

# **E3-E4 CM TECHNICAL**

## **Optimization Of Mobile Network**

# WELCOME

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- This is a presentation for the E3-E4 Technical Module for the Topic: Optimization of Mobile Network.
- Eligibility: Those who have got the Up gradation from E3 to E4.
- This presentation is last updated on 17-3-2011.
- You can also visit the Digital library of BSNL to see this topic.

# AGENDA

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- What is Optimization?
- Why Optimization?
- Inputs and Tools for Optimization
- Optimization solutions

# Introduction

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## ■ What is Optimization

Activity of achieving and maintaining the required quality as designed.

## ■ Why Optimization

Deviations between plan and reality.

## INPUTS

Quality Of Service Metrics

RF Design Parameters

Alarms and events Analysis from OMC

Drive testing

Customer complaint Analysis

## TOOLS

Drive test kit(TEMS),Post Processing tool(DESKET)

OSS (FOR REPORTS )

OMC-R

Customer Care Centre Database

Protocol analyzer

## Output

- 1) Frequency
- 2) BCCH changes
- 3) BSIC changes
- 4) Antenna downtilt
- 5) Azimuth changes
- 6) Antenna type changes
- 7) Database parameters changes

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# INPUTS

- The following inputs are considered for optimization:
  - QOS Parameters
  - RF Design Parameters
  - OMC alarms
  - Routine Drive Testing
  - Customer feedback
- Using the above inputs we can determine the optimization requirement and the area which needs to be optimized.

# Optimization of GSM network

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For optimization of GSM network Drive tests are performed & Reports generated by making lot of calls during drive test & OSS reports are loaded to optimization tools

like Netact Planner, Planet to generate useful reports & plots which problem in GSM network may be analyzed. Equipments Necessary for Drive testing are

- Vehicle
- Drive test mobile phone (e.g.Ericcson TEMS)
- External vehicle mounted GPS
- Laptop with drive test software and GPS connection capability

# OPTIMIZATION SOLUTIONS

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## General

Once the problem has been analyzed a solution has to be provided. Common solution to problems are

- Database Parameters Changes
- Antenna Optimization
- Frequency changes
- Neighbor addition and deletion
- Formation of new location areas
- Addition of new cell sites



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## **Database Parameter Changes**

- Many problems can be solved by changing some database parameters. Some of the common changes are

- Handover parameters and thresholds
- Maximum transmit power of BTS
- Paging parameters
- SDCCH Parameters

## **Antenna Optimization**

- This includes changing of antenna tilts, orientations, positions. Sometimes the antenna may also be changed.

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## Frequency Changes

- Frequency changes help us to control the interference in the network.
- However one should be careful when doing these changes so that these changes do not affect the other sites adversely.
- If there are a lot of changes it is advisable to change the whole frequency plan.
- A careful study of cell coverage area and server area helps in making those changes.

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## **Neighbor Addition And Deletion**

- Many problems arise due to wrong neighbor definitions or missing neighbors.
- Neighbor definitions must be reviewed on a regular basis. Statistics and drive tests provide good inputs for this purpose.

## **Formation Of New Location Areas**

- Sometimes to solve paging load problems it might be required to for new location areas.

## **Addition of new cell sites**

- Sometimes to solve coverage hole problems we need to add more site (normally micro or pico cells)

