Bharat Broadband Network Limited (BBNL)

NOFN – A Game Changer

Role of Broadband in Nation Building

- Broadband has the potential to touch and empower our lives both in urban and rural areas, More so in RURAL area where bulk of 72% people live
- Easy access to Broadband will lead to democratization of information
- Broadband will enable the delivery of services universally in key sectors of Health, Education, Commerce and Governance.
- It has been estimated that every 10% increase in broadband connectivity leads to 1.38% increase in Gross Domestic Product.
- Rapid growth of mobile sector has seen teledensity increase to more than 70% from barely 2% in 2000. However, limited availability of Broadband connectivity has created a digital divide.
- Policy Goal is “Right to Broadband” and “Broadband on Demand”

Policy Aspiration of Broadband

<u>TODAY:</u> No. of BB connections (≥ 256 Kbps) =13.5 million (Jan 2012)

<u>Vision</u> :

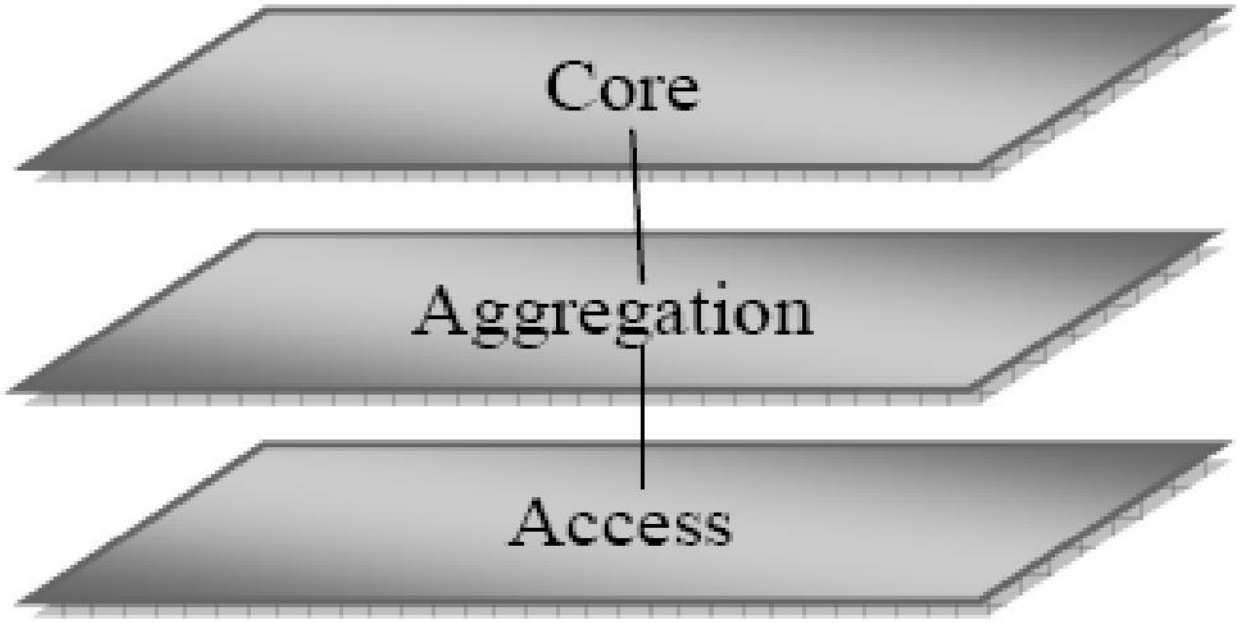
- ***BB on Demand***
  - *Affordable and reliable* ***broadband on demand (year 2015)***
- ***BB connections targets***
  - ***175 million -(year 2017)***
  - ***600 million -(year 2020) at minimum 2 Mbps DL speed***
  - ***higher speeds of at least 100 Mbps on demand.***
- **Recognise telecom and BB connectivity** as **a basic necessity** like education and heath and work towards **'Right to Broadband'.**
- **Synergise between** existing, on-going and future **Government programs** viz e-gov, e-panchayat, NREGA, NKN AADHAR, AAKASH tablet etc. & **BB roll-out, Sharing;**

GAP? : Miles to go ! How do we leap frog?

How do we meet aspiration?

- Urgent need for inclusive growth through Broadband
- Optic Fiber is the way forward to provide high speed and reliable Broadband
- Deployment of a National Broadband infrastructure is a prerequisite. Resources should be pooled.
- Need for STIMULUS- to trigger the BB Eco- system
- Many countries have taken initiatives to promote Broadband as a policy initiative
- Solution should be tailored to Indian conditions

Telecom Network Layers-Gaps in OFC Reach



BBNLprogrammes to cover 2,50,000 GPs
For Panchayats
wimax/wireline/
CSC by DIT

Gap from
Block to GP

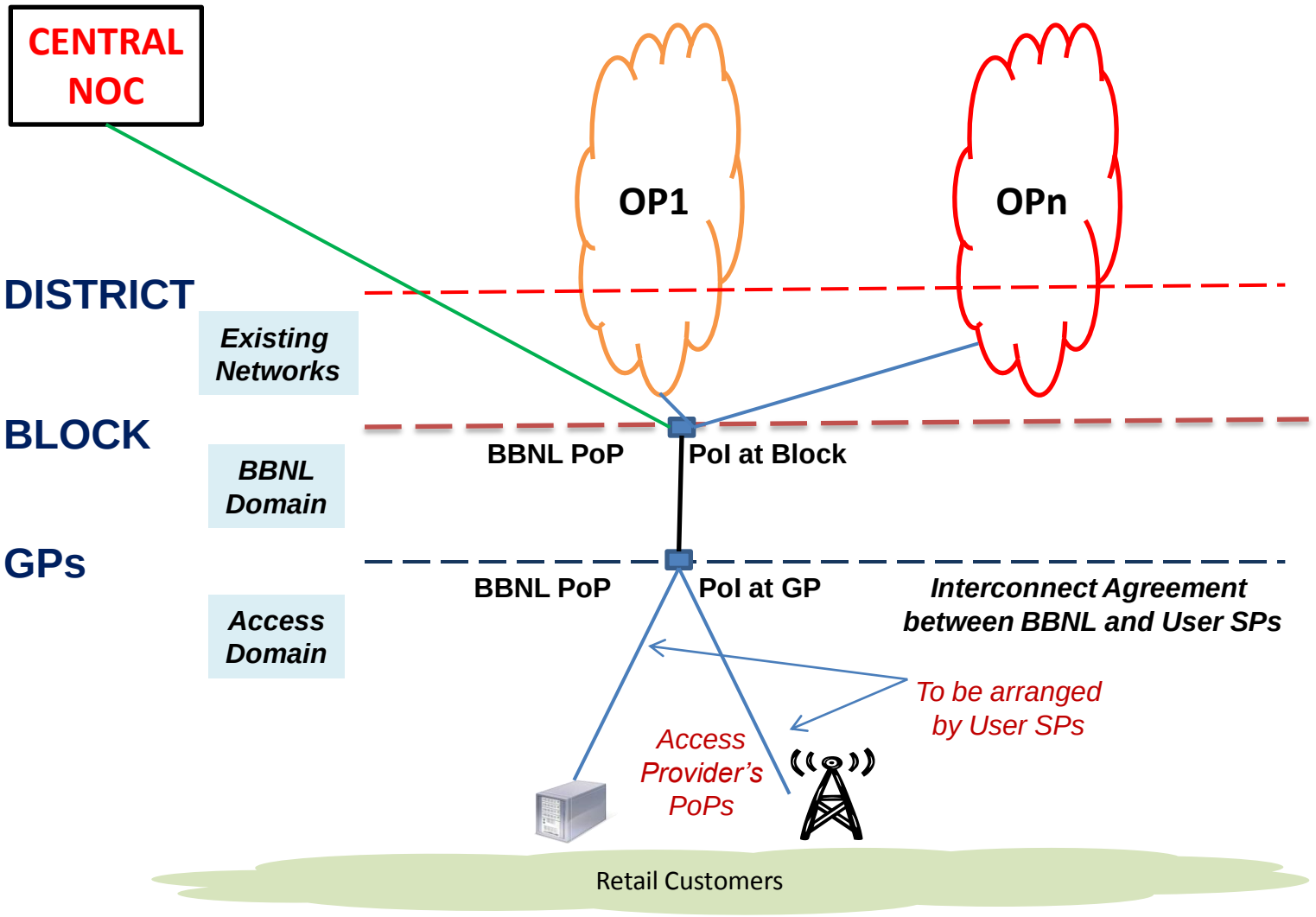
A new Rural market
at BoP waiting
to be tapped

INDIAN ADMINISTRATIVE SETUP



Population	1.17 Billion 72% Rural
Area	3287263 Sq. Km
States + UTs	28 + 7
Districts	640
Blocks	6382
Village Panchayats	250000
Villages	638619

BBNL Interconnection



NOFN - Bridging The Gap

- Fill the gap upto the aggregation layer by creating the National Optical Fiber Network (NOFN)
- Existing fibers and core network to be leveraged by leasing from existing operators, so as to avoid duplication.
- No. of Village Councils to be covered 2,50,000
- Incremental cable needed to be laid 5,00,000 Km
- GPON (Gigabit Passive Optical Network) technology to be used

NOFN

- Project to be carried out by Bharat Broadband Network Limited (BBNL), a Special Purpose Vehicle (SPV) of Government of India.
- **Estimated cost of the project is Rs 20,000 Cr**
- Govt. of India to fund the whole project through the Universal Service Obligation Fund (USOF).
- State Governments are expected to contribute by way of not levying any Right of Way charges
- IT and other infrastructure investment by other stakeholders
- NOFN Project implementation time - 24 months (by **31.3.2014**).

BBNL-Infrastructure Provider

- Bandwidth Provider
- Gap filler in aggregate layer
- Users of NOFN are access operators(TSPs/ISPs/Cable TV operators)
- Enables them to launch various access services
- Operator of operators (carrier of carriers)
- B2B,No retailing
- Non-discriminatory access to all licensed operators
- Seeks to trigger Ecosystem **opening up new Rural markets**
- **Incremental in nature**

NOFN Planning

1. BBNL to be a lean and flat organization. Therefore, Outsourcing model to be used extensively for both project execution and operations and maintenance.
2. Emphasis on management through technology. Project Management Tools to be extensively used. Primavera from Oracle selected for the purpose.
3. Survey work allocated to 3 PSUs – BSNL, PGCIL and RAILTEL
4. Centralized tenders for OFC and GPON equipment while cable trenching and laying work allotted to 3 PSUs.
5. Similarly, MOUs signed with CDOT for NMS and NIC for GIS

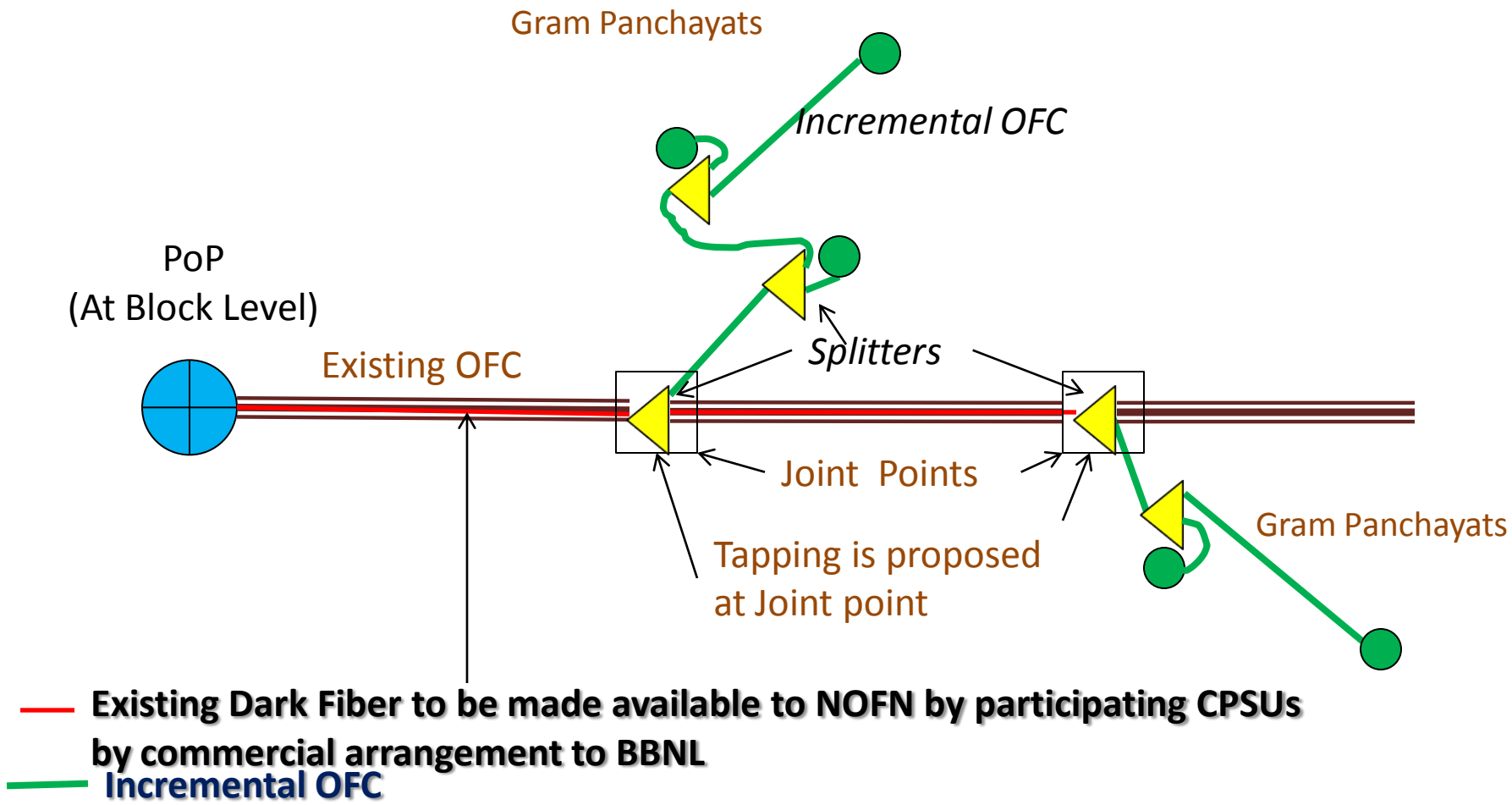
NOFN Planning

1. GPON technology decided by Technical advisory committee
2. Only incremental fiber to be laid to minimize cost. Planning tool also to be used to plan and optimize the routes.
3. Survey to be the central activity in planning and execution.
4. Standards to be followed as far as possible.
5. Pilot done to understand issues that will crop up

Technology & Architecture

- To be built using dark fibres leased from three CPSUs (BSNL/Railtel/PGCIL) and laying incremental fibre.
- To offer interconnection at Block level and Gram Panchayat (GP) level
- Guaranteed Bandwidth of **100 Mbps** at GP
- GPON is technology of choice considering the ground realities
- Predominantly Linear with rings wherever necessary.

Concept: Making available Dark Fibers by 3 CPSUs



Pilots

	BSNL	Railtel	PGCIL
Location Block/ District	Arain/ Ajmer	Panisagar/ North Tripura	Paravada/ Vishakhapatnam
Cable Laid	completed	completed	completed
No. of GPs connected on OFC	30	15	15
Equipment (GPON)	installed	installed	Installed
Backhaul connectivity with BSNL	Completed	Completed	Completed
Completed on	15.10.2012	15.10.2012	15.10.2012
Bandwidth available	100 Mbps	100 Mbps	100 Mbps

Pilot Project Learning

1. Wi-Fi enabled ONTs be used at GPs
2. Local area Power – Erratic Power situation necessitates provision for Back-up power
3. Block Headquarters be covered for G2G and G2C applications
4. ONT maintenance –Skill development of technical staff in local area
5. Data Analytics – Data on potential customers in each GP
6. Incremental cable length and cost estimates will vary

Pilot – Utilizing NOFN Infra

- Need to demonstrate benefit of connctivity in pilot phase
- Provide Horizontal access to 5-10 Institutions in 60 Gram Panchayats
- Deliver 5-10 services to citizens through e-applications
- Establish e-Education and e-Health facility in each block
- Support CSC, Digital Knowledge Center etc

Counterpart Funding by DeitY at Pilot Locations

- Counterpart funding of Rs. 24 Cr. for pilots is being done by DeitY. Which includes
  - Vertical connectivity above Block (4 No.)
  - Horizontal Connectivity below GPs (59 No.)
  - 195 institutions to be covered
  - No. of applications finalised
  - Training and manpower provided for
  - Ready for launch of G2C applications

Institutions Covered

Rajasthan- Arain		
Sr. No	**Type of Institution**	**No. of Institutions**
1	BDO Office	1
2	Gram Panchayat	30
3	Rajiv Gandhi Seva Kendra (RGSK)	31
4	PHC/ CHC	8
5	Police Station	1
6	Arian Sub Tehsil	1
7	Digital Knowledge Centres (DKCs)	5
8	Tele-medicine Centre	1
Total		**78**

Andhra Pradesh- Parwada		
Sr. No	**Type of Institution**	**No. of Institutions**
1	Educational	21
2	Health	4
3	Police Station	1
4	Govt Office	4
5	Govt Bank	1
6	Gram Panchayats	15
7	Digital Knowledge Centres (DKCs)	15
8	BDO	1
9	Tele-medicine Centre	1
Total		**63**

Tripura- Panisagar		
Sr. No	**Type of Institution**	**No. of Institutions**
1	Educational	12
2	Dept of Animal Resource Dvlp (ARDD)	8
3	Govt. Office	6
4	Health	2
5	Agriculture Dept.	2
6	Bank	2
7	Police	2
8	Administrative	2
9	Post Office	1
10	Digital Knowledge Centres (DKCs)	1
11	GPs	14
12	BDO	1
13	Tele-medicine Centre	1
Total		**54**

Portfolio of Services Planned

Rajasthan- Arain	Andhra Pradesh- Parwada	Tripura- Panisagar
• PRIYASOFT software package • E-Sugam, Telemedicine • Mandi Bhav, Cause List • Arogya-Online and e-Aushadhi modules • CCTNS Services • G2C related services: ▪ RPSC fee collection and application filling ▪ Digital Bonafide Residence Certificate ▪ Digital Caste Certificate ▪ Copy of record of rights ▪ tility Bills Payment • B2C related services : ▪ BSNL, IDEA, Airtel ▪ Tata Indicom and Vodafone mobile bill ▪ BSNL & MTS Telephone bill ▪ DISH TV Services	• Mee Seva Services • eHealth Services • Animal Husbandry Services • Veterinary Hospital • Telemedicine Services • ePanchayat Agricultural Services • Computer Literacy ,eLearning	• Tele-education • e-Book, e-Journals • National Animal Disease Reporting System (NADRS) • Records of Rights/Land Mutation Status • Integrated Child Development System (ICDS) • Electricity Billing • Mother and Child Tracking System (MCTS) • Agmarket • Electronic Fund Management/Direct Cash Transfer • CCTNS • e-Subidha service, Birth Certificate • Copy of Register of Ordinary Residence etc. • e-MO, Speedpost etc

Digital Knowledge Centres (DKCs)

- **New Initiatives**
  - Hub for dissemination of **Knowledge & Skills**
  - **Delivery of Digital Literacy Courses**
  - **Programs on offer:**
    - Azim Premji Foundation Education/e-learning- Class 2 – 8 (Hindi, Telgu & English)
    - Amrita University Skills Development- Fabric Painting, Soap Making & Plumber
    - TCS Adult Literacy Program
    - SAPNET-Spoken English
  - Passport
  - NIOS Facilitation Centers
  - Media Lab Asia Services
- **Currently available services extended to DKCs**:
  - Digital Literacy Courses
  - Pan Card
  - NIELIT Facilitation Centers
  - Telecom & DTH Services
  - E-Commerce/ Online Stores
  - Online Entertainment
  - Business Correspondent
  - UID Permanent Enrollment Centers

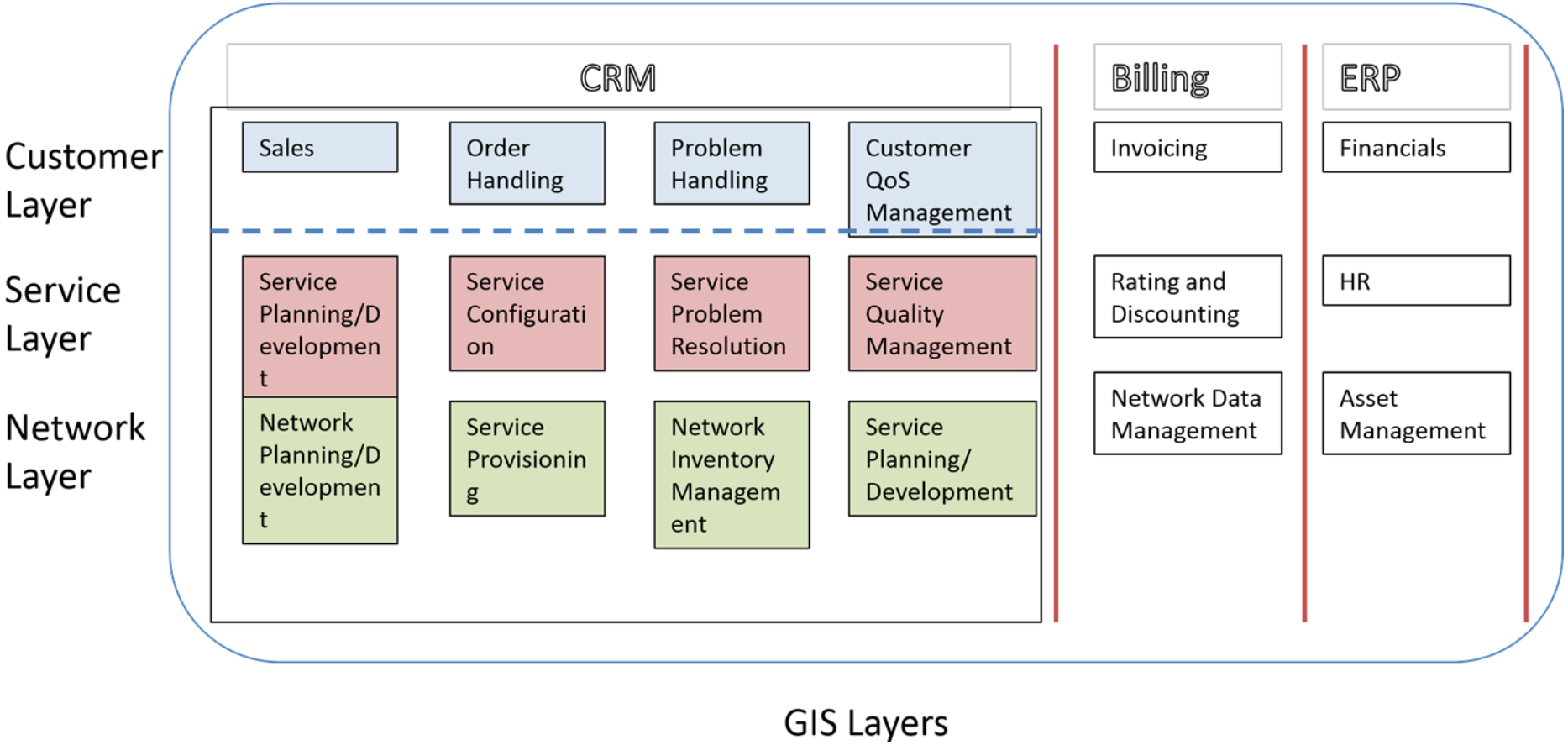
State Specific Services

- **Tripura**
  - Digital Literacy: Panchayat Functionaries under the e-Panchayat Programme
  - Rights of Records (RoR) Data entry
  - BABLE Course on fundamentals of Computer (Under NSDC Programme)
  - Livelihood Promotion Center- Tailoring Course to Women aged between 16-20.
  - .Training to the Institutional Users like GRS (Gram Rojgar Sevaks)
- **Andhra Pradesh**
  - Digital Literacy
  - SAPNET
  - Meeseva services
  - SCA services
  - Field Force Capacity Building
- **Rajasthan**
  - Digital Literacy: Women
  - E-Mitra Services

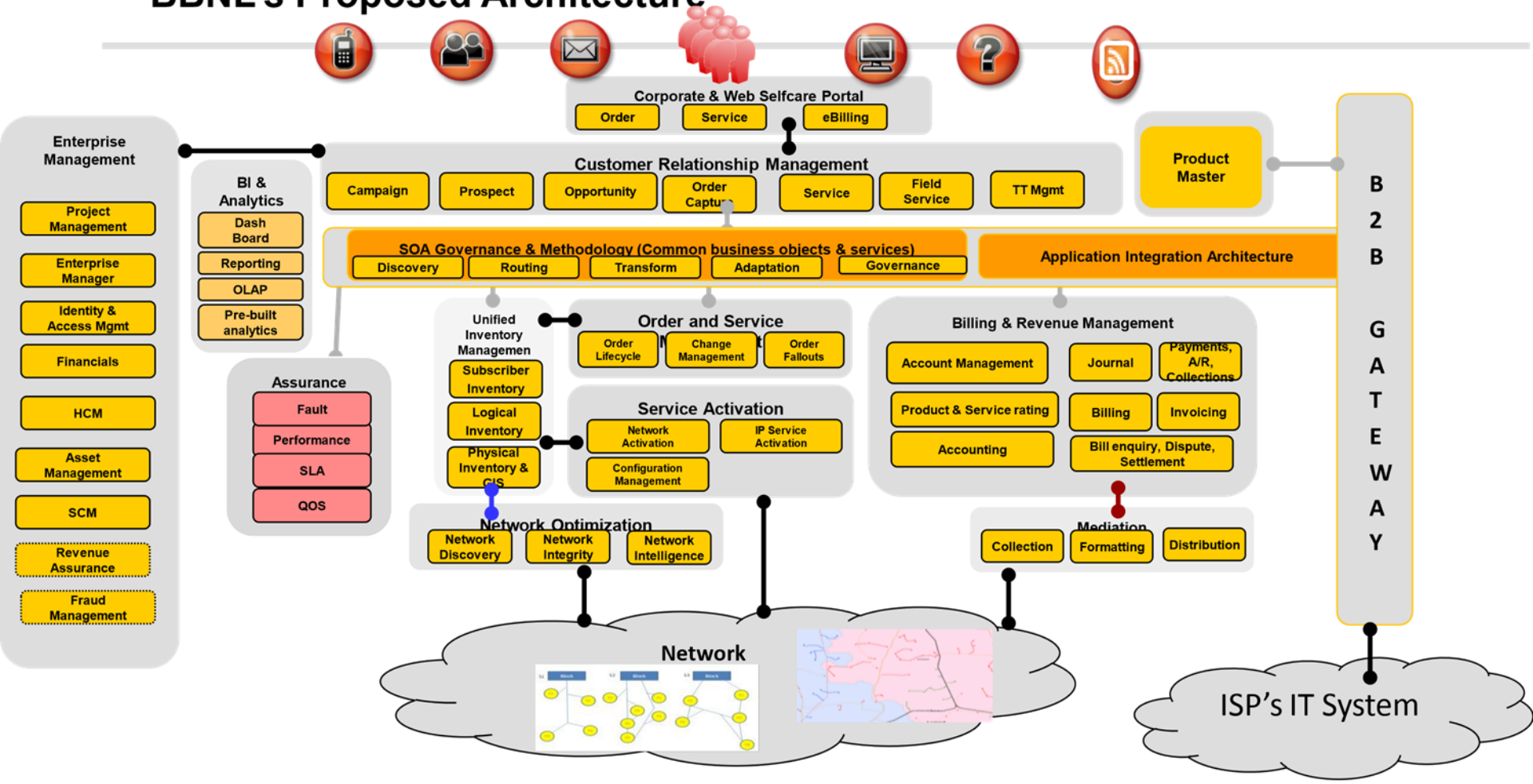
NOFN Differentiators

- Strict Timelines
  - Leverage IT (PM Tools)
- Large Geographical Spread
  - Leverage Technology (GIS)
- Lean Organisation
  - Centralized NOC
- Trigger Eco-System
  - Leverage DeIT support for e-Gov

IT Architecture for Telecom



BBNL's Proposed Architecture



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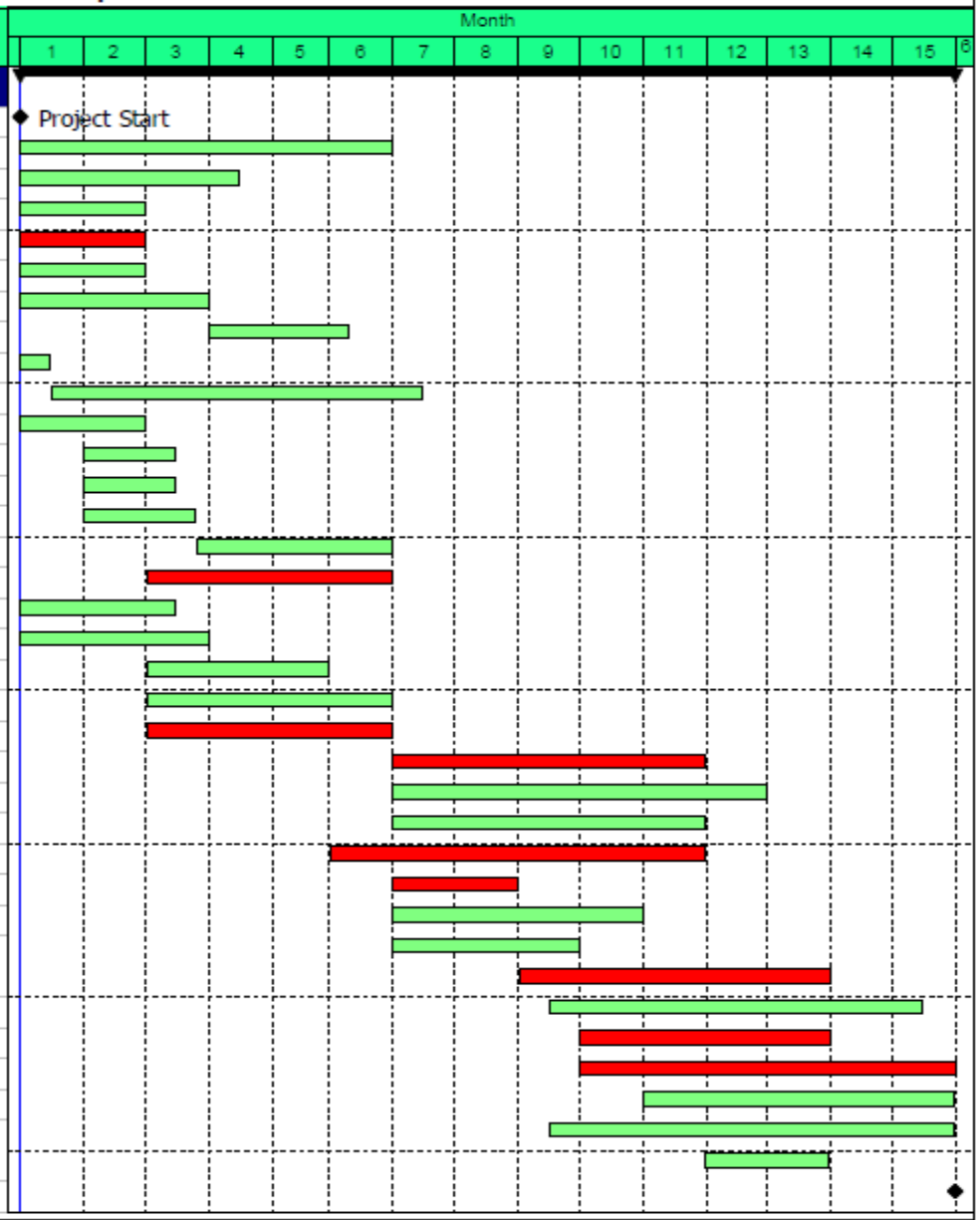
Project Management Tool

Project Management Lifecycle

- Initiating process
- Planning process
- Executing process
- Controlling process
- Closing process

Project Plan: National Optic Fibre Network

Activity ID	Activity Name	Planned Start	Planned Finish
	National Optic Fibre Network	01-Oct-12	31-Dec-13
	Project Start	01-Oct-12	
	Signing of ROW	01-Oct-12	31-Mar-13
	Signing of FLA	01-Oct-12	15-Jan-13
	Signing of MOU with CDOT	01-Oct-12	30-Nov-12
	Signing of MOU with BSNL/PGCIL/RAILTEL	01-Oct-12	30-Nov-12
	Signing of MOU for GIS	01-Oct-12	30-Nov-12
	Survey work	01-Oct-12	31-Dec-12
	Survey Analysis, Estimation & approval	01-Jan-13	10-Mar-13
	Pilot in 3 Blocks	01-Oct-12	15-Oct-12
	Applications in Pilot Proj	16-Oct-12	15-Apr-13
	Procurement Policy	01-Oct-12	30-Nov-12
	e-tendering platform	01-Nov-12	15-Dec-12
	Preparation of Specifications	01-Nov-12	15-Dec-12
	Preparation & approval of Bid Document	01-Nov-12	25-Dec-12
	NIT,Evaluation,LOI,PO by BBNL	26-Dec-12	31-Mar-13
	NIT,Evaluation,LOI,PO by PSU's	01-Dec-12	31-Mar-13
	PM Tool	01-Oct-12	15-Dec-12
	License NLDO	01-Oct-12	31-Dec-12
	Staffing	01-Dec-12	28-Feb-13
	GIS	01-Dec-12	31-Mar-13
	NMS 1st ph. testing	01-Dec-12	31-Mar-13
	Duct laying part1	01-Apr-13	31-Aug-13
	OFC laying & jointing part1	01-Apr-13	30-Sep-13
	OLT Installation part1	01-Apr-13	31-Aug-13
	ONT Installation & testing Phase 1	01-Mar-13	31-Aug-13
	Resurvey/Exception handling	01-Apr-13	31-May-13
	NMS ph2 testing	01-Apr-13	31-Jul-13
	Customer care set up	01-Apr-13	30-Jun-13
	Duct laying part2	01-Jun-13	31-Oct-13
	OFC laying & jointing part 2	16-Jun-13	15-Dec-13
	OLT Installation part 2	01-Jul-13	31-Oct-13
	ONT Installation & testing Phase 2	01-Jul-13	31-Dec-13
	Commercial use	01-Aug-13	30-Dec-13
	Applications & Services	16-Jun-13	30-Dec-13
	Feedback & Corrections	31-Aug-13	30-Oct-13
	Project Completion		31-Dec-13



Actual Work
Remaining Work
Critical Remaining Work
Milestone

ORACLE PRIMAVERA

Risk Analysis

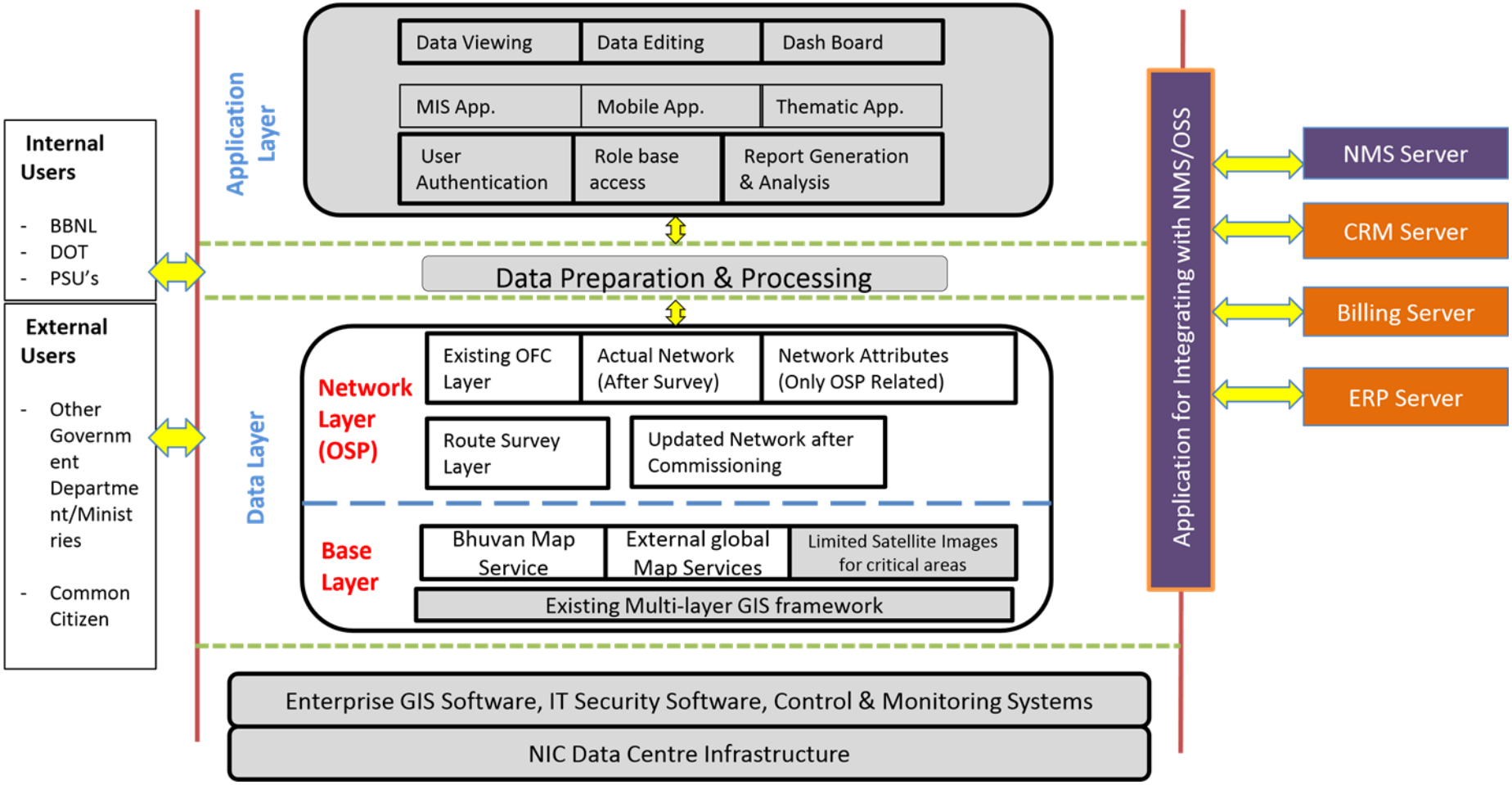
- Risks
  - Permissions/ ROW not available (may impact 5-10% cases)
  - Monsoon (may delay digging work in some areas by 25%)
  - Tenders may get delayed (add 25% to activity completion)
  - Difficult terrain/areas adding delay to normal completion time
  - Inventory mismatch
  - Technical deviations/difficulties leading to delays
  - Cost over run leading to delays/ non-execution
  - Non-performance by vendors/contractors

Projected Roll out Plan

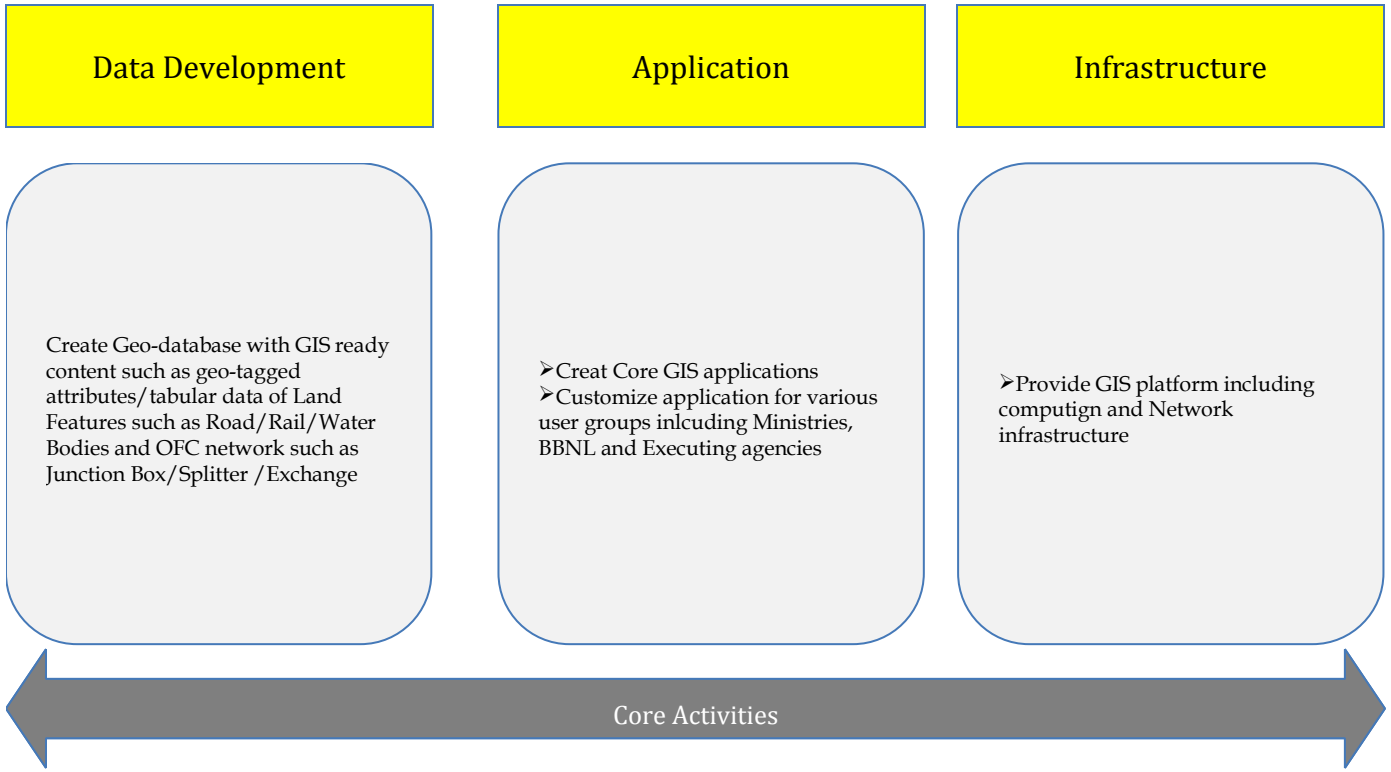
- 31/12/2013 - 10,000 GPs
- 31/1/2014 - 20,000 GPs
- 28/2/2014 - 30,000 GPs
- 31/3/2014 - 40,000 GPs
- Cumulative by 31/03/2014 - 1,00,000 GPs

GIS

High Level View for BBNL GIS



BBNL GIS BUILDING



BBNL GIS BUILDING

- Application for Viewing for each of the survey
  - For BBNL/ Stake holder
  - For Public
- Application for editing for each of the survey
  - For BBNL/ Stake holder
- Tools/ applications for Data Capture/ Preparation/ QA & QC
- Dash Board application
- Mobile based application
- GIS as a service to be consumed by other applications

NMS

NOFN CNMS™ Introduction

- CNMS™ monitors and manages NOFN network/devices from a centralized location. CNMS™ supports multi- vendor multi technologies in NMS/EMS/OSS domain.

- CNMS™ supports the NMS features of different Network Elements of NOFN GPON (OLT/ONT) and other technology Network Elements adapted by NOFN.

- CNMS™ supports fiber management of FDMS, Cable, Joint, Route and System configuration, Fibre Provisioning as per access/capacity requirements.

- Bandwidth Provisioning features.

- Using CNMS™ NOFN, the administrators can configure and provision the NOFN Network Elements (OLTs and ONTs or other technology NEs) to address the service provider's bandwidth requirements.

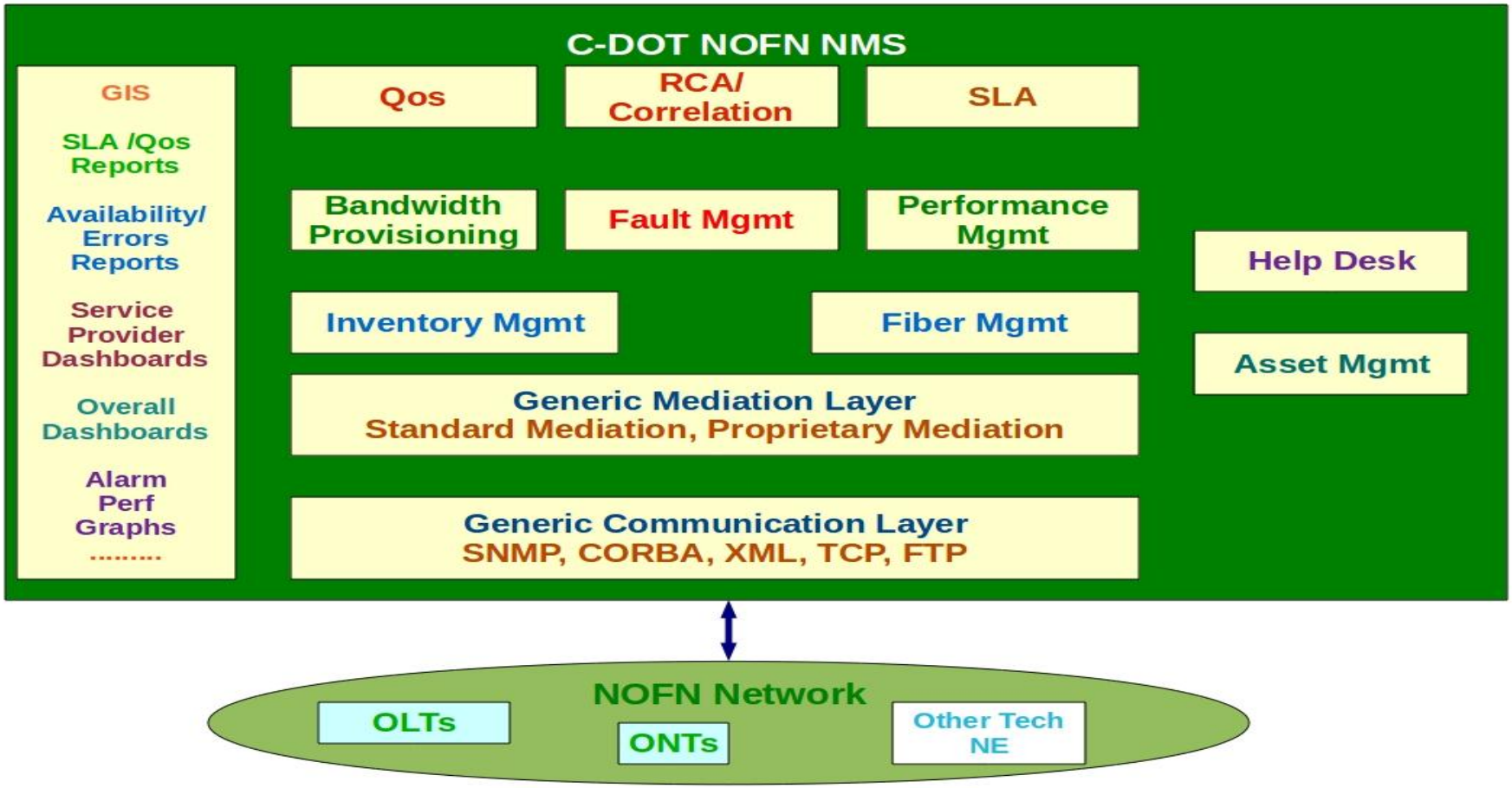
NOFN CNMS™ Introduction Contd..

- The fault management services ensures the network is quickly recovered following a failure.
- The performance management services pro-actively monitors the network for QoS and helps for network planning.
- Security management services ensure authentication/authorization needs.
- Accounting log management provides the comprehensive details on NOFN network management activities and administration.
- User friendly graphical management views, customer views, Graphical views per Service Provider.

NOFN CNMS Compliance

- Support for NOC and hierarchical deployment architecture.
- Compliance to standards: ITU-T, TMF, NGOSS, OSS/J, Generic communication platform.
- Generic mediation support (TMF /legacy mediation).
- Multi-platform solutions.
- Flexible database support.
- Multi-tier components based architecture.
- Multi-vendor support for all networks.
- Supports GIS MAPS, GRAPHICAL VIEWS, Fiber management.

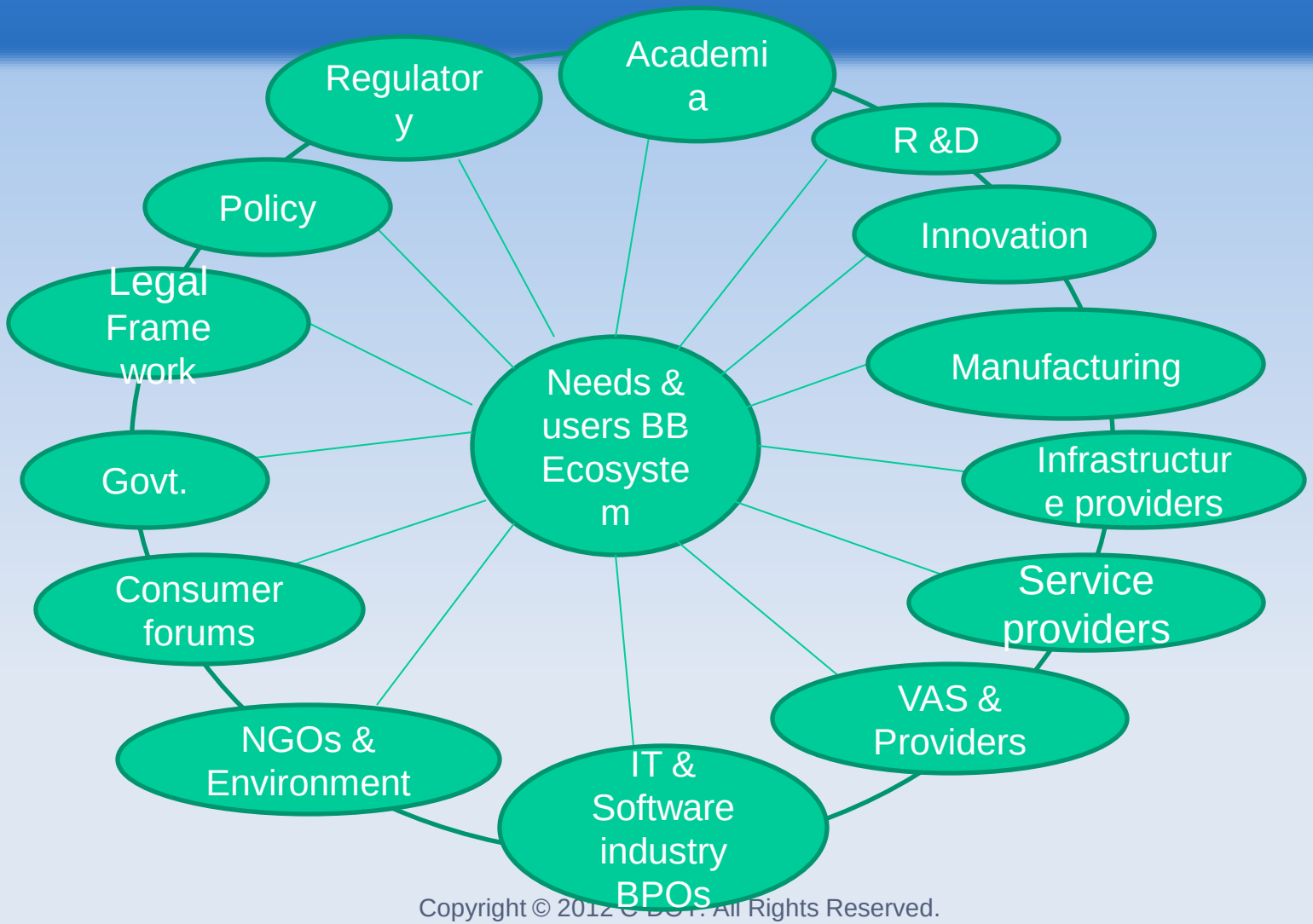
NOFN NMS Architecture



NOFN NMS Services

	BUSINESS DEVELOPMENT		**MONITORING/ASSURANCE**		**BILLING**	**ENTERPRISE/ ERP**
SERVICE LAYER	SERVICE PLANNING/ DEVELOPMENT	PROVISIONING/ CONFIGURATION MANAGEMENT	SERVICE PROBLEM RESOLUTION	SERVICE QUALITY MANAGEMENT		
NETWORK/ RESOURCE LAYER	NETWORK PLANNING/ DEVELOPMENT	NETWORK/ CONFIGURATION PROVISIONING	NETWORK INVENTORY MANAGEMENT	NETWORK MAINTENANCE AND RESTORATION	NETWORK DATA MANAGEMENT	TAMS (ASSET MANAGEMENT)
NETWORK ELELEMENT LAYER	**CNMS™** LEGACY MEDIATION		**CNMS™** STANDARD MEDIATION		**CNMS™** INTERFACES TOWARDS OEM /SERVICE-PROVIDER NMS/OSS	

Broadband Eco-system Resonance & Synergy of Stakeholders



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Ecosystem

- Availability of relevant applications and content particularly in priority areas viz. e-Education, e- Health, e-Gov applications to suit local requirements
- Availability and affordability of customer end devices relevant to local needs
- Access service providers using latest and appropriate technology
- Alternate energy solutions to surmount the power problems in rural areas

NOFN Impact

Societal

- Bridging the digital divide

Business

- Job creation, Indigenous Industry Growth

Sectoral

- Improved connectivity, Data Growth

Technological

- Differentiators

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Thank You