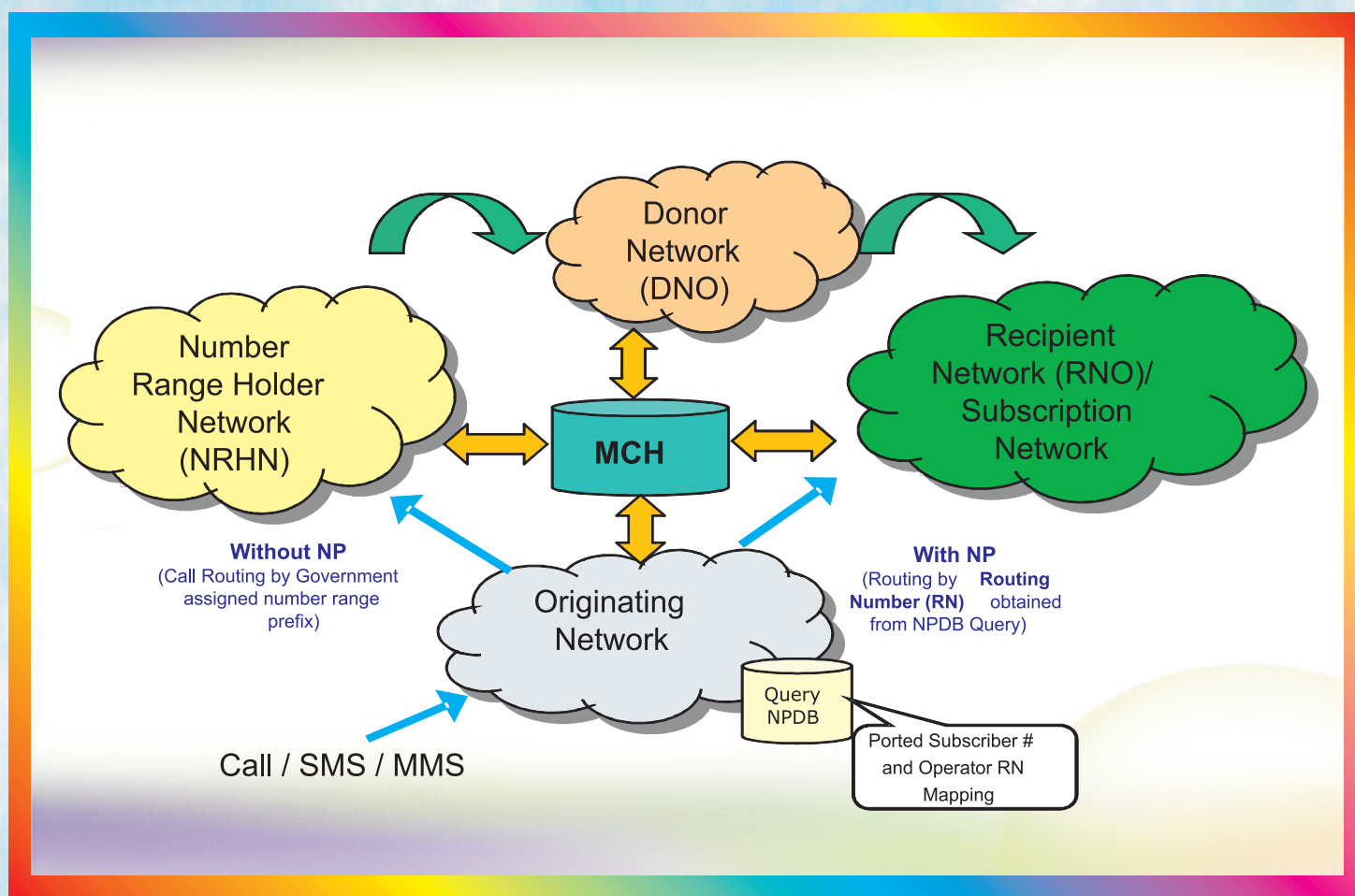


## MOBILE NUMBER PORTABILITY (MNP)



ISO 9001:2008

TELECOMMUNICATION ENGINEERING CENTRE

### IN THIS ISSUE

- MOBILE NUMBER PORTABILITY (MNP)

## 1.0 Introduction :

Number Portability allows subscribers to retain their existing telephone number when they switch from one access Service Provider to another irrespective of mobile technology or from one technology to another of the same or any other access service provider. Portability benefits subscribers, encourages improvement in quality of service through increased level of competition between service providers, rewarding those operators having better customer service, network coverage, and service quality.

Today, Subscribers are not changing subscription even if the competitor is offering lower tariff and better services because they do not want to change their number as changing one's telephone numbers can be a major inconvenience. The absence of NP may give the incumbent operators a significant competitive advantage over new entrants. MNP will also help to retain their number to have 3G services from a service provider other than present one serving to him. The subscribers and operators both would benefit from the introduction of the number portability system.

Number Portability in both fixed line deployments and mobile networks have been

implemented in various countries of the world as shown in diagram below. India has opted to go for number portability relatively at later date but it is likely to introduce tougher competition among operators and bring better QoS at lower tariff.

As of now, number portability is introduced in mobile networks and not in fixed-line networks. Reason may be very few operators in fixed line and even subscriber base of fixed line is less than 10% of total subscriber base.

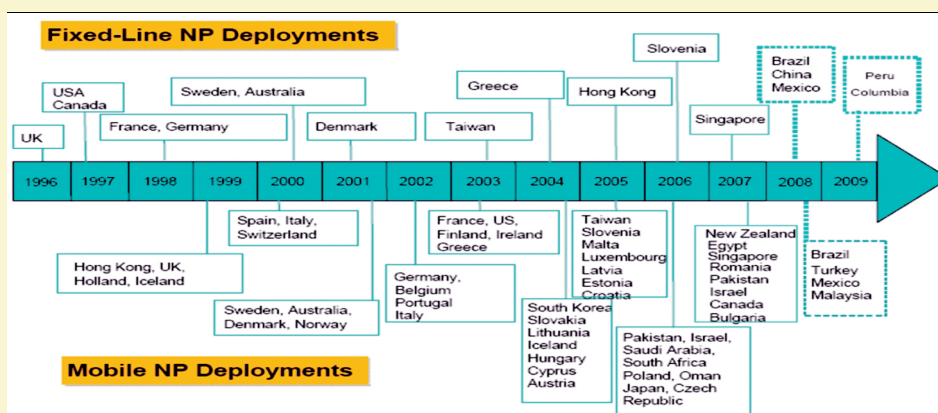
## 2.0 Challenges in implementation in India :

India has 22 License Service areas (LSAs) for operating mobile networks. From MNP implementation perspective portability is restricted within LSA only therefore there are 22 Portability Domains (PDs).

MNP implementation in India involves

- ✍ 2 MNPOs (M/s Syniverse and M/s MITS) – each LSA as portability domain (PD) i.e. 22 (PDs)
- ✍ Multiple service providers (10-12 nos.) in each LSA
- ✍ Multiple types of networks (GSM, CDMA, WCDMA, PSTN, WLL etc.)

## Number Portability Around the World





Moreover it was decided to

- ✍ Implement MNP with All Call Query (ACQ) based for all mobile destined calls
- ✍ Adopt originating network query approach instead of (N-1) approach because it will help to select National Long Distance Carrier and also make possible to apply differential tariff on basis of subscription network of B-party though it may require country wide data base implementation in each operator network

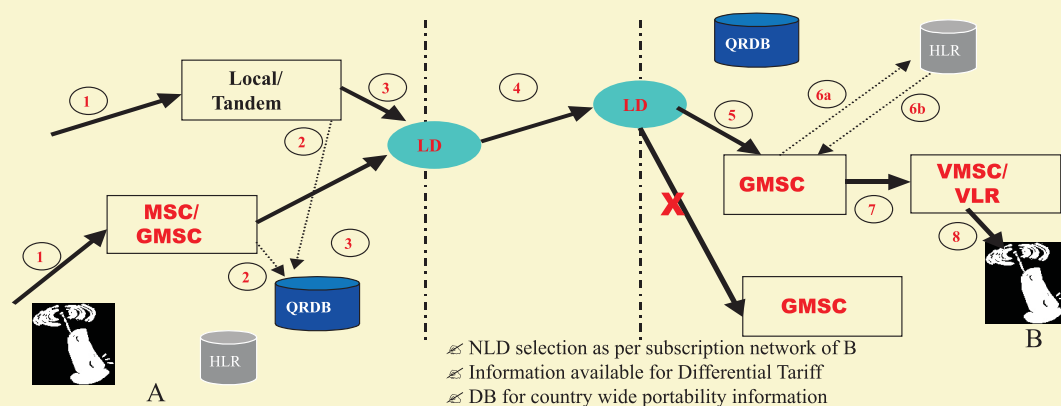
and also implementing MNP up-gradation in all LSA irrespective of whether MNP is to be introduced in that LSA.

The originating Query approach and N-1 network query approach has been illustrated in the diagrams below.

From issuance of license for MNP service provider country has been divided into two zones namely zone-1 and zone-2 each comprising of 11 LSAs as illustrated in the diagram on next page.

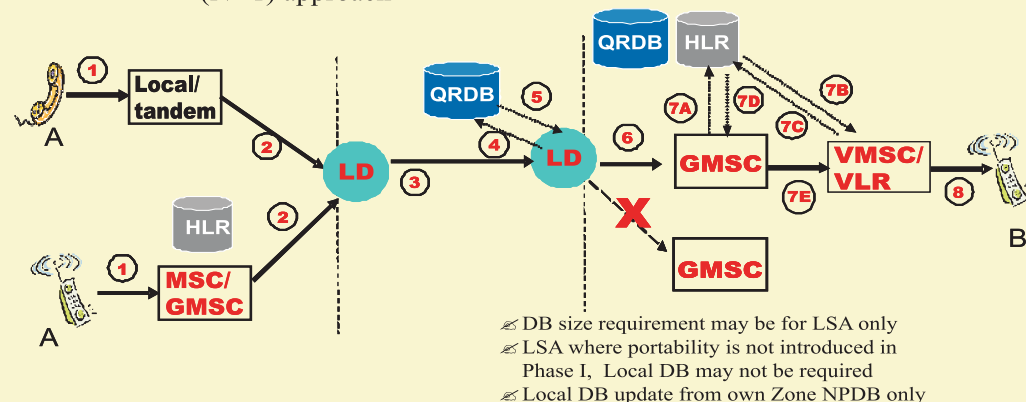
### Inter -LSA Call to Mobile Network for a Ported Number

#### Originating Network Query Approach



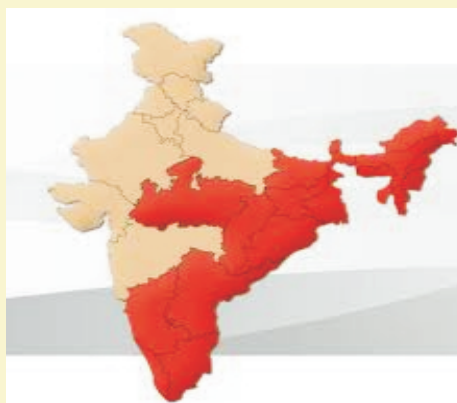
### Inter-LSA Call to Mobile Network for a Ported Number

#### (N - 1) approach



### Implementation in India

- ✍ 22 Portability Domains
  - Each LSA as PD
- ✍ 2 Zones
  - M/s Syniverse
    - ✍ LSAs in Western Part
  - M/s MITS
    - ✍ LSAs in Eastern Part



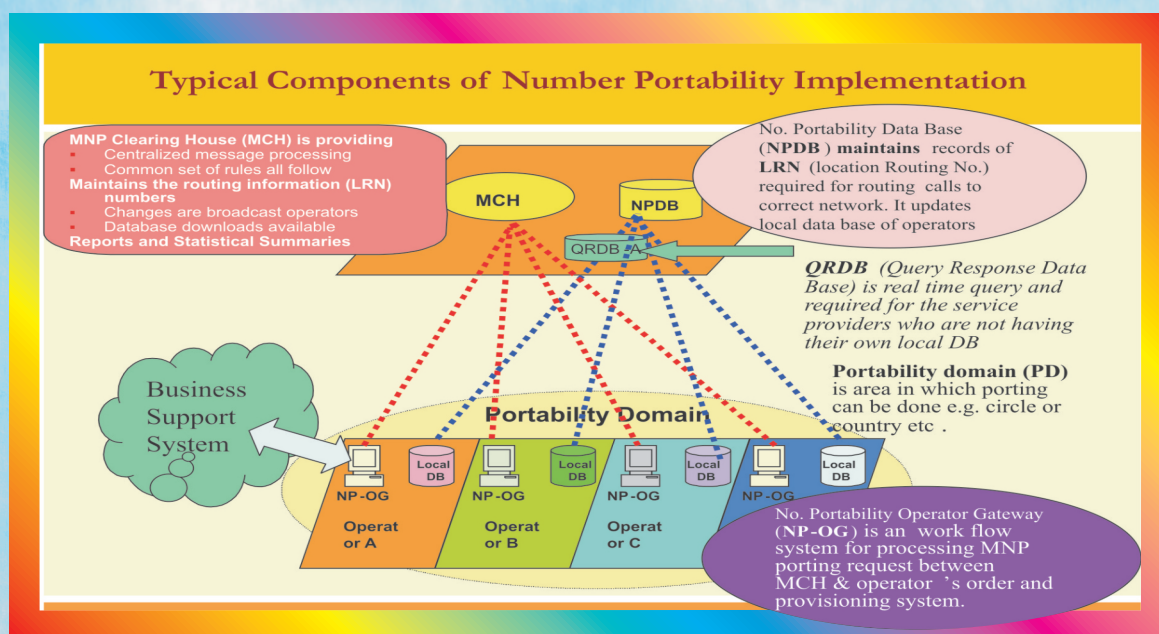
Department of Telecom (DoT) awarded Licenses for Mobile Number Portability Operators (MNPOs) to two Licensees namely M/s Syniverse for Zone-1 & M/s MITS for Zone-2. The MNP License Agreement was signed on 17.04.2009 with effective date as 20.03.2009.

DoT on 6th May 2009 made it mandatory for all Basic, CMTS, UAS, NLD and ILD Licensees to facilitate timely implementation of MNP by up-gradation, operation/ maintenance of their network/systems to support MNP Service operation at their own cost. The Licensees were instructed to have a mutual commercial agreement with MNP Service Licensee for terms and condition of interconnection, standard interfaces, network resources including the cost of upgrading/ modifying interconnecting networks to meet their service requirements, points of interconnection and technical aspects subject to compliance of prevailing orders.

### 3.0 Architecture adopted for MNP Implementation :

MNP Licensee will have MNP Clearing House (MCH) for port ordering, processing, notification and administration of ported numbers between mobile Operators and Number Portability Data Base (NPDB) which will work as a centralized reference database and will be the repository of all ported numbers in the respective MNP Zone. They also need to deploy Query Response Database (QRDB) to support number portability related queries for existing and future operators for call setup and data service delivery (i.e. SMS/MMS). But in practice Mobile Network operators have deployed their own Local Data Base (LDB) which is synchronized with NPDB of MNP licensee and works as a QRDB, so QRDB of MNP licensee is not in work. MNP licensees have also to have disaster recovery system located in other seismic zone and at least 500 km away from production site. The diagram on next page illustrates various components of MNP system.





For processing and managing MNP port transactions with the centralized clearinghouse MCH and Operator back-end systems e.g. order and provisioning systems, the LICENSEE shall own a Number Portability Gateway which shall be connected to the MNP centralized Clearing House (MCH) and logically centralized Number Portability Data Base (NPDB) of the Main as well as the Disaster Recovery (DR) sites at their own cost.

All Basic service/CMTS/UAS licensees, International and National Long Distance Operators that deliver calls to a LSA shall implement direct routing i.e. All Call Query method, to route calls to ported numbers. Routing Numbers (RN) or Location Routing Number (LRN) has been provided to each operator for each network (CDMA and GSM) in each Service Area to enable routing to ported numbers. For querying routing information, the LICENSEE may have option to either maintain its own local Number Portability Database or use shared local NPDB with other telecom service providers or may take services of MNP service Licensee's centralized MNP QRDB System.

The list of components to be deployed is as below:



#### By MNP Service Providers

- MNP Clearing House (MCH)- Production & Disaster Recovery site
- Number Portability Data Base (NPDB)- Production & Disaster Recovery Site
- Query Response Database (QRDB)- Production & Disaster Recovery site
- Storage server
  - Web server
  - Report Generation server
  - O&M server
  - Others- Routers, switches etc.



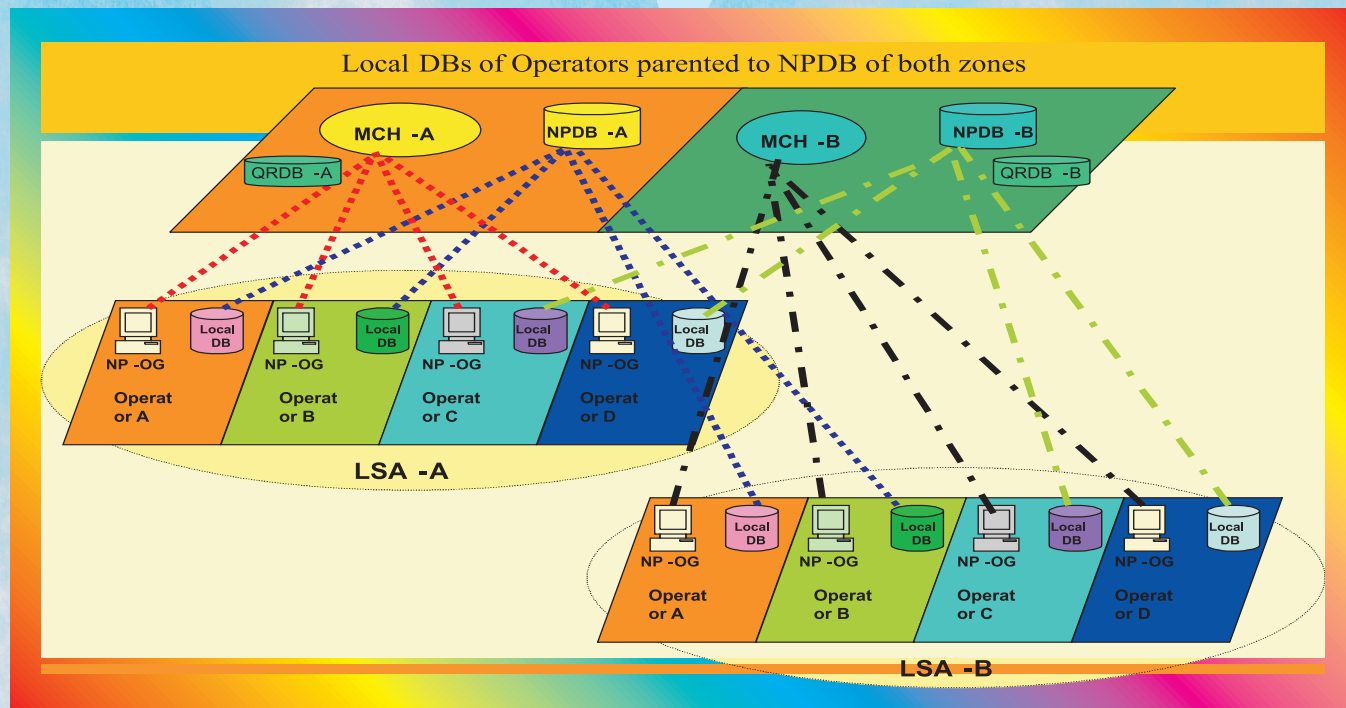
#### By Telecom Service Provider

- Local operator DB query response system
- Number Portability operator Gateway

The two zone connectivity with various LSAs and network operators and disaster recovery locations are illustrated in the first diagram below.

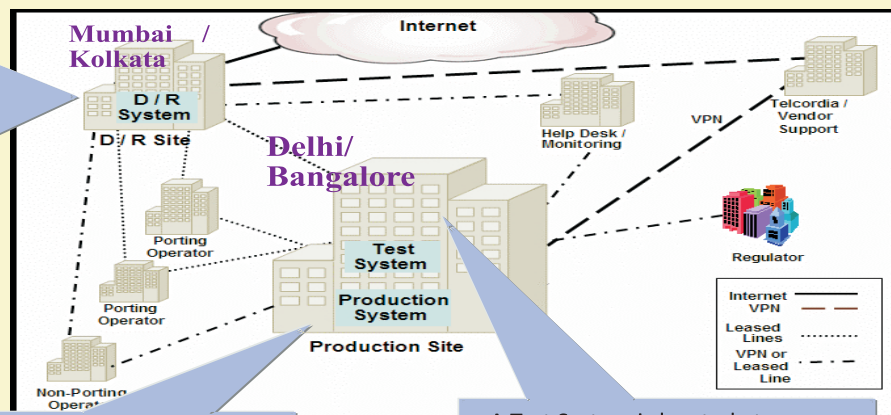
As each network has to make query at

originating end and country is served by two MNP licensees; therefore it was required to have connectivity of each network operator with both MNP licensees systems as depicted in the second diagram below.



### Interconnection of operators and MCH

If the Production System fails, the **Disaster Recovery System** shall allow porting processes and database queries to continue to be conducted until full service of the Production System is restored.



The **Production System** is the primary platform for supporting porting processes and database queries for Service Providers.

A Test System is located at the Production Site and is used for testing new releases.



#### 4.0 Porting Process and Regulation :

TRAI issued the Regulation on Business process of MNP in September 2009 and Tariff Order on MNP was issued by TRAI in November 2009. TRAI also issued directions on Unique Porting Code on 10th February 2010 with allocation of 1900 Code for sending request for UPC. TRAI regulation mentioned that Total Time to port must not exceed 5 working days from Initial request; Deactivation should be done before activation i.e. Deactivation of Donor must occur before activation by recipient operator. Max Service Outage is defined as 2 hrs i.e. Subscriber must not be without services for more than 2 hours. Port activation can be performed throughout the day or during selected time window.

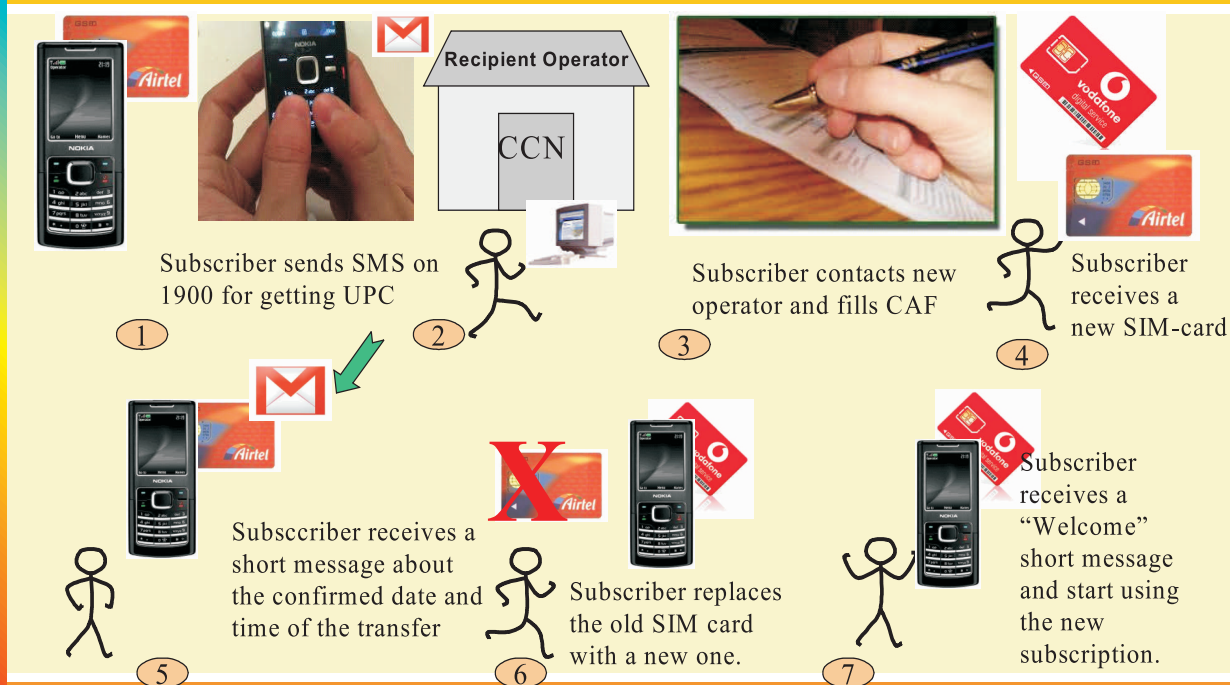
Typical steps involved during porting process are illustrated in the diagram given below.

#### 5.0 Summary :

Though Average Revenue Per User (ARPU) in India is one of lowest in world but with launch of MNP it is expected that it will still bring further down and provide better quality of services as there are on average 10-12 number of operators in each LSA. MNP will stem an interesting battle, between companies, of winning and retaining subscriber will be competing to gain higher subscriber base.

However, MNP implementation delayed because of complexities and need of close and extensive co-operation between all stakeholders. Now MNP has already been launched in Haryana LSA on 25th November 2010 and in rest of India it will be launched on 20th January 2011.

### Typical steps of porting: Subscriber's View



## Important Activities of TEC during October 2010 to December 2010

### DCC held for :

- ✍ GR on Standalone Synchronisation Equipment (SASE),
- ✍ GR on Network Time Protocol (NTP) Server,
- ✍ GR on Primary Reference Clock Cesium Frequency Standards Monitoring,
- ✍ IR on PABX for Network connectivity,
- ✍ GR on Monitoring Equipment for Lawful Interception of PSTN,

### Sub-DCC/ MF held for:

- ✍ IR on Asymmetric Digital Subscriber Line-2 plus (ADSL2+) System for Central Office and Remote Office Applications,
- ✍ GR on Cable House Wiring PVC (Tinned copper conductor insulated, pated and PVC sheathed),
- ✍ GR on Optical Router,
- ✍ GR on Layer-4 to Layer-7 Switch,
- ✍ GR on Solar Photovoltaic (SPV) Power Supply,
- ✍ GR on Tubular Valve Regulated Lead Acid (VRLA) Batter Based GEL Technology,
- ✍ GR on 3G Data/ HSDPA Card,
- ✍ GR on WCDMA Repeater,
- ✍ GR on Lawful Interception of Mobile Network,
- ✍ GR on Fibre Distribution and Management System,
- ✍ OTM Tester,
- ✍ GR on WiMAX CPE and BB Wireless Access System,
- ✍ GR on Permanently Lubricated HDPE Telecom Ducts,

### Study Paper/ White paper:

- ✍ Study paper on Lithium ion batteries for Telecom Applications,
- ✍ White Paper on Cloud Computing,
- ✍ White Paper on Network Virtualisation ,



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### Approvals issued by TEC during the period October 2010 to December 2010

**Interface Approvals.....45**

**Type Approvals.....05**

**Certificate of Approvals.....12**

### **Other Activities:**

- ✍ Three days workshop on "Electromagnetic Radiation Compliance Audit" held at ALTTC Gzb.
- ✍ Installaion of E-granthalaya.

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जनवरी 2011

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अंक 1

दूरसंचार इंजीनियरी केन्द्र

खुर्शीद लाल भवन

जनपथ

नई दिल्ली - 110001

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