-DOT

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### C-DOT

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C-DOT

Centre for Development of Telematics

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