# ABSTRACT

Micro cells are effective replacement for issues like bandwidth allocation, service arrangement for user and distribution of cells for a specified number of users. But with such facilitation, it has some indigenous overheads, respectively. Handover latency has significant influence on wireless cellular network for continuous connectivity. Subsequently, it has to stand firm with the user location to subsist a link with user. The aforementioned subjects are part of Mobility Management (MM). These two functions help in decisive behavior of Base Stations (BS) to establish a connection with User Equipment (UE) for uninterrupted services. Thus, for improved MM if both the factor is carried out unanimously for reducing Handover time & prior estimation from user previous log can help in optimizing current scheme.

Several heuristics approach has been proposed for decision engine in cellular network. But in real-time application, the algorithm has an austerity for assignment of services to stationary as well as to moving users. This involves computation within adjacent cells whenever a user is moving either in a particular pattern or in uncertain pattern. Thus, taking limited bandwidth (spectrum available), signal strength & other factors, it will be favorable if minimum number of cell get involved in the computation and decision making for Handover. Therefore, it will beneficial if we facilitate user log for estimating the user future movement. Thus, some statistical or tactical measures are required to deal with this vagueness.

In our proposed idea, we will count time by first transition state from stationary state which will be kept as a benchmark throughout for the second time unit and this will help cells to take decision for handover. To embody such intelligence, decentralized calculations and controls, Fuzzy Inference system will be incorporate with minimum number of cell participation. Thus, this proposed idea can reasonably improve QoS (Quality of service) & embodiment of the proposed intelligence in both cellular network and UE. As a future prospect, this can be extended for future generation wireless networks including other soft computing, to reduce complexity of computation.

***Keywords***: - Base Station (BS), Fuzzy Inference System (FIS), Base Station Controller (BSC), Received Signal Strength (RSS), Timing Advance.

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# LIST OF ABBREVIATIONS

**2G 2nd generation**

**3G 3rd generation**

**3GPP 3rd Generation Partnership Project**

**AAL ATM Adaptation Layer**

**BSC Base Station Controller**

**BSS Base Station Subsystem**

**BTS Base Transceiver Station**

**CDMA Code Division Multiple Access**

**CN Core Network**

**CPCH Common Packet Channel**

**CPICH Common Pilot Channel**

**CRNC Controlling RNC**

**CS Circuit Switched**

**DCCH Dedicated Control Channel**

**DCH Dedicated Channel**

**DL Downlink (Forward Link)**

**DPCCH Dedicated Physical Control Channel**

**DPCH Dedicated Physical Channel**

**DPDCH Dedicated Physical Data Channel**

**DRNC Drift RNC**

**DRX Discontinuous Reception**

**FACH Forward Access Channel**

**GGSN Gateway GPRS Support Node**

**GPRS General Packet Radio Service**

**GSM Global System for Mobile telecommunications**

**HLR Home Location Register**

**IMT-2000 International Mobile Telecommunications 2000**

**IP Internet Protocol**

**ITU International Telecommunication Union**

**MAC Medium Access Control**

**MM Mobility Management**

**MNC Mobile Network Code**

**MRC Maximum Ratio Combining**

**MS Mobile Station**

**MSC Mobile Switching Center**

**OSI Open System Interconnection**

**PDF Probability Density Function**

**PMM Packet Mobility Management**

**QoS Quality of Service**

**SGSN Serving GPRS Support Node**

**UE User Equipment**