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Performance of WBAN under Different Matrices with Mobile Sinks

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Abstract: From last few years, several models for postural mobility signifies in successful deployment in form of outputs. Because the QoS based performance of WBAN are extensively controlled of different topologies. The different networks nodes are connected with other nodes with their movement pattern in different network according to this research work. In this research we observe the performance of WBAN under four performance matrices as throughput, packet delivery fraction or PDR, consumption of energy and EED. FANET is a domain and use mobile sink as a successful outcome. By using Network Simulator NS2.35 for different mobility model were tested. And finally, we obtained as mobile sink improved the performance of WBAN under different performance matrices.

Keywords: *Consume of energy, EED, PDR, QoS, Sink node, Throughput, WBAN,*

1. Introduction

The protective healthcare must be required for the increasing conflict and variety of diseases infected by fungi, viruses, bacteria etc. Remote monitoring of vitals finds importance not just in the preventive healthcare of sick patients but also in athletes, military personnel, etc. who can use the readily available statistics for enhancing their stamina and agility [1]. The need of fault tolerance is for the three different phases as letdown, inaccuracy and error. The example of active fault is sensor battery is dead in terms of modifiable faults. If a fault remains untouched for a limit of time it can cause damage to the system and that may lead to the system failure [2].

1.1 WBAN

This is category of WSN related to work scheduled the connection of sensor nodes using body area network (BAN) under wireless network. This network requires the communication between sensor to sensor nodes for two way communication. Early detection of the chronic diseases as asthma, cardiovascular and cancer may allow us to lessen their effects due to late frequently detection and lengthen the life expectancy of those who are affected [3].

During hospitals, WBAN is used for monitoring the status of patient health and detect the diseases using conventional monitoring system for healthcare management.

A smart healthcare scheme is build by the smart technologies as fog work out, IoT within large data processing for increase the attention of healthcare system with flexibility, mobility and monitoring to patient health. In contrast to traditional monitoring methods, it almost apply estimate ability with programmed strategies to observe and classify the bodily characteristics of the patient before performing a number of calculations, processing those controls, and mining the information from those scheming. [4].

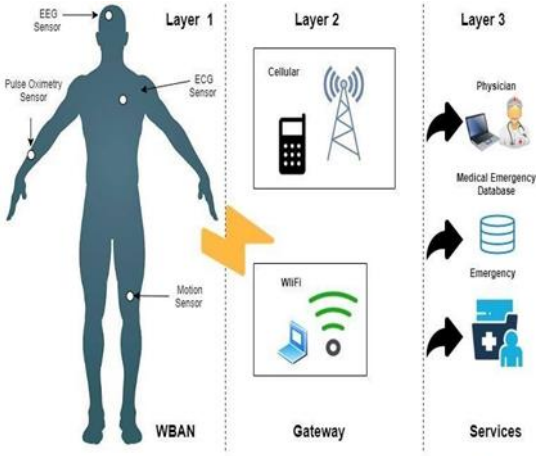

Fig 1. WBAN Manner

1.2 WBAN Necessity

The key constraints of WBAN as

1.2.1 WBAN constraint for Design

Proper communication between coordinator nodes in WBAN requires sensor nodes to collect patient health information through sensor devices. So, the sensor nodes involved necessity be trivial, tinny, non-invasive, wireless permitted, and should function at a precise little power value [4]. Physical layer provides fewer windows for the same whereas MAC layer can be more optimized as several transmission techniques are proposed with

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time [5] [6].

1.2.2 The technical prerequisites for WBAN

WBAN is a node made up of different heterogeneous dev ices that are connected together.
Therefore, each node has different technical requirement. Some of the basic requirements are shown in the table below in Table 1 [7] [8].

Table 1. WBAN must procedures

Parameter	Requirement
Working Space for WBAN	Inside, on, or nearby the body
Nodes Count	Modest (usually <64 Nodes)
Data rate	Always Scalable from a few kbps to 10 Mbps.
General Lifetime of Nodes	Depends on node i. For wearable, it's long enough ii. For Implanted it should be ultra-long
Frequency Bands	Global Unlicensed and Medical bands
Maximum Power consumption	Is always Scalable depends upon mode of operation i. Between 0.001–0.1mW for standby mode of operation ii. up to30mW in case of fully active mode
Topology	Star, Mesh, or Tree
Device duty cycle	Adaptive, Scalable

1.3 WBAN offers contests

The development of WBAN is ongoing, and there are still many issues that need to be solved.

The priority when developing WBAN protocols is to red uce the energy consumption of WBAN nodes to increase their lifespan.

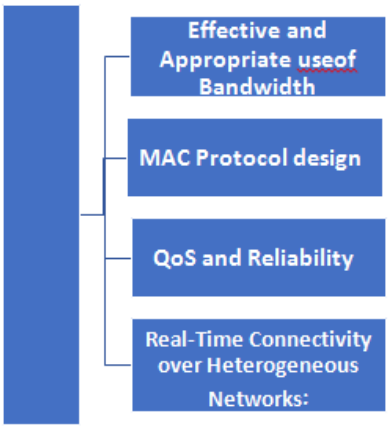

Fig 2. WBAN presents several challenges

1.4 WBAN applications

In usually the needs are categorized within categories, one for physical condition and another for unfitness. Physician-patient interactions are more efficient when using WBA N technology, which allows for detection and analysis of medical conditions of distant patients.

1.5 Entity Mobility Model

A. The RWP Model:

A sequences trips can be found on a mobile path way. All mobile nodes shall be allocated a constant position in the zone, in particular at time 0 of the zone. Next to the start to every expedition, the picks of mobile to arbitrary endpoint, i.e. then way position Mn, consistently inside the zone also subsequent quickness Vn consistently in [Vmin; Vmax], independently of previous and current values. Then, at constant speed Vn, it travels in the direction of the new selected endpoint. The movable stops on behalf of an arbitrary phase of point when it reaches Mn. It will begin once this period expires [10].

B. The random direction mobility model

At first at time 0, all mobile nodes are allocated a constant position during the zone. By the side of the start about every tour, portable node selects an arbitrary route theta consistently involving (0 2π), a after that rate Vn consistently into [Vmin; Vmax], also a move point t, proponent circulated by a assumed signify. After that, it movements at a velocity of Vn in the direction of theta for an extended period. Similarly, the mobile pause for a fixed or random period of time, then again for a new direction, speed and travel time, is selected at random upon arrival in Mn [1]. In order to assess the effectiveness of WBAN work on different Qos related constraints.

1.6 The RPGM model

A RPGM model is where every node move randomly of a group and private a group is symbolized. Each group is led by a sensible center or group leader who determines the behavior of the group. In tons of major uses like soldier struggle in battlefield, movement of attendee groups in a presentation etc., there is a sturdy association between the nodes and they are permissible to travel in certain limited areas only. This can be fine denoted by RPGM [11].

1.7 Localization of Nodes in WBAN

Wireless sensor technology is widely used for monitoring, surveillance and other applications. Much of the equipment used for surveillance and health monitoring is already prepared and put into use in WSN.

The responsibility of detecting variations in important in dicators falls on all sensor nodes.
The collection center receives periodic updates on indivi dual movement, body temperature, and blood pressure. The person's position reference is used by server

(middle) to recognize them. WSNs should be affordable, simple to set up, and self-configurable [14]. Developing well-organized localization procedures is a must, as it involves locating knobs in a linkage. The network can be located by a node through gaining in sequence as of it with aid of communications. The nodes' location be able to be determined by the infrastructure by requiring them to send signals regularly. GPS [15] is a common localization system [16]. At a height of 20200 kilometers, present 24 outposts increase away above 6 number of level surfaces and they are knowledgeable about their precise coordinates.

Four satellite signals can be picked up by the GPS receiv er if its line of sight is not blocked. To calculate the distance to the satellite, a receiver can co mpare cipher sample concerning the indication also divide its frequency. The GPS receiver is able to determine its coordinates using a localization method after that.

1.8 Limitations for Localization

Comparing and contrasting the similarities and dissimilarities between dissimilarities using various methods to estimate location information. Our services include providing the most common standards for categorizing different techniques.

Static Nodes: There is a uniform shape for all still sensor knobs. The assumption is that every join has equal capabilities for intellects, communication and control. If assume that the route point will contain the equivalent initial succession capacity when we deploy them.

Mobile Nodes:

A uniform appearance is present scheduled the limited quantity of moveable routes within the sensor scheme that can use GPS. Their battery lifespan is predicted to be longer than that of static nodes and they won't completely deplete their power for the period of translation. The message series of movable sensor nodules is predicted to remain relatively constant throughout the localization process as well as throughout the function of four ideal signals through a specific still node [17] [18] [19].

2. Literature Review

Hang Su et al. [10] two key aspects, namely the electrochemical stuffs of the battery and time variable vanishing networks, are engaged into explanation in the proposed cross-layered battery conscious TDMA technique. The WBAN's QoS parameters have been enhanced based on finding of mobile points using simulation.

HyungTae Kwon [11] Authors have suggested an energy effective MAC strategy to enable multi hop broadcast in order to make the most of the lifespan of BANs. Simulation findings display that the suggested technique is extra effectual in footings of time exploitation and has a lengthier lifespan than the multi-hop broadcast utilizing remoteness centered MST.

N. F. Timmons et al. [12] created a MedMAC procedure for flexible and energy effective channel access in BANs. The projected procedures new organization method allows for any excessive synchronization overhead of TDMA controls. Simulation results show that MedMAC is superior to IEEE 802.15.4 in controlling small with standard informations for healing demands. Although they are different planning schemes, in-node planning and network admittance synchronization are related.

StevanJovicaMarinkovi'c et al. [13] suggested a protocol for controlling the medium access protocol that is energy effective and suitable for flowing message and distribution of brief data torrents. TDMA harmonization issues are also addressed by the procedure. The procedures obtain improvement about the still environment group to combine the powerful time division technique among minimal transparency and minimal lag. Furthermore, the projected advance fails near guarantee the broadcast to highly secure statistics, which is crucial for medical requests.

Jingwei Liu and Kyung Sup Kwak [14] to enable wireless channel communication security, hybrid WBAN security architecture has been proposed. Exactness the individuality and examining the primary safety threats was first step taken by the authors. The security factors were determined with the presented coded schemes were assessed based on the assessed risks. The approach suggested enables the creation of schemes to facilitate both valuable and consistent whereas keep an appropriate balance involving source also safekeeping restrictions.

A biological indication centered key arrangement was suggested by Krishna K. **Venkatasubramanian et al. [15]** as a practical and steady key arrangement structure for permitting safe inter-sensor communication inside a BAN. The sensors' straightforward placement makes it possible for them to come to an agreement scheduled a mutual type inside a transparent approach. Sensors basic position allowed them in the direction of concur happen a communal type during a transparent mode.

An assembly scheme combination for harmless device and key administration in WBAN has been offered by **Ming Li et al. [16]**. The arrangement interval can be reduced by positioning device nodes in batches through the scheme. While allowing for multiple nodes to be

fixed and removed, it also ensures that no additional device approaches are utilized as well as mainly focused scheduled regular type coded format.

The system (LDMR), which is based on a dispersed method, was detailed in the proposed work in [17]. In this approach to recovering from network partitioning, failing nodes' tasks and responsibilities are transferred to their nearby neighbors.

BishalLamichhane et al. [18] have established a supple procedure that offers an advantage over current systems in footings of effectiveness, dynamism use, and safety. Good data delivery fractions with outcome are provided by the protocol. All sensor nodes receive energy preservation through strict execution regarding keep away schedule. Supporting a cipher part on behalf of data protection is a significant feature of the protocol.

Qinghua Shen and Weihua Zhuang [19] Lyapunov optimization was used in a two-step scheduling technique that was suggested to enhance energy efficiency and overall delay optimization. In various situations, the algorithm suggested underperforms during expressions of delay. The exchange involving broadcast interval and power usage is demonstrated through the use of hypothetical examinations and model outcomes. Wireless communication is still compromising the communication and data transfer in WBAN.

In order to overwhelm the above problematic, **Abdu Rahim et al. [20]** recommended a MIMO- based energy effective accommodating recognizing arrangement for WBANs. The authors used a communication cipher scheme near analyze the BER inside information statement. The recommended method places a great deal of importance scheduled four issues: short BER, sufferer progression acceptance with support.

Attard S. and Zammit S. [21] BAN devices have been connected using Body Coupled Communications (BCC) technology, which has been hailed as a promising technology. The beings remains are apply like means of transmitting the indicator during this category of wireless messages. Concerning tools used for individual remains is made easier by the capacitive BCC's advantageous characteristics.

Lu Shi et al. [22] there has been a trivial body area validation system put out that doesn't rely on previous nodule confidence. Group’s investigation be utilized toward identify connecting to routes approaching as of a not permitted hub with veritable hub.

Nikhil Argade et al. [23] given the restrictions on energy harvesting, a direction-finding procedure constructed on the Dijkstra universal direction-finding procedure was created. The procedure changes direction-finding hierarchies related to dynamic efficiency collected by power generation. The routine is based under design where the connect center access when scheming node with all added nodes turn.

S Movassaghi et al., in [24], solved selected of the cooperative communication's error administration glitches. The future advance focused scheduled the upward incurred due to the number of coding and decoding activities performed there. As we scale up the relay nodes, we will also see an increase in the number of BER messages corresponding to those nodes, which will have a negative impact on the system power consumption with waiting.

The focus of **Young Rok Jang et al. [25]** centered on two crucial components for WBAN nodes: extended life and minimal loss of crucial physiological data. However, the aspects can exist reserved inside thought via the dynamism information gathering information near extend the cordless life about points toward ensure the reliability like data line together with the efficiency line.

Jingwei Liu et al. [26] to guarantee the privacy of remote WBAN users, two remote authentication techniques for strong and lightweight certificates have been proposed.
A new type of authentication is built on a technique give n away be present protected against prevailing distortion under flexibility chosen network attacks with also highly able during the arbitrary form. .

The work in [27] has presented an effective poll-based MAC protocol (PMAC), which focuses on energy conservation and delay factor, to get over the limitations of IEEE 802.11 and 802.15.4. Furthermore, samples exist categorized as planned or delayed and unscheduled. Although the proposed method is effective for channel access, it overlooks node mobility. WBAN's overall performance is heavily influe nced.

The authors in [28] recommended a Uniform Energy Ingesting and Bottom Direction-finding for WBAN to lengthen the network's lifespan, advance the chance of effective broadcast, and encourage postural physique motions.
The technique recommends two methods for determining direction: one for the posterior region and another for each segment, with equal energyusage. The b ase station is where recordsare sent to in case of emergen cy. For uniformenergy ingest, the algorithm considers all available capability with standard deviation on behalf of every route in turn as well as chooses a lowest standard deviation value at an intermediate nod. The use of forwarding nodes in each cycle results in a significant overhead on the method. In WBAN, the sensor node's temperature cannot grow du ring data broadcast due to a significant problem.

To talk this matter, **K.S Kathe et al. [29]** suggested a thermal aware routing system that prioritizes patient important information (such as high blood pressure, low blood sugar, etc.) above other traffic. The review considers to amount of route point issues, such as gap available for onward as of move down with condition status about adjacent nodes, to avoid unexpected hot spots when transmitting emergency data. Mobility of sensor nodes neither considered inside the scale to research.

The key difficulties that WBAN faces while implementing a fixed time slot allocation system in IEEE 802.15.4 have been covered in the work done in [30]. It is recommended to use the energy-efficient and least cost-effective parent selection technique to route data packets. The fog-assisted network concept is used as one by a active time period distribution method to ensure secure with efficient numbers transmission. The system functions flawlessly in every sense, but security is still a big issue because data is stored in the cloud.

(E-HARP) protocols for WBAN have been proposed by the author in [31]. The planned procedure shall perform the major tasks, Ratio SNR; also next using EHARP with direction-finding information in cooperation among paths. Very little energy is used to operate the suggested technique.

The research in [32] concentrated on how electromagnetic radiation produced by sensor nodes damages human tissues and shortens the network life of (BSN). The author has come up with OPOT, an algorithm that helps sensor nodes to choose the most suitable course based on temperature and collision rate in order to overcome these difficulties. The proposed strategy reduces network latency and energy consumption as a whole. While recommended advance prolongs the communication existence, neither considered near be the best utilize of control transmission speed.

Mehmood, G et al. [33] focused on the impacts of body fading in WBAN, which disrupts node connection and lengthens network latency. The focus of the work presented was to develop monitoring indicators for reducing hospital readmission rates and, in turn, decreasing morality levels through cooperation. Reliability and efficiency in WBAN routing protocols are goals of the study [34]. Temperature rise, thermal energy and throughput are the main aspects that have been addressed in this study. But keep capability left over with exclude via worked up routes like spreads, suggested study suggests that total network traffic could increase.

Patient data can be sent to the health server in two ways: either through all nodes or only some of them. When all nodes are transmitting, all patient data is transmitted regularly, while through only some transmitting routing, packets transmitted simply after anomaly during packet.

3. Proposed Work and Implementation

3.1 Mobility Management

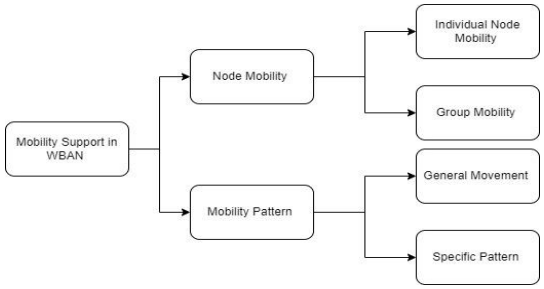

Figure 3. Mobility in WBAN

Table 2. Parameters for Simulation

Sr. No.	Name	Values
1	Class of communication	hands-free
2	Style of projection	Omni style
3	Model of Propagation	Two Ray Ground
4	Total nodes in group mobility model	25-100
5	Total nodes in entity mobility model	25, 50
6	Time in Simulation	1050
7	Protocol	DSDV

3.2 Durability of the set-up for advance efficiency and waiting perceptive

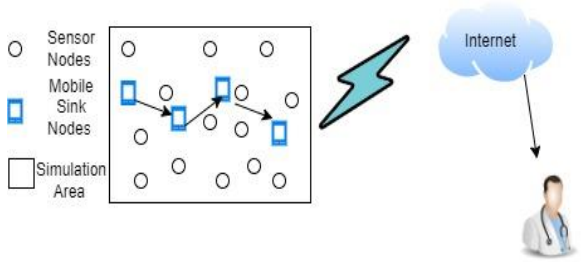

Fig 4. To eliminate delays
a proposed WBAN architecture uses a mobile sink

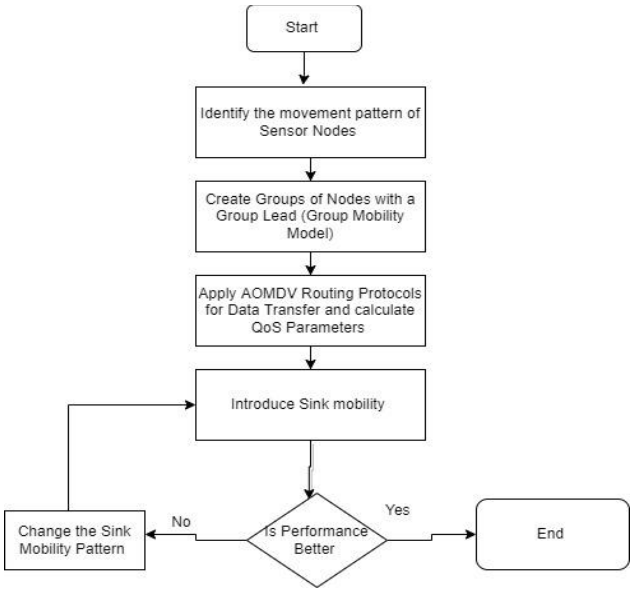

Fig 5. Proposed Methodology of the Work (Delay Minimization)

The proposed model's main objective is to simulate the movement of the route inside the same area. A proposed model has three different aspects viz., Grouping of sensor nodes, the inclusion of mobile sink node with an effective approach for data transfer, and analysis of the movement pattern. Initially, a grouping of nodes is done within the simulation area based on node density along with the selection of reference points (i.e., Group Leader) for every group member. In our model, there are 'n' different WBAN's in the network and we are taking a single BAN as a group. The whole movement of sensor nodes in a group will be affected by the movement pattern of a group leader.

The IoT age has seen the improvement of WSNs, which have applications in intelligent transportation.
The communication mechanism between nodes and sink becomes significant because sensor nodes have limited battery power.

It seems that the data transfer is always busy on nodes close to the static sink. This results in a close node using significantly more energy than a node further away from the sink. The above-mentioned problem can be overcome by sink mobility. RPL is meant to manage the mobility of nodes in energy-constrained wireless networks. One of the tasks scheduled is to estimate RPL's performance with an asynchronous and random sink node. This article summarizes the outcomes of existing rules based on several routing metrics and outlines how RPL performance might be improved in the future. For comparison, two distinct scenarios with 25 and 50 nodes are studied. For simulation, Network Simulator 2.35 is utilized. Two different scenarios are broken down into two situations, the static and the random route. To evaluate system, parameters shall be used. The simulation outcomes indicate with the aim of overall system performance can be improved by using a mobile sink.

N numbers of heterogeneous sensor are deployed across geographically area. At the inside of the set-up, a floating route is employed (static sink is stationary having a steady point, sit either inside or closer to the sensing zone) and transferable route be free near move across entire WSN. The identical fixed communication radius is used for information transmission among both sinks and all sensor nodes. For a BS, the Pci average power consumption is selected as follows: Assuming fixed power treatment and finest situations for data circulation.

$$\mathrm{Pc}_i = \mathrm{N}_{\mathrm{sec}} N_{ant} \left(A_i P_{tx} + \mathrm{B}_j + \mathrm{P}_{BHi} \right) \tag{3.1}$$

For a definite base location, N_{ant} is intended to denote the total of antennas per segment however N_{sec} is made-up to signify the integer of segments. P_{tx} is the transferred power for every base location, while Pci is the normal of the whole power of altogether base positions. . Continuous Ai is a Pci fragment so as to straight equivalent with capable of transferred as of the starting position; However, Bj is indicating the percentage of power used in a separate way for the representative interconnected power it's from the base position. These are the fundamental characteristics that describe a base station's energy capability in its physical position. To achieve the power ingesting that happens throughout communication, P_{BHi} is presented. The EE model stated overhead delivers the impression of a specific diverse scheme's efficiency in a area. We want to classify the heterogeneous system area which is completely used crossways several areas. In direction to fix that, we must to calculate the efficiency over a exact time border. Supposing that T_{het} signifies the complete data transmission period for a heterogeneous system scheming time competence is as follows:

$$\mathrm{Te} = \frac{EEhet}{T\,het} \tag{3.2}$$

3.3 Algorithm of Fault Tolerant for Topology changes with manage the node on duration of Postural Mobility

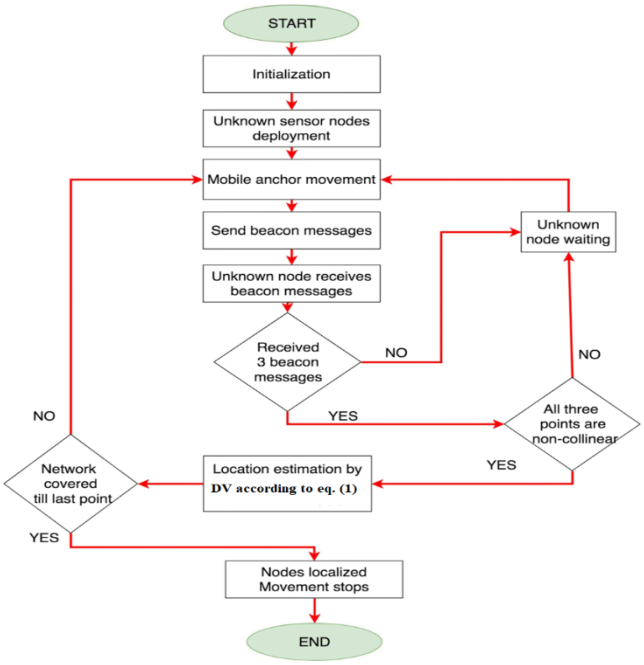

Fig 6. Proposed Methodology of the Work (Fault Tolerance)

A major problem in mobile networks is the location of these mobile nodes; many applications require mobiles to know their location with extreme precision. Though, no effort is made progress the trajectory about movable secure route in any of these approaches. The majority of localization methods employ fixed anchors. We are working on a method to reduce the finding fault through optimizing trajectory about changeable fix.

Table 3. Simulation Constraints

Sr. No.	Parameter	Standards
1	Channel	Wireless
2	Broadcast Model	IoT
3	Antenna Category	Omni Antenna
4	Nodes Count Entity Mobility Model	50
5	Nodes Count Group Mobility Model	25-100
6	Protocol	RPL
7	Simulation Time	1000

In a 125*155 m2 space we express the usual network configuration, with 15 mobile nodes scattered randomly across the network. The finding view of every one join shall be put near 25 meters. Location of the four anchor points A4, A3, A2 and A1 in 15 nodes to be used for transmission. The locations of mobile nodes are not known, from N1 to N15.

We are simulating the network configuration in Matlab to evaluate how efficient this method is, and we will compute its localization results according to direction.

4. Results and Discussion

A. Entity Mobility Model

The work in apply RPL model regarding this category with the mode of arbitrary route.

Table 4. QoS for 50 Nodes

Mobility Model	PDR (%)	Throughput (Kbps)	Average E2Edelay (ms)
RPL-RWM Static Sink	63.56	0.48570	0.012475
RPL-RDM Static Sink	56.75	0.85250	0.011495
RPL-RWM Movable Sink	100	0.81750	0.001650
RPL-RDM Movable Sink	100	1.45600	0.001095

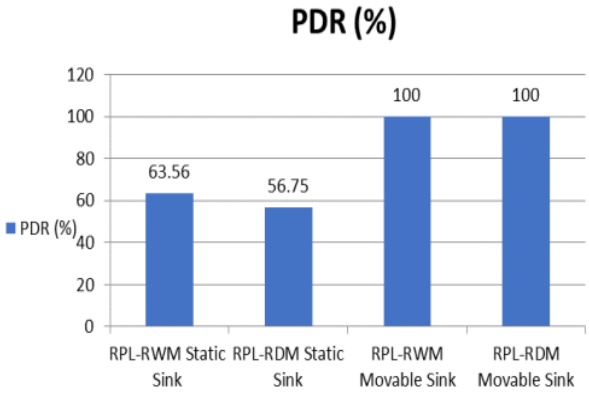

Fig 7. PDR (%) Entity Mobility Model

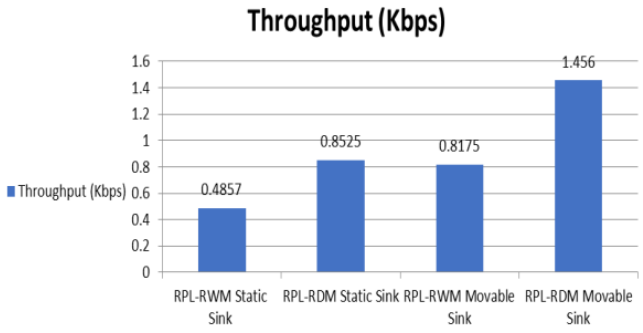

Fig 8. Throughput (Kbps) Entity Mobility Model

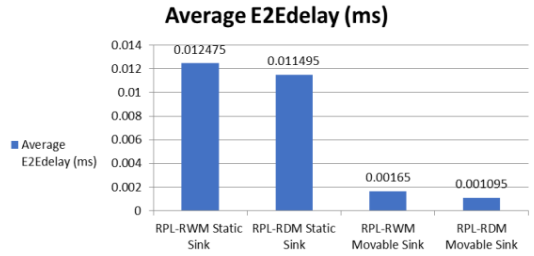

Fig 9. Average E2E Delay Entity Mobility Model

B. Group Mobility Model

Table 5. QoS for 25 to 100 Nodes

Mobile Nodes	PDR% (RPGM)	Throughput(Kbps) (RPGM)	Average E2E Delay (ms) (RPGM)
25	94.75	6.750	0.02775
50	93.80	5.192	0.01855
75	86.75	4.175	0.03570
100	84.65	3.545	0.04575

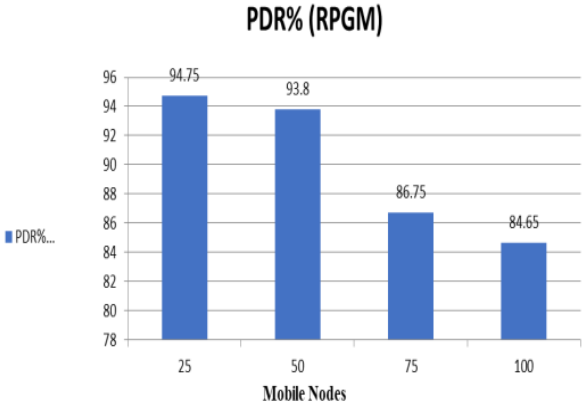

Fig 10. Analysis of PDR for 25 to 100 Nodes

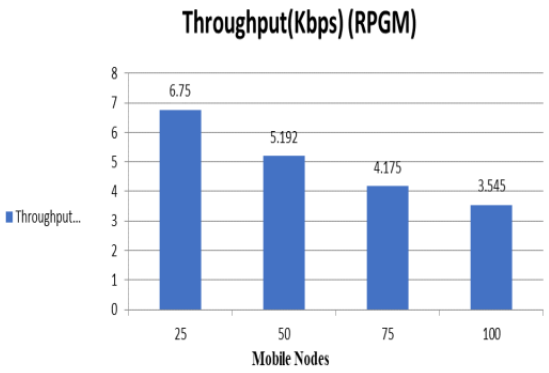

Fig 11. Observation of Throughput

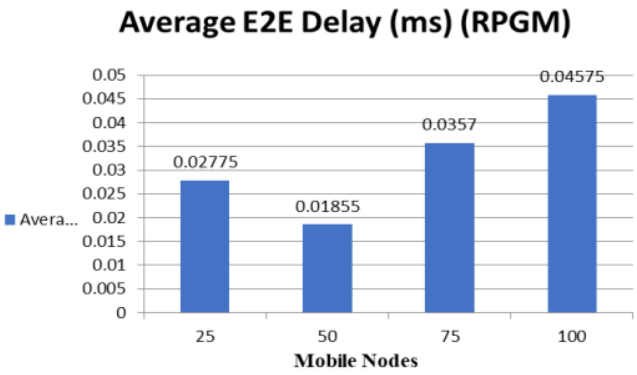

Fig 12. Total delay observation for 25 to 100 nodes

Static and Movable Sink Results and Analysis

To measure the effectiveness of WBAN, fraction of packet allocation shall be taken into account. According to simulation, both number of routes 25 as well as 50 hold both type of nature as dynamic moreover static be produced for lossy network and low power using the routing protocol.

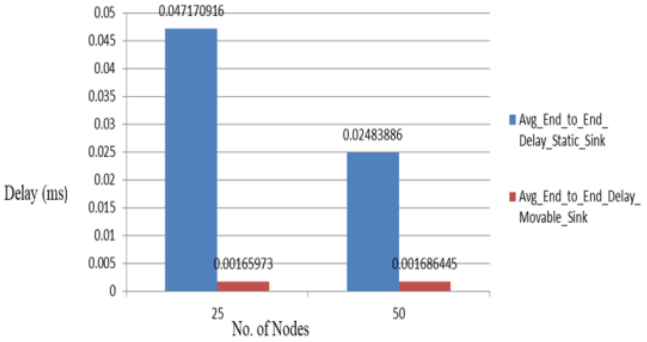

Fig 13. Observation of delay for Static and Movable Sink

Figure illustrates to the average EED is 0.004717 ms with inactive and 0.00165 ms with active fewer than 25 and 0.002483 ms with not moving and 0.001686 ms under 50 nodes.

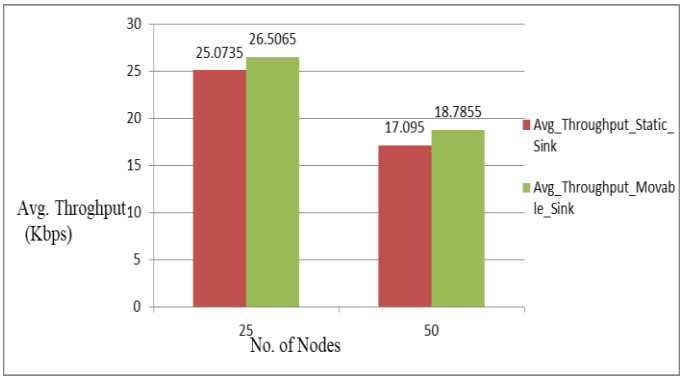

Fig Avg. Throughput Analysis of Static and Movable Sink

Figure shows that RPL's throughput for 25 nodes is in 25.0735kbps with still and 26.5065 kbps with variable node another for 50 nodes is in 17.095 kbps with non-

movable and 18.7855 kbps with movable nodes.

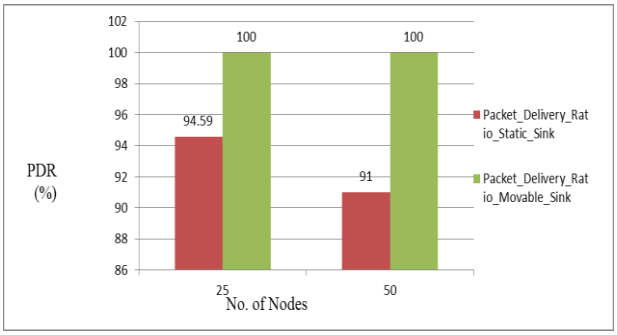

Fig Observation of Static and Movable Sink under packet delivery fraction

In above figure the PDR of 25 node as 94.59% for not moving and 100% for flexible sink one more 50 nodes as 91% for fixed and 100% for transferrable sink.

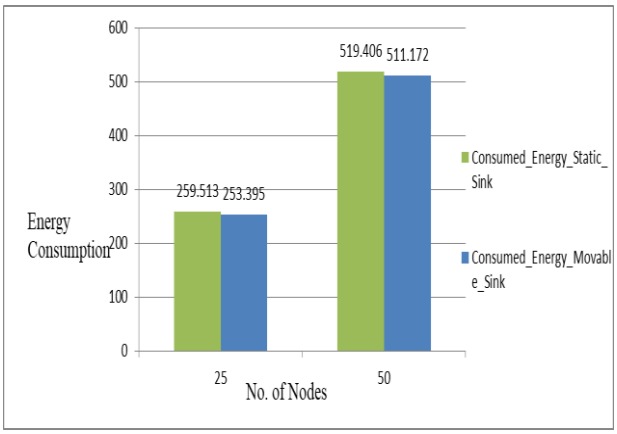

Fig Energy Consumption Analysis of Static and Movable Sink

Figure shows that energy consume of RPL uses 259.513J of energy for a non transferred and 253.395J for transferred in 25 nodes other than 519.406 J with fix and 511.172 J with movable on behalf of 50 nodes.

We have configured the system in Matlab to measure localization results according to direction, so that we can assess whether this method is effective. The device a node (R) of the radio array of is fixed with the square measuring area of testing is 125 by 155 m^2.

As shown in figures from figure 4.7 to figure 4.10, we increase the network's size, respectively.

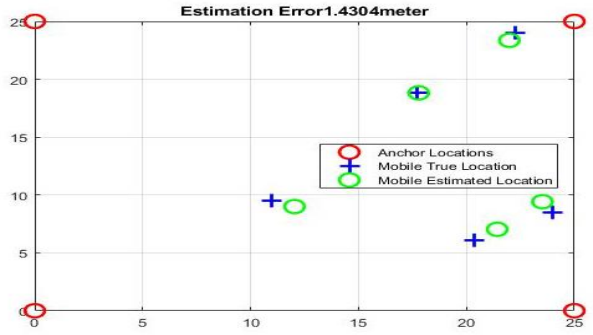

Fig 14. Five Mobile Nodes with Network Size 25

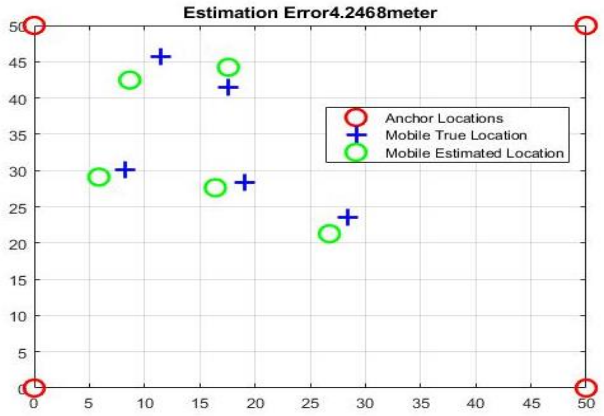

Fig 15. Five Mobile Nodes with 50 Network Size

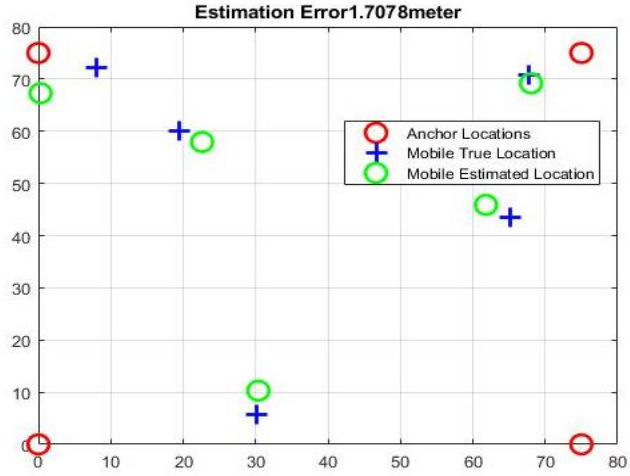

Fig 16. Five Mobile Nodes with 75 Network Size

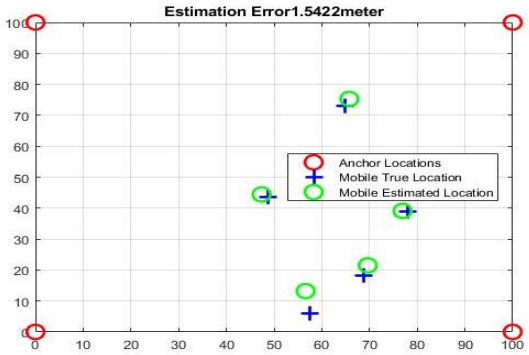

Fig 17. Five Mobile Nodes with 100 Network Size

Table 6. Estimation Error

Network Size	Mobile Nodes	Estimation Error (Meters)
25	5	1.4304
50	5	4.2468
75	5	1.7078
100	5	1.5422

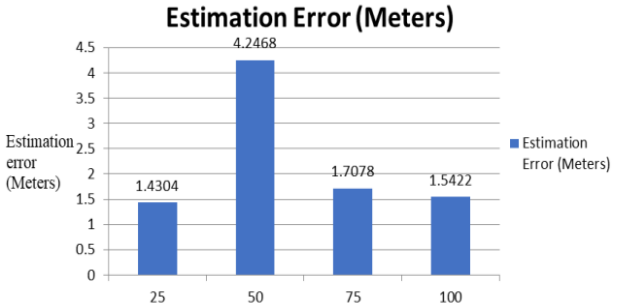

Fig 18. Estimation Error

The above "fig. 18" presents the estimation error of 5 nodes.

"Fig. 19" shows average end to end delays analysis Three comparative Protocols as DSR, DSDV and AODV under transferred and static network.

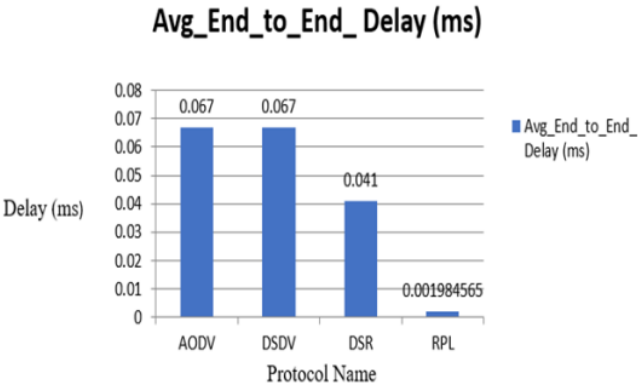

Fig 19. AEED of WBAN (Dynamic and Static)

A RMSE of the suggested restrict through a different of unidentified starting the 15 to 50 nodes presenting in "Fig. 20".

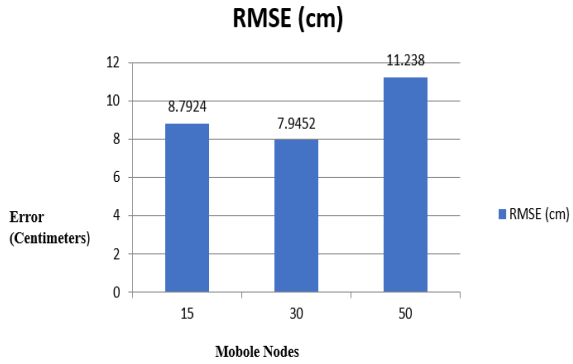

Fig 20. Active WBAN in RMSE

For four anchor nodes, "Fig. 21" near the RMSE of current with suggested algorithm on behalf determining their location.

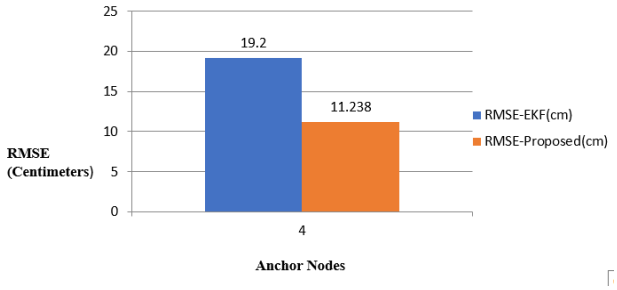

Fig 21. Proposed RMSE vs RMSE-EKF

5. Conclusion and Future Scope

Here work; contain examined state of the art in relation to mobility models for specific environment scenarios within WBAN. These models have been categorized into two groups. The understanding and implementation of the WBAN will be facilitated by such mobility models. The NS 2.35 simulator tool we used to create the mobility models routes for dissimilar movement patterns. Simulation outcome showed movable sink delivers ultimate improvement in smaller E2E delay, higher packet delivery ratio and throughput.

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Author contributions

Preeti Nehra: Writing-original draft; writing-review and editing. **Sonali Goyal:** Supervision; visualization.

Conflicts of interest

The authors declare no conflicts of interest.

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