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WHEN

9 – 11 APRIL 2018

WHERE

ADELAIDE, AUSTRALIA

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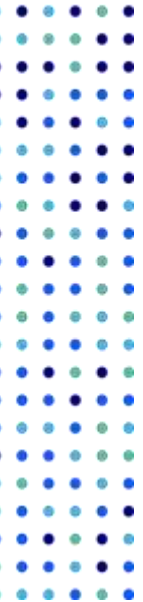
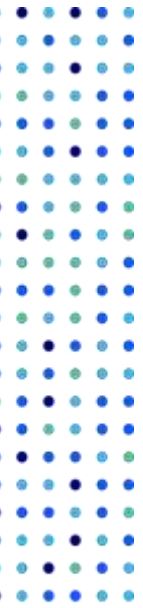
Geospatial Technology in Telecom Network Infrastructure Management

Milind Deshpande

Reliance Jio Infocomm

GeoSmart Asia 2017

24th August 2017



- ❑ **Telecom Business Characteristics**
- ❑ **How GIS Technology meets industry challenges?**
- ❑ **Before you set out ...**
- ❑ **Geospatial Technology in FTTx Network Plan-to-Build**
 - Architecture & Design Principles
 - Role of Geospatial Platform
 - Business Planning
 - Plan to Build
 - As-Built Capture
 - Provisioning and Service Fulfillment
 - Network O & M

❑ **Challenges:**

➤ Peculiar Business Requirements

- Green-field and Brown-field installations co-exist
- Incremental network build for Service Fulfillment - Routine business
- Assets in Public Domain – “where” is an extremely important question
- Highly competitive – Customer Satisfaction, Sales & Marketing very important

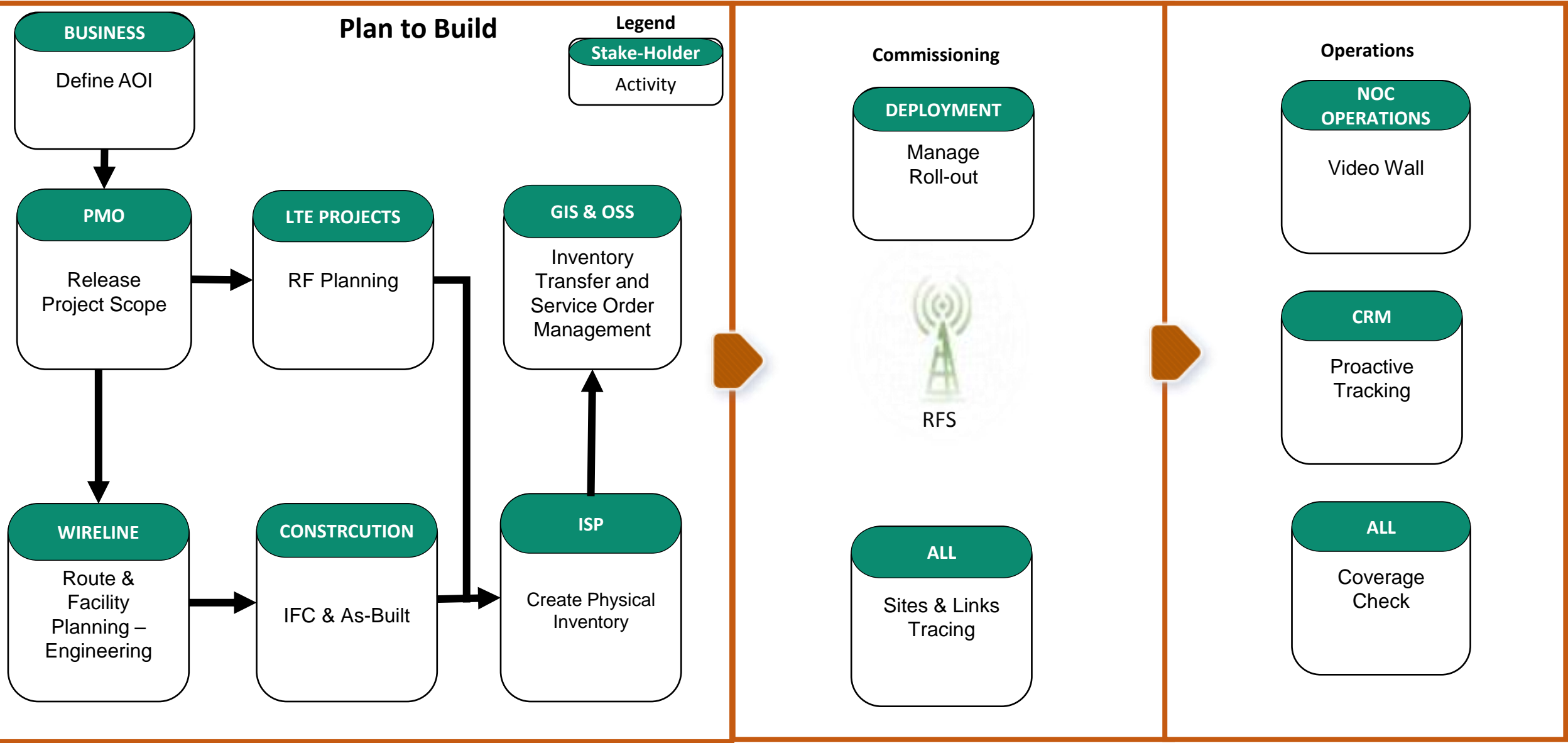
➤ Process Oriented industry

- Several Complex, Inter-dependent work processes
- Involvement of multiple stake-holders

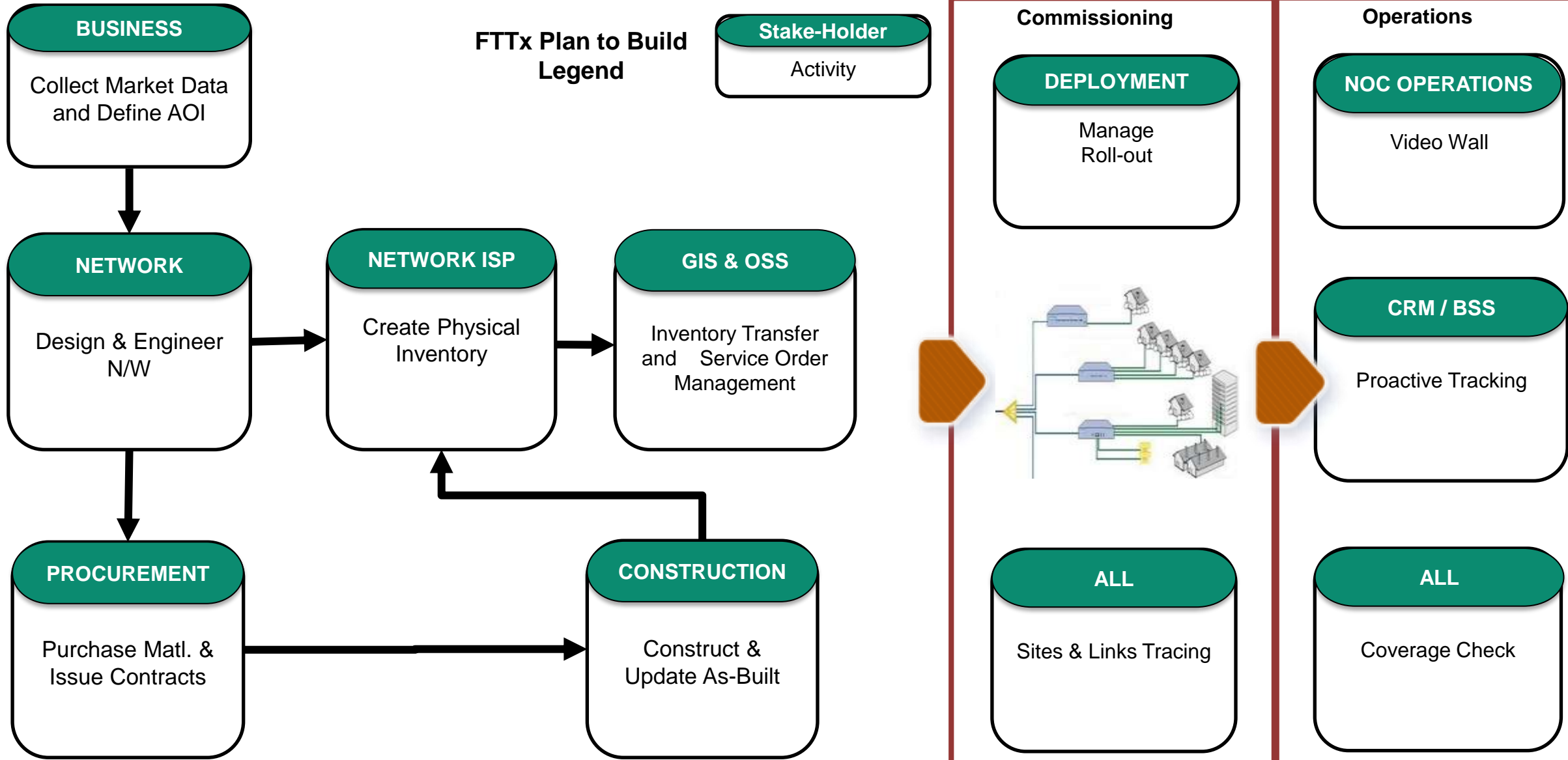
❑ **Opportunities: Hi-Tech Industry**

- Several IT Systems and software for various purposes
- First-adapter of technology

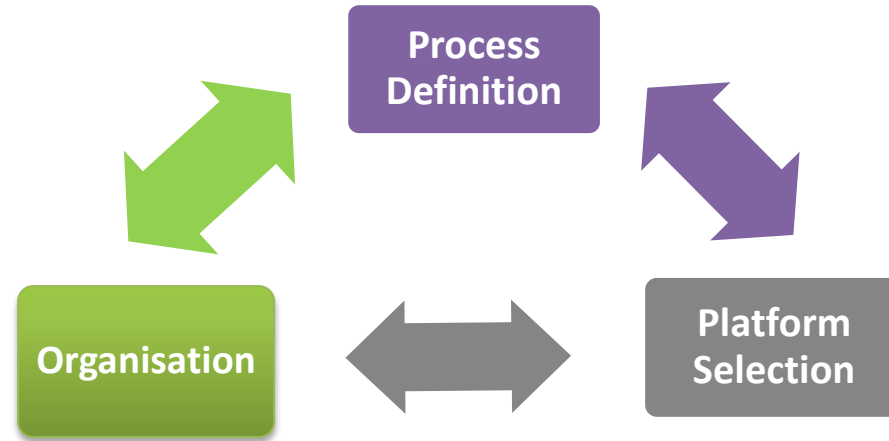
GIS meets Mobile Network P2B Challenges



FTTx Network P2B Challenges



- ❑ Secure Management Commitment & Budget
- ❑ Finalize Process, Platform and Organisation iteratively

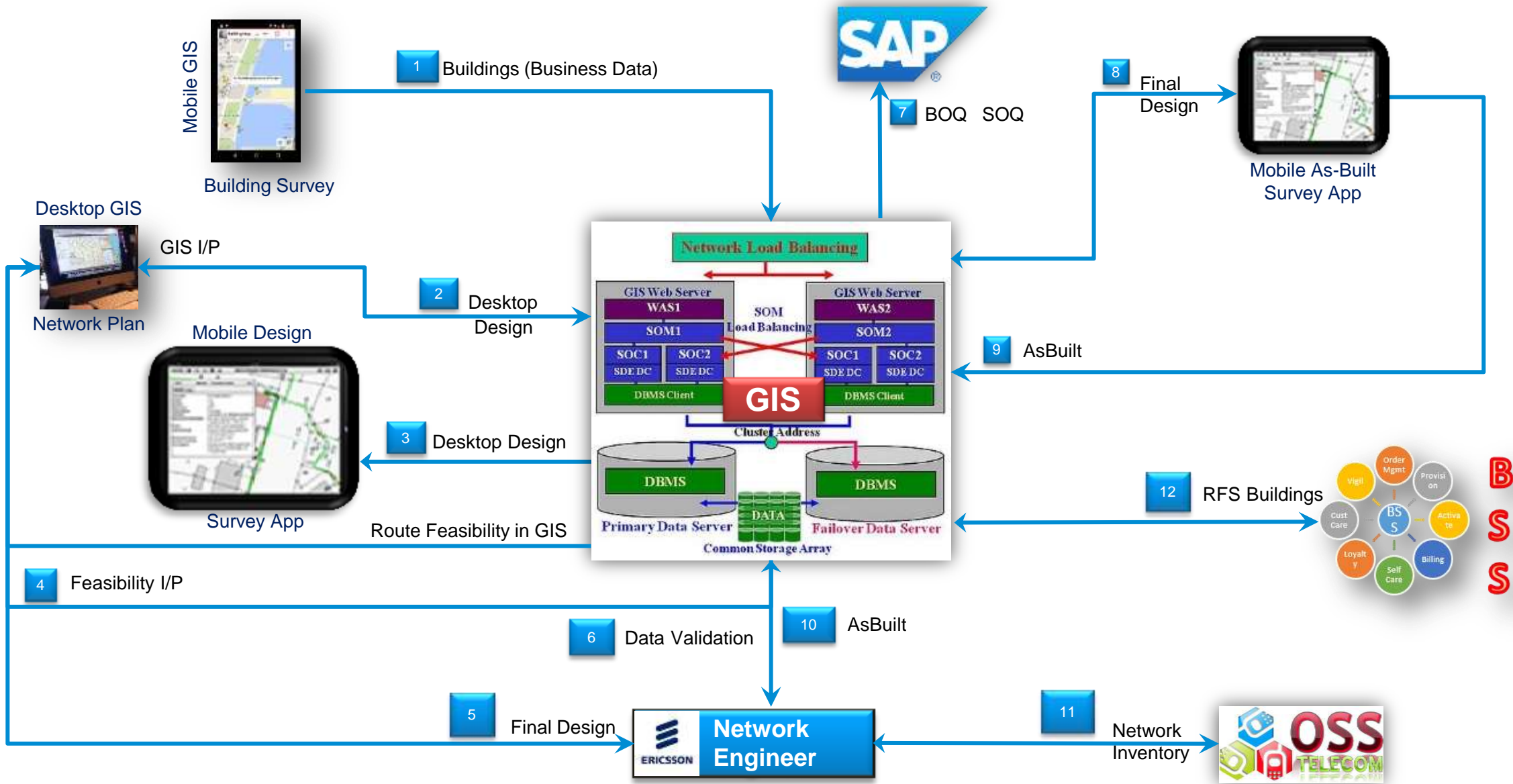


- ❑ Plan in detail
 - Return on Investment
 - Identify Quick-Wins
 - Technical Execution
 - Project Management & Project Control

Geospatial Technology in FTTx Network Plan To Build

- Define Data Masters / Systems of Records (SOR)
- Decide Workflow and BPM Systems
- Decide Dashboard / Analytics Platform
- Decide Systems of Interaction (SOI) and UX
- Define Integration Requirements between various SORs and SOIs
- Define Integration Architecture – SOA
- Design Individual System / Components
- Build, Test and Deploy Incrementally

FTTx Workflow: GIS-NE Role



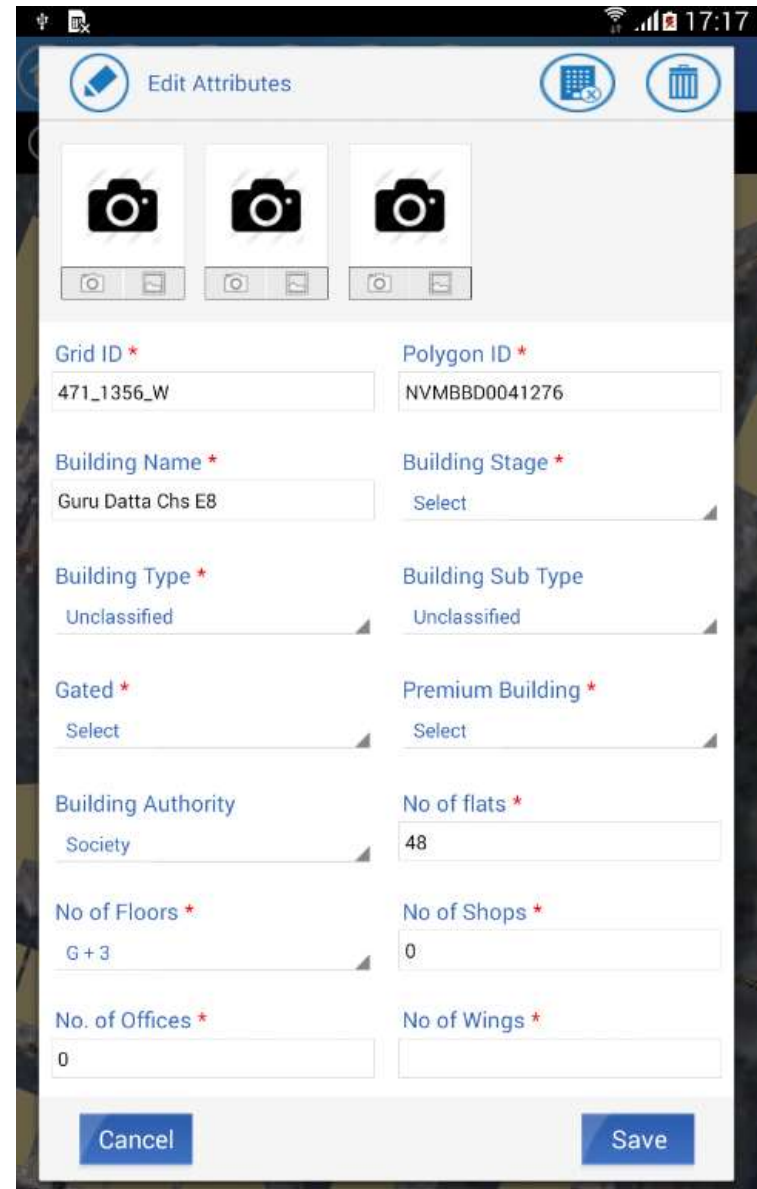
Business Planning & Project Management

Mobile App for Business Potential Survey



<< Edit Existing / Draw New Buildings on Mobile App

Update Building Attributes with Simple UI on Mobile >>



Web-based Business Planning – Scope / Area of Interest and Priorities



Table of contents

- Planing Route
 - RoadNetwork
- AOI
 - BusinessAOI
 - Gold
 - Industrial
 - Platinum
 - Silver
 - Slum

Legend: Gold Silver Industrial Slum

Select Version: ALL

Count	Building	Flats
Gold:	43883	309837
Industrial:	12553	16748
Platinum:	23225	237722
Silver:	12414	81210
Slum:	123436	109831
Total Count:	215511	755346

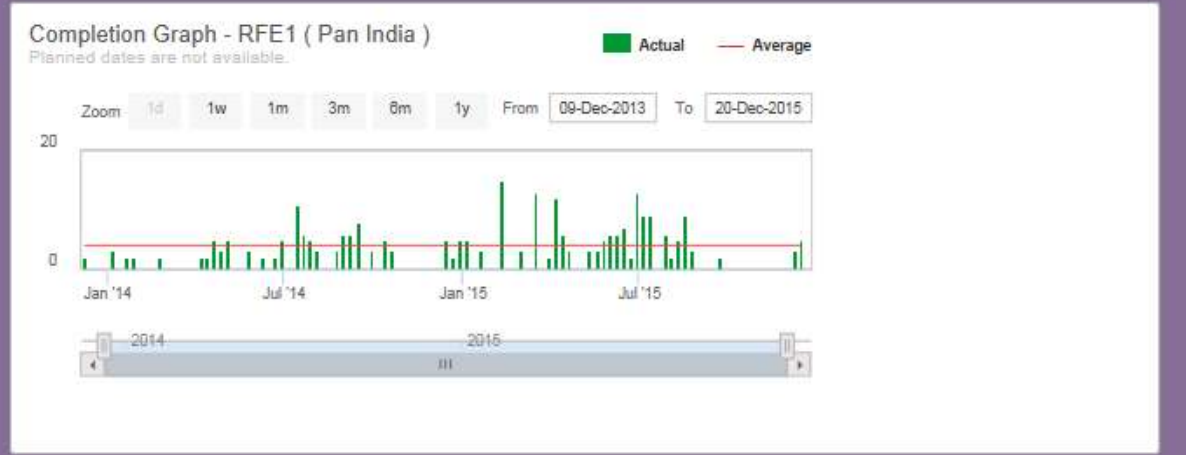
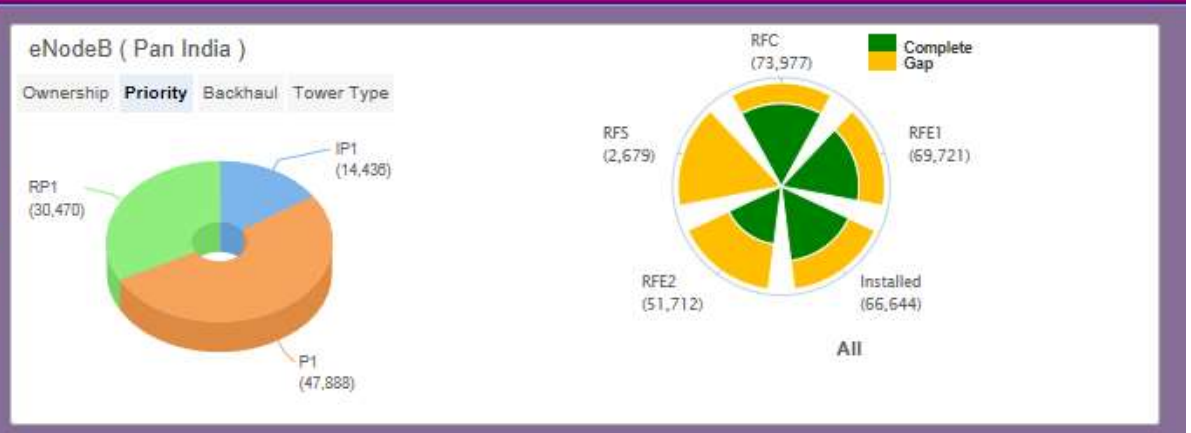
[Report](#)

TotalBuilding	AvgFloorSize	TotalFlats	Locality	Remarks	Category	City
3					Gold	
5	5	15	Jalvayu Vihar		Gold	
66		0	ONGC Colony	SRP02	Gold	

Project Progress Monitoring



eNodeB Pan India

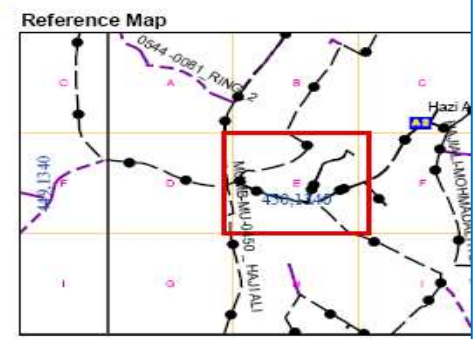
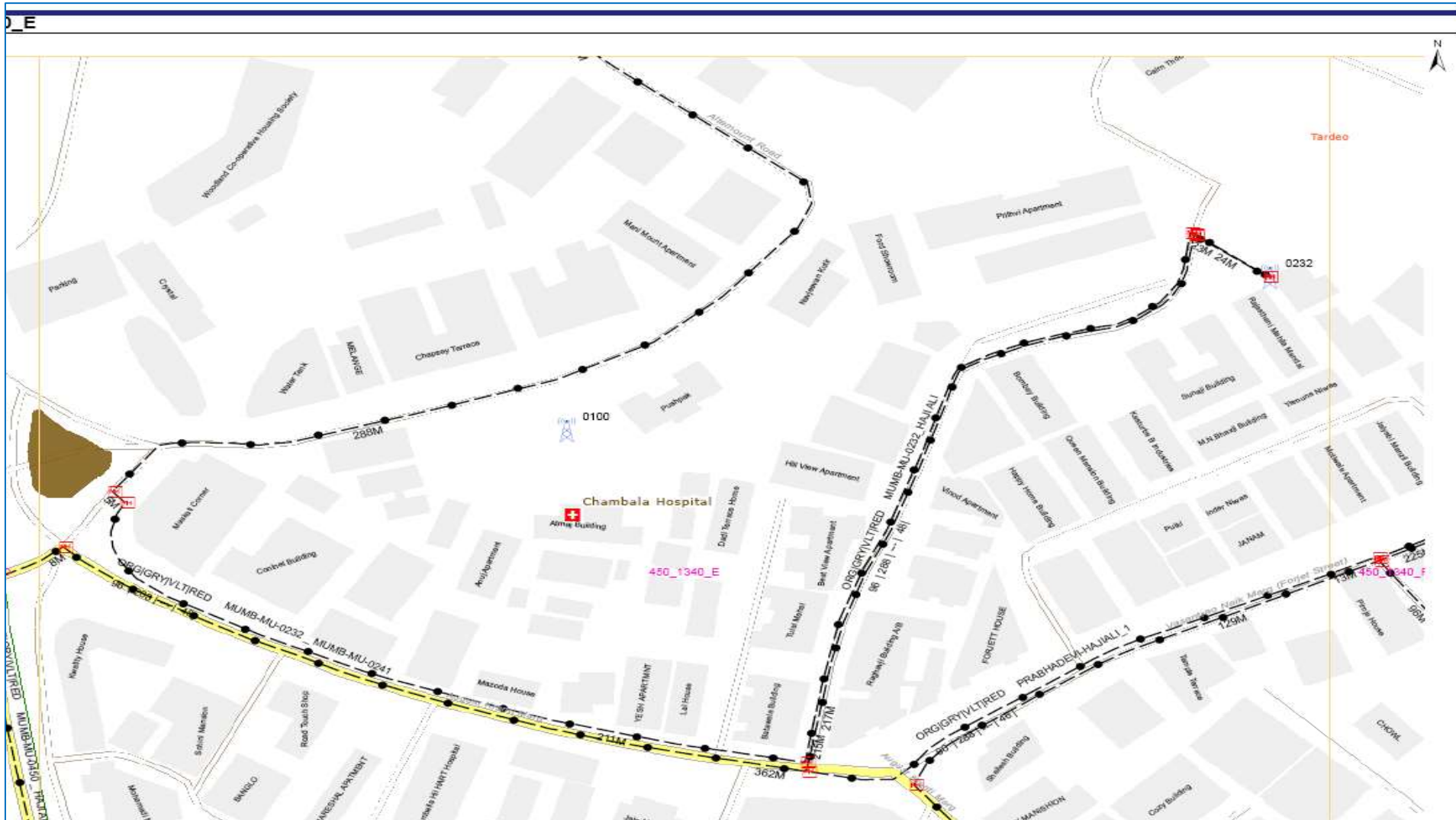


FTTx Network Planning

Scope Area for FTTx Planning



Network Map Issued For Construction



For Notes & Reference Drawing please see Ward/City wise Drawing No:
R4G-20-IFN-RLT-MU-MUMB-04501340-001-01

Bill of Material:

MATERIAL	SAP CODE	QTY.	UN
HDPE DUCT (ORANGE)	2001059113	1620.40	Mtr
HDPE DUCT (GREY)	2001512982	1620.40	Mtr
HDPE DUCT (VOILET)	2001512983	1620.40	Mtr
HDPE DUCT (RED)	2001512980	1620.40	Mtr

- Note:**
1. NLD, City Core and CSS own Build Routes are Released for Construction
 2. BoM covers only above categories
 3. Manhole locations are indicative
 4. The 48F Fiber to be blown in Red Duct, during FTTH installation only, i.e. day 2 not day 0
 5. As a minimum 10M length of each OFC coming shall be looped and stored inside MH/HH.

Legend

	Build-RCOMLastMile (C)
	CSS (3 Duct)
	City Core/Aggregate (4)
	NLD Overlay (7 Duct)
	NLD (3 Duct)
	eNodeB
	AG1
	AG2
	AG3

FTTx Network Build

Web App for Assigning Field Work



FTTx



Mohasin Sayyed (Consultant)
(JC Construction Lead)

FSA Name : Sector 11 Nerul-NVMB2391

Number Of DSA: 40 Tasks: 1319 Assigned: 633 Under HOTO: 17 Yet To Assign: 686

ASSIGN DSA RE-ASSIGN DSA

DSA List

<input checked="" type="checkbox"/> Dev Darshan Apt NVMB2391DA5200	Total Consumer: 151 Feeder No: 1 S1 + S2 Count: 23
<input checked="" type="checkbox"/> Hirakani Chs NVMB2391DA0600	Total Consumer: 119 Feeder No: 1 S1 + S2 Count: 17
<input checked="" type="checkbox"/> Tata Press Employees NVMB2391DA1100	Total Consumer: 64 Feeder No: 1 S1 + S2 Count: 9
<input checked="" type="checkbox"/> Sangam Apt NVMB2391DA0100	Total Consumer: 128 Feeder No: 1 S1 + S2 Count: 18
<input checked="" type="checkbox"/> Maharashtra Shasan NVMB2391DA0700	Total Consumer: 96 Feeder No: 1 S1 + S2 Count: 14

Contractor Name: Eagle Seaks & Systems Ltd.

Field Engineer: SHARATBABU.CHINTALA

ASSIGN

Map interface showing street layout with green highlighted areas. Includes a search bar at the top right and navigation controls on the right side.

Search: Search Text Here

Map labels include: Sector 10, Sector 11, Sector 15, Sector 9, Sector 5, Sector 13, Nerul Station Road Sec-10, Jagadguru Adi Shankaracharya Marg Sec-15, Sant Dyaneshwar Mauli Maharaj Marg Sec-17, Abhyudaya Co-Op Bank Ltd, Meebatal Chackrey Hospital, Jain Mandir, Om pathology Laboratory, Pating Guest Accommodation-Basera, Guru Gobind Sing Edu Soc, Shop Banaras Hotel, Vija ya Bank ATM, Reliance Fresh, Sara swati College Of Management, MS EDC L Engineering Office, Govt School, SBI Bank, MTNL, Nerul Station, Pan cha Parmeshwar Mandir, Govt. Mandir.

Rmaps

Field Engineer's View –Tasks at DSA level with map view

List of DSA

Search DSA

JC Name: Sanpada Comm Complex, Sanpa
JC Code: JC_MUMB_23

500+

FSA : Sector 11 Nerul
No. of DSAs : 11

- DSA Name : Dev Darshan Apt
DSA ID : NVMB2391DA5200
- DSA Name : Kohinoor Plaza
DSA ID : NVMB2391DA0400
- DSA Name : Isha Shopping Centre
DSA ID : NVMB2391DA0500
- DSA Name : Hirakani Chs
DSA ID : NVMB2391DA0600
- DSA Name : Maharashtra Shasan
DSA ID : NVMB2391DA0700
- DSA Name : Sangam Apt
DSA ID : NVMB2391DA0100
- DSA Name : null
DSA ID : NVMB2391DA0800
- DSA Name : Neel Paradise
DSA ID : NVMB2391DA5300
- DSA Name : Drishant
DSA ID : NVMB2391DA0300

Map view at DSA level

MAP VIEW

FSA Name : Sector 11 Nerul
DSA Name : Dev Darshan Apt

Task ID : NVMB2391DS5207
Task Type : SPAN / Distribution Span

EQUIPMENT

- Others
- 1:8-Splitter
- 2:8-Splitter
- Aerial Fib. Spl.
- Buried Fib. Spl.
- Indoor Fib. Spl.
- OTB-6Ports
- RY-48-FDMS

TRANSMEDIA	SPAN
— DISTRIBUTION	— DISTRIBUTION
— FEEDER	— FEEDER

↑ ↓ ↺ ↻
CANCEL SAVE

DSA Name: Kohinoor Plaza
Sector 11 Nerul

Transmedia ID: NVMB2391DC0402
Feeder: 1

No	Parameter	Design	Actual
1	Length (M)	36.5	36.5
2	Cable Type	12F-Micro-6x2-UG	12F-Micro-6x2-UG
3	Cable Category	DISTRIBUTION	12F-Aerial-6x2-FG8
4	Label	NVMB2391DC0402	12F-Aerial-6x2-ADSS
5	Reading	Start	12F-Micro-6x2-AR

Update Consumption Booking
Verify

Group	Status	Name	Date
FE	Select	SHARATBABU.CHINTAL A	14-08-2017
JCL	ASSIGNED	ASHISH.BHATNAGAR	14-08-2017
Contractor	Eagle Seaks & Systems Ltd.		14-08-2017

View History

Notes/Deviation(Construction)

1. Root Cause Analysis

2. Corrective Action

Punch Points(Acceptance)

1. Root Cause Analysis

2. Corrective Action

Quality check updation

↑ ↓ ↺ ↻
100% 17:25

UPDATE QUALITY CHECK POINTS

SAVE

FSA Name: Sector 11 Nerul

DSA Name: Dev Darshan Apt

Task ID: NVMB2391DS5207

Task Type: SPAN / Distribution Span

Feeder: 2

SPAN-Methodology, Type of Duct, Route	conditional ok	↺ ↻
Span-Methodology should be UG instead of aerial.		
Less depth and Duct not protected & Cusioning of Soft soil in Rocky trench. Installation of Warning Tape, HDD and MT.	ok	↺ ↻
Crossing - Culvert/ Bridge/ Rail/ Road etc	select	↺ ↻
Duct Transition - Under Ground to Above Ground along the wall/ Pole etc.	select	↺ ↻
Trench Offset, Backfilling, End Plug, Coupler Installation.	select	↺ ↻
IBD Work & clamping	select	↺ ↻

Web App – “Ready for Service” Building Viewer



Search: Scale 1:

FTTx Reports

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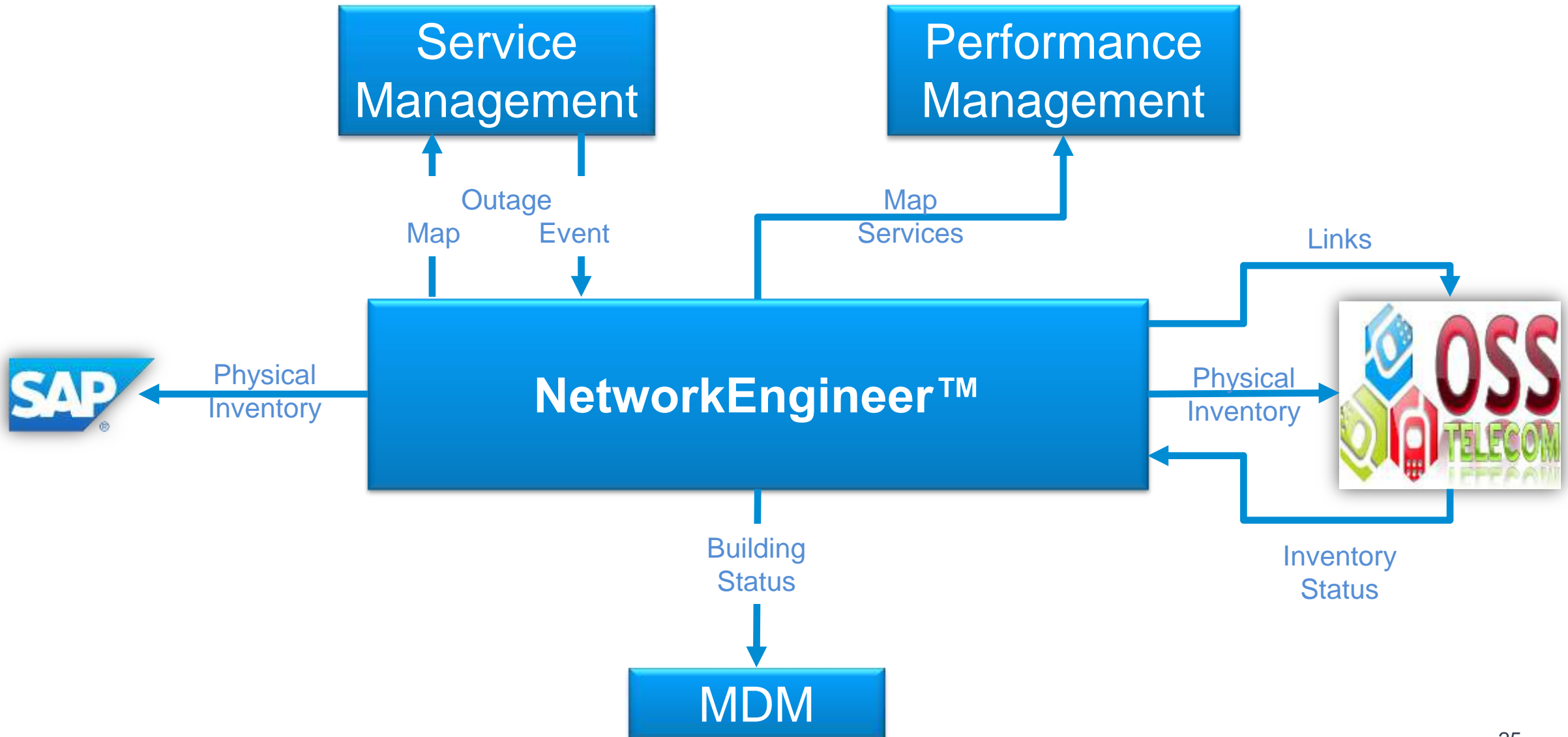
- FTTx RFS
 - NE.STRUCTURE
 - NE.EQUIPMENT
 - NE.TRANSMEDIA
- RILGDB.Building
 - Not Planned
 - Planned
 - Design
 - Near RFS
 - Field RFS
 - RFS
- Distribution Serving Area
- Feeder Serving Area
- Jio Center Boundary
- R4G State Boundary

Feedback

Benefits & ROI in Network Plan-to-Build

Qualitative Benefit	Factors allowing RoI
Controlled process implementation	Workflow; Repeatable, Accurate, Real-time Data; Optimal Project Organisation
Real-world Planning from office and Construct – as – Planned	No rework, shortest route used, reduction in cell sites – 3% project cost
As-Built Capture	Minimal efforts, Accurate; improved future planning; Infra sharing
Data Flow-through to OSS and O&M	No data entry at OSS, Service Order w/flow, Quick roll-out and Reduced MTTR
Effective Project Management	Schedule improvement – 1% project cost
Geographical Asset Management	Inventory Lifecycle Management Warranty and spares management

3. Provisioning & Service Fulfillment



Qualitative Benefit	Factors allowing RoI
Master Physical Inventory & Link Data	Single truth – alarms correlate to location
Data flow-through and re-use	2 mil equipment records entry saved
Avoid redundant data entry	One-time data entry in SAP, HP-SM, TeMIP
Effective logical inventory management	Quick service provisioning
Fault Localisation	Substantially reduced MTTR
Effective Network Monitoring	Single, Geographic view in NOC

4. Network O&M

Saturday, 15-Aug-15

15:15:00 Hrs.

NLD Core (Transport) Link & Node Availability



- SA01
- SA02
- NLD + OTR
- Down Link
- Up Link

Trouble Ticket (TT)



Field Ticket (FT)



Change Management (CM) – Service Affecting



Collector	Fibre - Own Built	Fibre- Rcom	Fibre – 3rd Party
TT - 31	TT - 34	TT - 37	TT - 56
7	8	9	14
11	12	13	18
13	14	15	24
FT - 46	FT - 41	FT - 52	FT - 40
8	7	10	8
22	21	24	17
16	15	18	15
CM - 24	CM - 22	CM - 28	CM - 36
13	12	15	17
11	10	13	19

RFS Building and Network Trace for O&M on Mobile



- In Service FTTx Network with Connected Buildings
- Connected Buildings with Network Equipment
- Details of Selected Building
- Equipment at Selected Location
- Equipment Details
- Network Trace



Enter fault details

Equipment fault Fiber fault

"FromStructureID" : INGJAMBDGOTATW0002

INGJAMBDGOTATW0002MA1FDM001

Port number*

Optical distance (meters)*

Structure Details

MODEL NAME* **CATEGORY NAME***
 1000x1000x1200-B-MDC VAULT

INVENTORY STATUS CODE* **TYPE NAME***
 IN PLACE RECT MANHOLE

LATITUDE **LONGITUDE**
 2167506.7403292097 -983123.1894843951

MeasuredLength	6734.81563039
NearestStructureRjid	STR374517
FromStructureRjid	STR89666
ToStructureRjid	STR89673
StartNode	INGJAMBDGOTATW0002
NearestStructureDistance	28.1734577720234
OtdrOpticalDistance	144
FaultDistance	143.999999999829
TransmediaRjid	CBL383172
Fmsneid	INGJAMBDGOTATW0002MA1FDM001
SpanId	AMBD_0111_GOTATW0002_ANMLTW0001
CalculatedLength	6734.81563039
FaultY	2599179.56097892

Qualitative Benefit	Factors allowing RoI
Effective N/W Monitoring	Quick identification of faulty network
Utility Management	Improved operational efficiency up to 5%
Equipment Maintenance History	Warranty & Service Management in SAP
Facility Planning	Retrieval of plans, Space Management
Fault Localisation	Reduced MTTR

Thank You !!!