R F D
RESULTS-FRAMEWORK DOCUMENT

For
Centre for Development of Telematics (C-DOT)

(2011-2012)

SECTION 1:

Vision, Mission, Objectives and Functions

Vision: C-DOT to become World Class Indian Telecom Technology Development Centre

Mission:

i. To indigenously design & develop state of art telecom technologies, product and solution.

ii. To meet the telecom needs of India, particularly of national importance in strategic sector and rural areas.

Objectives:

1. Work on telecom technology products and services to provide solutions for current, future requirements and converged networks including those of national importance especially related to rural applications, strategic sector and security agencies, etc.

2. Support Telcos and service providers in the introduction of new technologies, features and services by optimal utilization of installed networks, pilots and studies.

3. Develop and progressively transfer technology from design to manufacture utilizing resources from within the country and abroad.

4. Provide market orientation to R&D activities and sustain C-DOT as a centre of excellence.

Functions:

(1) Work in the frontiers of technology of Telematics & Information Technology taking into account futuristic trend and to conduct such basic research to meet the objectives
(2) Indigenous Telecom R&D to meet the telecom needs of the country
(3) Making country self reliant with appropriate telecom technologies by import substitution
(4) Build partnerships and joint alliances with Academia, Industry, Solution providers, Telcos and other R&D organizations to offer cost effective solutions.

(5) To promote & assist ancillary industry in the production of high quality components, subassemblies and equipment to meet performance standards required by the telematic industry

SECTION 2:
Inter se Priorities among Key Objectives, Success indicators and Targets

Column 1	Column 2	Column 3	Column 4	Column 5	Column 6	Column 7				
						Target / Criteria Value				
Objective	Weight	Actions	Success Indicator	Unit	Weight	Excellent	Very Good	Good	Fair	Poor
						100%	90%	80%	70%	60%
Work on telecom technology products and services t provide solutions for current, future requirements and converged networks including those of national importance especially related to rural applications, strategic sector and security agencies, etc.	55.00	Completion of R&D Programs.	CMS[1] - R&D trial completion in the field.	Date	15.0	15.02.12	31.03.12	30.04.12	15.05.12	31.05.12
			SG-RAN[2] – Field trial completion for Field-Worthy Proto-type System	Date	15.0	30.11.11	31.12.11	31.01.12	29.02.12	31.03.12
			MOES[3] - Field-trial completion for CPEs & MT	Date	15.0	30.11.11	31.12.11	31.01.12	29.02.12	31.03.12
			Terabit Router supporting IPV4, & upgradable to IPV6, MPLS & VPN features –Lab proto-type development completion	Date	5.0	15.02.12	31.03.12	30.04.12	15.05.12	31.05.12
			SDCN[4] -Development completion & Field deployment in Delhi, progressively expanding the network with 2000 subscribers to 5000 subscribers.	Date	15.0	30.11.11	31.12.11	31.01.12	29.02.12	31.03.12
			CSMP[5] : Lab proto framework completion & piloting with NMS Application(s).	Date	5.0	30.11.11	31.12.11	31.01.12	29.02.12	31.03.12
Support Telcos and service providers in the introduction of new technologies, features and services by optimal utilization of installed networks,	25.00	Enhancements/ new features/	ISP monitoring system at 50 locations comprising Gateways/POPS	Number	6.0	57	45	35	25	20

[1] CMS : Centralized Monitoring System;
[2] SG-RAN : Shared GSM Radio Access Network;
[3] MOES : Multi-port Optical Enterprise Solution; CPEs - Customer Premises Equipment & MT- Multi-port Terminal
[4] SDCN : Secure and Dedicated Communication Network
[5] CSMP : Customized Service Management Platform; NMS – Network Management System

Column 1	Column 2	Column 3	Column 4	Column 5	Column 6	Column 7				
						Target / Criteria Value				
Objective	Weight	Actions	Success Indicator	Unit	Weight	Excellent	Very Good	Good	Fair	Poor
						100%	90%	80%	70%	60%
pilots and studies.		upgradations/ adaptations/ technical support for developed technologies	Pilot Implementation of CMS in Delhi[6] in 2 TSPs (Telecom Service Providers)	Date	3.0	T+3.0	T+3.5	T+4.0	T+4.5	T+5.0
			Provisioning Voice over FTTH services using C-DOT NGN solution in 200 cities pan India	Number	7.0	200	190	180	170	<170
			Migration of Fixed Line (equipped capacity) to IP based technology - completion of clearance and acceptance testing	Date	3.0	31.12.2011	31.01.2012	31.02.2012	31.03.2012	30.04.12
			Technology support in the field for fixed-line, ATM etc.: field issues' redressal by Bug fixes/New Release/Enhancements etc.	%	6.0	100	95	90	85	<85
Develop and progressively transfer technology from design to manufacture utilizing resources from within the country and abroad.	4.00	Transfer of Technology for NGN, MAX-NG, Routers and G-PON System.	Non Disclosure Agreements (NDA) for transfer of technology signed.	Number	4.0	>8	6-8	4-5	2-3	1
Provide market orientation to R&D activities and s	3.00	Technology Promotion	Exhibitions/ Technical Presentation to prospective customers/ Demonstrations/ Feasibility Studies and Pilots	Number	3.0	>25	20-25	15-19	10-14	<10
Efficient functioning of the RFD System @	5.00	Timely submission of Draft for approval	On-time submission	Date	2.0	05.03.12	08.03.1	09.03.12	10.03.12	11.03.12
		Timely submission of results	On time submission	Date	1.0	02.05.11	03.05.11	04.05.11	05.05.11	06.05.11
		Finalize strategic plan	Finalize strategic plan for next five years	Date	2.0	10.12.11	15.12.11	20.12.11	24.12.11	31.12.11

[6] T+<n = 3,3.5,…5.0> in the Pilot Implementation for CMS in Delhi : T indicates Date of Approval of CCS (Cabinet Committee on Security) & <n> indicates no. of months

Results-Framework Document (RFD) for the Centre for Development of Telematics (2011-2012)

Column 1	Column 2	Column 3	Column 4	Column 5	Column 6	Column 7				
						Target / Criteria Value				
						Excellent	Very Good	Good	Fair	Poor
Objective	Weight	Actions	Success Indicator	Unit	Weight	100%	90%	80%	70%	60%
Improving internal efficiency/responsiveness/service delivery of ministry/department [7]	6.00	Develop RFD for all responsibility centers (subordinate offices, attached offices, autonomous bodies	Percentage of RCs covered	%	2.0	100	95	90	85	80
		Implementation of Sevotham	Create Sevotham compliant to implement, monitor and review citizen's charter	%	1.0	01.10.11	05.10.11	11.10.11	15.10.11	20.10.11
			Create Sevotham compliant system to redress and monitor public grievances	%	1.0	01.10.11	05.10.11	11.10.11	15.10.11	20.10.11
			Independent Audit of implementation of Citizen's Charter	%	1.0	100	95	90	85	80
			Independent Audit of implementation of public grievance redressal system	%	1.0	100	95	90	85	80
Ensuring compliance to the Financial Accountability Framework[8]	2.00	Timely submission of ATNS on Audit Paras of C&AG	Percentage of ATNS submitted within due date (4 months) from date of presentation of Report to Parliament by CAG during the year	%	0.5	100	90	80	70	60
		Timely submission of ATRs to the PAC Sectt on PAC Reports	Percentage of ATRs submitted within due date (6 months) from date of presentation of Report to Parliament by PAC during the year	%	0.5	100	90	80	70	60

7 : Mandatory Objective(s)

8 : Mandatory Objective(s)

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Column 1	Column 2	Column 3	Column 4	Column 5	Column 6	Column 7				
						Target / Criteria Value				
						Excellent	Very Good	Good	Fair	Poor
Objective	Weight	Actions	Success Indicator	Unit	Weight	100%	90%	80%	70%	60%
		Early disposal of pending ATNs of Audit Paras of C&AG Reports presented to Parliament before 31.3.2012	Percentage of outstanding ATRs disposed off during the year	%	0.5	100	90	80	70	60
		Early disposal of pending ATRs on PAC Reports presented to Parliament before 31.3.2012	Percentage of outstanding ATRs disposed off during the year	%	0.5	100	90	80	70	60

SECTION 3:
Trend Values of the Success Indicators

Objective	Actions	Success Indicator	Unit	Actual Value for FY 09/10	Actual Value for FY 10/11	Target Value for FY 11/12	Projected Value for FY 12/13	Projected Value for FY 13/14
Work on telecom technology products and services to provide solutions for current, future requirements and converged networks including those of national importance especially related to rural applications, strategic sector and security agencies, etc.	Completion of R&D Programs.	CMS[9] - R&D trial completion in the field.	Date	Development & lab testing ongoing	Development completed; infrastructure being set-up for piloting.	31.03.12	Pan India field deployment initiation	Pan India field deployment initiation 3
		SG-RAN[10] – Field trial completion for Field-Worthy Proto-type System	Date	Integration & testing ongoing	Field-trial Started	31.12.11	Manufacturing & Field deployment	Manufacturing & Field deployment
		MOES[11] - Field-trial completion for CPEs & MT	Date	design & development Completed	System integration & testing Completed	31.12.11	Manufacturing & Field deployment GPON/MOES technology	Manufacturing & Field deployment GPON/MOES technology
		Terabit Router supporting IPV4 & upgradable to IPV6, MPLS & VPN features –Lab proto-type development completion	Date	NA	Key routing engine technologies' evaluation Completed	31.03.12	Development of high capacity terabit router	Development of high capacity terabit router
		SDCN[12] -Development completion & Field deployment. in Delhi, progressively expanding the network with 2000 subscribers to 5000 subscribers.	Date	31.03.10	30.09.10	31.12.11	Technology roll-out for National Capital Region (NCR)	-
		CSMP[13] : Lab proto framework completion & piloting with NMS Application(s).	Date	NA	31.03.12	31.12.11	Unified converged NMS development based on CSMP.	Unified /converged NMS development based on CSMP.

[9] CMS : Centralized Monitoring System;
[10] SG-RAN : Shared GSM Radio Access Network;
[11] MOES : Multi-port Optical Enterprise Solution; CPEs - Customer Premises Equipment & MT- Multi-port Terminal
[12] SDCN : Secure and Dedicated Communication Network
[13] CSMP : Customized Service Management Platform; NMS – Network Management System

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Objective	Actions	Success Indicator	Unit	Actual Value for FY 09/10	Actual Value for FY 10/11	Target Value for FY 11/12	Projected Value for FY 12/13	Projected Value for FY 13/14
Support Telcos and service providers in the introduction of new technologies, features and services by optimal utilization of installed networks, pilots and studies.	Enhancements/ new features/ upgradations/ adaptations/ technical support for developed technologies	ISP monitoring system at 50 locations comprising Gateways/POPS	Number	-	15	45	As required by ISPs	As required by ISPs
		Pilot Implementation of CMS in Delhi[14] in 2 TSPs (Telecom Service Providers)	Date	NA	NA	T+3.5	Field implementation	Field implementation
		Provisioning Voice over FTTH services using C-DOT NGN solution in 200 cities pan India	Number	-	55 cities readied for commercial operation	190 cities	As per TSPs' requirements	As per TSPs' requirements
		Migration of Fixed Line (equipped) to IP based technology	Date	NA	NA	31.01.2012	Field deployment	Field deployment
		Technology support in the field for fixed line, ATM etc.: field issues' redressal by Bug fixes/New Release/Enhancements etc.	%	73%	100%	100%	100%	100%
Develop and progressively transfer technology from design to manufacture utilizing resources from within the country and abroad.	Transfer of Technology for NGN, MAX-NG, Routers and G-PON System, etc.	Non Disclosure Agreements (NDA) for transfer of technology signed	Number	-	11	6-8	-	-
Provide market orientation to R&D activities and sustain C-DOT as a centre of excellence.	Technology Promotion	Exhibitions/Technical Presentation to prospective customers/ Demonstrations/ Feasibility Studies and Pilots	Number	-	>25	20-25	>30	>30

[14] T+<n = 3,3.5,…5.0> in the Pilot Implementation for CMS in Delhi : T indicates Date of Approval of CCS (Cabinet Committee on Security) & <n> indicates no. of months

SECTION 4:
Description and Definition of Success Indicators and Proposed Measurement Methodology

S. No.	Actions	Success Indicator	Description and Definition of Success Indicators	Proposed Measurement Methodology
1.	**Objective:** Work on telecom technology products and services to provide solutions for current, future requirements and converged networks including those of national importance especially related to rural applications, strategic sector and security agencies, etc.			
(i)	Completion of R&D Programs.	CMS[15] - R&D trial completion in the field.	CMS provides call interception, monitoring, analysis of social networking of target subscribes' data, end-to-end secured workflow as per the requirements of Law Enforcement Agencies (LEA) to address threats & unlawful activities of anti social elements. This requires design, development of CMS software & setting-up a centralized monitoring centre with requisite infrastructure.	• R&D trial for CMS solution related to voice interception, monitoring for PSU TSP (Telecom Service Provider) in Delhi
		SG-RAN[16] – Field trial completion for Field-Worthy Proto-type System	With the Government allowing active infrastructure sharing, there is cause for developing a GSM solution based on this active sharing principle, which will attract the cellular operators to the low ARPU (Average Revenue per User) rural markets. The SG-RAN system enables sharing of radio access network for mobile infrastructure.	• Field trial of SG-RAN system.
		MOES[17] - Field-trial completion for CPEs & MT	The MOES provides a cost-effective high bandwidth triple play solution in competitive urban market providing high bandwidth connectivity from existing E1 networks to packet-switched backbone networks, and in rural areas through a single fibre termination for applications like e-education, e-health, e-governance etc. The MOES system includes two types of modules, namely, CPE having multiple types of interfaces, a Multi-port terminal (MT) to serve many such CPEs to minimize network side connectivity for reducing field fibre usage.	• Field trial completion of Multi-Port terminal and variants of CPEs. • Commencement of ToT for GPON/MOES technology.
		Terabit Router supporting IPV4 & upgradable to IPV6, MPLS & VPN features –Lab proto-type development completion.	Routing in backbone optical networks happens in the core nodes. As nature of applications become increasingly content and location dependent, implementation of core nodes becomes more complex, requiring routing decisions to be taken at very high speeds. A prototype terabit router is intended to be built.	• Prototype router supporting IPv4, MPLS & VPN features.
		SDCN[18] -Development completion & Field deployment in Delhi, progressively expanding the network with 2000 subscribers to 5000 subscribers.	A high speed, secure optical broadband IP-network is required to be built, dedicated to the needs of defense, security, and other government agencies, for carrying voice and data. The network is planned to be equipped with next generation packet Network Element (NE) based on C-DOT's technology, which requires customizations and enhancements of C-DOT's Network Elements (NE) to security grade classified by the relevant grading agencies.	• Technology deployment in the field as per roll-out plan. • Submission of encryption module for SAG approval.

[15] CMS : Centralized Monitoring System;
[16] SG-RAN : Shared GSM Radio Access Network;
[17] MOES : Multi-port Optical Enterprise Solution; CPEs - Customer Premises Equipment & MT- Multi-port Terminal
[18] SDCN : Secure and Dedicated Communication Network

S. No.	Actions	Success Indicator	Description and Definition of Success Indicators	Proposed Measurement Methodology
		CSMP[19]: Lab proto framework completion & piloting with NMS Application(s).	A generic NMS platform with service management layers and customized applications based on industry standards. C-DOT's CSMP is a generic Application and Mediation platform that can integrate EMSs/ NMSs from domains like TDM, IP, optical, wireless and provide Element/ Network/ Service Management functions.	• Piloting CSMP with NMS application(s) such as IP-NMS.
2.	**Objective:** Support Telcos and service providers in the introduction of new technologies, features and services by optimal utilization of installed networks, pilots and studies.			
(i)	Enhancements/ new features/ upgradations/ adaptations/ technical support for developed technologies	ISP monitoring system at 50 locations comprising Gateways/POPS.	Implementation of ISP monitoring solution at the Gateways / PoPs of all ISPs to meet the requirements of lawful interception and monitoring by LEAs, and technical support thereafter.	• Installation, integration, testing and handing over of solution to LEAs at all 57 sites.
		Pilot Implementation of CMS in Delhi in 2 TSPs	To carry-out the pilot implementation of Centralized Monitoring System (CMS)in Delhi based on the C-DOT R&D work, as part of the national roll-out of CMS on getting the approval from CCS (Cabinet Committee on Security) for the purpose.	• Installation of 1-RMC (Regional Monitoring Centre) data centre at TERM's office • Installation of store-&-forward server at TSPs premises • Demo of Monitoring & interception function to the user (Law Enforcement Agencies –LEAs) having installed requisite equipment at their premises/locations. • Centralize Monitoring Data Centre built with MPLS connectivity to TSPs
		Provisioning Voice over FTTH services using C-DOT NGN solution in 200 cities pan India.	M/s BSNL has started providing triple play services over GPON technology. The voice service for this project is being provided by indigenously developed C-DOT NGN solution and C-DOT installed its NGN core network at NOIDA and is planning to install its DR (Disaster Recovery) at Bangalore. To carry the PSTN/PLMN traffic, C-DOT has also installed its media gateway and signaling gateway at L1 TAX locations at different circles. With the installation of current infrastructure, it is planned to increase the provisioning of FTTH services on pan India.	• Provisioning of voice over FTTH in 200 cities.
		Migration of Fixed Line (equipped) to IP based technology.	C-DOT has developed its Next Generation IP based packet technology (MAX-NG: Next Generation) for migrating its existing fixed line exchanges, namely, MAX/RAX (Main Automatic Exchange/Rural Automatic Exchange) to VoIP based Packet technology. The field trial for the technology is completed and accord of the technology approval is in process. On receipt of the technology approval, the presently installed C-DOT fixed line technology (25 million lines in the network) shall be converted to Packet based technology progressively over a period of 3 years.	• Commencement of migration of fixed lines deployed in the network to Next Generation VoIP technology on receipt of the technology approval for its MAX-NG.

[19] CSMP : Customized Service Management Platform; NMS – Network Management System

S. No.	Actions	Success Indicator	Description and Definition of Success Indicators	Proposed Measurement Methodology
		Technology support in the field for fixed line, ATM etc.: field issues' redressal by Bug fixes/New Release / Enhancements etc.	To provide enhancements/ upgradations/ bug-fixes, solutions for obsolescence and field support for the technology developed/ deployed in the network with new set of features or migration/ scalability, and trials off newly developed technologies.	• Field issues' redressal to extent 100% by providing on/off-site support, patches / new releases etc.
3.	**Objective:** Develop and progressively transfer technology from design to manufacture utilizing resources from within the country and abroad.			
(i)	Transfer of Technology for NGN, MAX-NG, Routers and G-PON System.	Non Disclosure Agreements (NDA) for transfer of technology signed as well TOT agreement signing.	NDA is an agreement signed between licensor and licensees to keep the confidentiality of the information exchanged for the purpose taking technology. Subsequently, TOT agreement is signed with licensees who qualifies the criteria laid down for taking up the technology for manufacturing.	• Number of NDAs and TOT agreements signed.
4.	**Objective:** Provide market orientation to R&D activities and sustain C-DOT as a centre of excellence			
(i)	Technology Promotion	Exhibitions/Technical Presentation to prospective customers/ Demonstrations/ Feasibility Studies and Pilots	It is business promotion activity, which involves showcasing the developed technology, demonstration of applications using the existing technology in the conference, feasibility study for carrying-out customization etc.	• Number of promotional events.

SECTION 5:
Specific Performance Requirements from other Departments

Department/PSU/Authority	Relevant Success Indicator	What do you need?	Why do you need it?	How much you need?	What happens if you do not get it?
Department of Telecommunication (DOT)	Allocation R&D Funding	Timely release of allocated Funding for R&D programs /schemes	To meet the cost of technology development	As approved in the budget for the financial year subject to utilization.	• Roll-out of projected R&D will be affected
	Pilot Implementation of CMS in Delhi in 4 TSPs	• DOT to authorize & assist in allocating TSP sites & availability of infrastructure at TSPs premises.	• It is basic requirement to conduct pilot implementation.	• All TSPs' allocation in Delhi	• Pilot will not be able to commence
		• TSPs' telecom exchanges should be ETSI[20] compliant as per TEC / CMS – GR[21].	• DOT, LEAs & TSPs are the major stakeholders & LEAs are the end users.	• All LEAs & TSPs of Delhi.	• Implementation will be adversely effected.
		• DOT should facilitate in mandating C-DOT CMS solution to all TSPs, ISP, & LEAs.			
Cabinet Committee on Economic Affairs (CCEA) / Cabinet Committee on Security (CCS)	Approval of C-DOT CMS technology for National Roll out	CCS approval for the project.	For implementation of National Rollout of C-DOT CMS Technology	Needed at the earliest to commence the pilot implementation.	This would lead to delay in implementation of National Rollout of C-DOT CMS technology.
Revenue Department	Appreciation of C-DOT's status as a "Scientific Research Association"	Exemption of total income, if any, from the Income Tax	As C-DOT sustains its R&D activities only from the grant-in-aid support from the Government.	100% at the earliest, i.e. 1.4.2011	C-DOT will be crippled due to want of funds for its research & development activities impacting the indigenous technology development and manufacturing thereof.

[20] ETSI: European Telecommunications **Standards** Institute

[21] TEC /CMS-GR: CMS specifications document released by TEC (Telecommunication Engineering Centre)

SECTION – 6
OUTCOME / IMPACT OF ACTIVITIES OF ORGANIZATION MINISTRY

1	2	3	4	5	6	7	8	9
S. No.	**Outcome / Impact of organization / RCs**	**Jointly responsible for influencing this outcome / impact with the following organization(s) / departments / ministry(ies)**	**Success Indicator(s)**	**2009-10**	**2010-11**	**2011-12**	**2012-13**	**2013-14**
1.	Indigenous technology for the strategic sectors like Law Enforcement Agencies, Defense and the technologies for bridging the digital divide between the urban and rural, remote, NE Region of the country for the socio-economic development of the region as well as giving impetus to the manufacturing base in the country.	• Ministry of Communication & IT • Telecom service providers – BSNL, MTNL • Law Enforcement Agencies, Defense • Indian telecom manufacturers • Department of IT • NIC • Scientific Analysis Group (SAG), DRDO • Intelligence Bureau (IB)	New technologies' Field trials, implementation /pilot deployment in the network	5 [MAX-NG, Broadband Wireless, VoIP over FTTH & ADSL, CLH, NMS: GSM]*	6 [MAX-NG, GPON, TAX-NMS, WiFi – based broadband access, NGN for FTTH services, CLH]*	6 [CMS,SG-RAN,MOES,SDCN,CLH, MAX-NG]*	8 [CSMP, WIPS, CMS, SDCN, MOES, Router, MAX-NG, SG-RAN]*	6 [Terabit Router, Unified NMS, 10G-GPON, WIPS, CMS, MAX-NG]*
			Technology commercialization – Readiness of technologies for Transfer to manufacturers	-	4 [GPON, NGN, MAX-NG,IP-DSLAM]*	5 [GPON, NGN, MAX-NG, Router, IP-DSLAM]*	3 [WIPS, SG-RAN MOES]*	2 [Terabit Router, 10G-GPON]*

* **LIST OF TECHNOLOGIES** :
MAX-NG : Next Generation Circuit Switch Technology ; **VoIP** : Voice over IP; **FTTH** ; Fiber-to-the-Home ; **ADSL** : Asymmetric Digital Subscriber Line; **CLH** : Clearing House; **NMS-GSM** : Network Management System for GSM Mobile; **GPON :** Gigabit Passive Optical Network; **TAX-NMS**: Trunk Automatic Exchange NMS; **CMS** : Centralized Monitoring System; SG-**RAN** : Shared GSM Radio Access Network; **MOES** : Multi-port Optical Enterprise Solution; **SDCN** : Secure and Dedicated Communication Network; **CSMP** : Customized Service Management Platform; **WiPS** : Wireless Phone Service; **IP-DSLAM** : IP Digital Subscriber Line Access Multiplexer