State Of The Art : Security In Wireless Body Area Networks

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Abstract---Advances in wireless communication technologies and sensors have scepter development of Wireless Body Area Network (WBAN). The wireless nature of network and sort of sensors provide various new, sensible and innovative applications to enhance health observance and alternative health care applications system. Within the past few years, several researches targeted on building system design of health observance to enhance the technical demand specifically designed for WBAN. However, as a part of communication medium, WBAN faces with varied security problems like loss of information, authentication and access control. Less research were found in providing robust security system in WBAN. Throughout this study, we tend to believe that WBAN will offer varied applications together with medical and non medical. During this paper, we tend to gift an summary of body area network and their connected problems stress in security downside. We tend to conjointly offer the variations between Wireless Body Area Network and Wireless Sensor Network (WSN) that is inadequate to use in WBAN though some challenges visaged by WBAN area unit in many ways just like WSN. Finally, we tend to highlight security challenges that also have to be compelled to be addressed to create WBAN actually present for a wide range of applications.

Keywords- Wireless Body Area Network (WBAN); Wireless Sensor Network (WSN); characteristics; requirements; Challenges

I. Introduction

Wireless body area network (WBAN) was firstly introduced by T. G. Zimmerman in 1996. Such networks were initially defined as wireless personal area networks (WPAN). The name of body networks was redefined as WBAN, replacing WPAN, or distances up to 3 meters. Wireless Sensor Network (WSN) is turning into a promising technology for varied applications. One of its potential deployments is within the variety of wireless biomedical sensors network for measuring physiological signals. Wireless Body Area Network (WBAN) could be a wireless network used for communication among sensor nodes operational on, in or round the human body so as to watch very important body parameters and movements. These observation signals are gathered by a personal device, e.g. a Personal Digital Assistant (PDA) or smart phone that acts as a sink for information of the sensor nodes and transmits them to care skilled for health observation. There are varied problems identified in implementation of WBAN technology notably within the area of security.

Generally speaking, two varieties of devices are often distinguished: sensors and actuators. The sensors live accustomed measure sure parameters of the anatomy, either outwardly or internally. Examples embody measurement the heartbeat, temperature or recording a chronic electrocardiogram (ECG). The actuators (or actors) on the opposite hand take some specific actions consistent with the information they receive from the sensors or through interaction with the user. E.g., an actuator mechanism equipped with an integral reservoir and pump administers the proper dose of hypoglycaemic agent to allow to diabetics supported the glucose level measurements. Interaction with the user or different persons is sometimes handled by a private device, e.g. a Personal Digital Assistant (PDA) or smart phone that acts as a sink for knowledge of the wireless devices.

This study conducted a holistic review on previous researches that stress in security related problems in WBAN yet as Wireless LAN. This paper organized into four sections. Section I provides transient introduction on WBAN and highlights many variations once it's being compared with WLAN. Section II provides characteristics of WBAN and Section III attracts general design of this technology. Section IV discusses needs in WBAN and this section addressing additional on security issues. The ultimate section summarizes related researches in security issues for Wireless Body Area Network.

II. CHARACTERISTICS OF WBAN

Basically, WBAN may be a communication network between the humans and computers through wearable devices. So as to appreciate communication between these devices, techniques from Wireless Sensor Network and ad hoc networks may be used. A typical device node in WBAN ought to make sure the accurate sensing of the signal from the body, do low-level process of the sensor signal and wirelessly transmit the processed signal to an area process unit [1]. However, attributable to the everyday properties of a WBAN, current protocols designed for these networks don't seem to be forever compatible to support a WBAN. To support this time, TABLE I simplifies the overall variations between a Wireless sensor Network and a Wireless Body Area Network as mentioned elsewhere in [2] and [3]:

TABLE I. THE GENERAL DIFFERENCES BETWEEN WBAN AND WSN

Challenges	*WBAN*	*WSN*
Deployment	The number of sensor nodes deployed by the user depends on various factors. (i.e.: on form or hidden beneath clothing).Devices are measure equally vital and solely additional after they are measure required for application. WBAN doesn't use redundant nodes	WSN is commonly deployed in places that will not be simply accessible by operators that need additional nodes to be placed to atone for node failures.
Density	WBAN is not node-dense.	
Data Rate	WBAN may occur in a more periodic manner and stable data rate.	WSN is employed for event-based monitoring where events can happen at irregular intervals.
Mobility	WBAN users may move around. WBAN nodes share the same mobility pattern.	WSN nodes are usually considered stationary.
Latency	Replacement of batteries in WBAN nodes is much easier done when energy conservation is definitely beneficial.	Nodes can be physically unreachable after deployment. It may be necessary to maximize battery life-time in WSN at the expense of higher latency.

WBAN was found started from existing Wireless Personal Area Network (WPAN) technologies [4]. WPAN could be a personal area network using wireless connections generally within a short range (≤10m). It's used for communication among devices like telephones and electronic equipment, further as personal digital assistants (PDA).Technologies sanctioning WPAN is Bluetooth, Zigbee, Ultra-wideband (UWB), IrDA, Home RF etc. However, the foremost promising wireless standard for WPAN applications is Zigbee, an occasional power consumption and low value technology, capable of handling giant sensor networks up to 65000 nodes. Another WPAN technology is Bluetooth, that was used because the basis for a brand new standard , IEEE 802.15 [4].Technical needs of WBAN embody the wants of WPAN properly like the present low power, low rate wireless sensor network standard-Zigbee. But the very fact that Zigbee doesn't address majority of core technical needs of WBAN highlights the necessity for a typical specifically designed for WBAN. Recognizing the nice market potential and fast technological developments during this sector, the Institute of Electrical and Electronics Engineering (IEEE) is developing an 802.15.6 standard optimized for low power WBAN devices supporting at a knowledge rate from ten Kb/s to ten Mb/s [1].

The unique characteristics compared to majority of core general WPAN are as follows:

- WBAN could be a small-scale network instead of WPAN relatively; short communications vary together with the communication in or on an individual's body (≤3m).
- Devices comprising WBAN are severely restricted in their computation capabilities, power for those deep-rooted into the body, and needed ascendable performances; rate up to 10Mbps, peak power consumption up to 40MW.
- Data that are detected, collected and transmitted in WBAN is comparatively sensitive; high security and privacy.
- Devices of WBAN closely surround the human body to contain its transportation systems; high safety meeting regulation needs for SAR (Specific Absorption Ratio).
- A network topology is often utilized in WBAN wherever communication centrally organized and each sensor node is directly joined to a master node. However, it cannot continually meet the required reliable ness demand. Hence, a star-mesh hybrid topology extends the traditional approach and creates mesh networking among central coordinators in multiple star networks.

III. GENERAL ARCHITECTURE

This section provides an outline of general design in WBAN.Each form of network has its typical enabling technology, outlined by IEEE. A WPAN uses IEEE 802.15.1 (Bluetooth) or 802.15.4 (Zigbee), a wireless fidelity uses IEEE 802.11 (WiFi) and WMAN IEEE 802.16 (WiMax).The communication during a WAN may be established via satellite links. As mentioned before, though challenges faced by WBAN are in many ways kind of like WSN, there are intrinsic variations between the two requiring special attention.

The development associated analysis within the domain of WBANs is simply at an early stage. As a consequence, the word isn't continually clearly denned. In literature, protocols developed for WBANs will span from communication between the sensors on the body to communication from a body node to an information centre connected to the net. So as to own clear understanding, we tend to propose the subsequent dentitions: intra-body communication and extra-body communication. An example is shown on Figure 1.

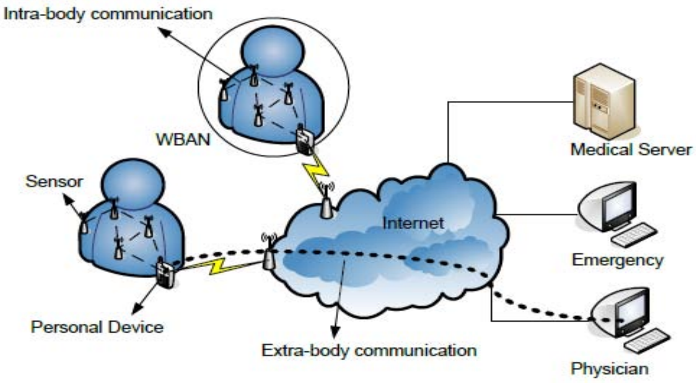

Figure 1. Example of intra-body and extra-body communication in a WBAN

The former controls the data handling on the body between the sensors or actuators and therefore the personal device [05-08], the latter ensures communication between the personal device and an external network [09]. Doing so, the medical data from the patient reception are often consulted by a doctor or hold on during a medical info. This segmentation is comparable to the one denned in [10] wherever a multi-tiered telemedicine system is conferred. Tier one encompasses the intra-body communication, tier two a pair of the extra-body communication between the personal device and therefore the web and tier three represents the extra-body communication from the web to the medical server. The mixtures of intra-body and extra-body communication are often seen as an enabler for present health care service provisioning. An example is often found in [11] wherever Utility Grid Computing is combined with a WBAN. Doing so, the information extracted from the WBAN is shipped to the grid that has access to applicable procedure services with high information measure and to an outsized assortment of distributed time-varying resources. To date, development has been chiefly targeted on building the system design and repair platform for extra-body communication. a lot of those implementations target the repackaging of ancient sensors (e.g. ECG, heart rate) with existing wireless devices. They think about a really restricted WBAN consisting of solely some sensors that square measure directly and wirelessly connected to a personal device. Any they use transceivers with an oversized kind issue and huge antennas that don't seem to be tailored to be used on a body.

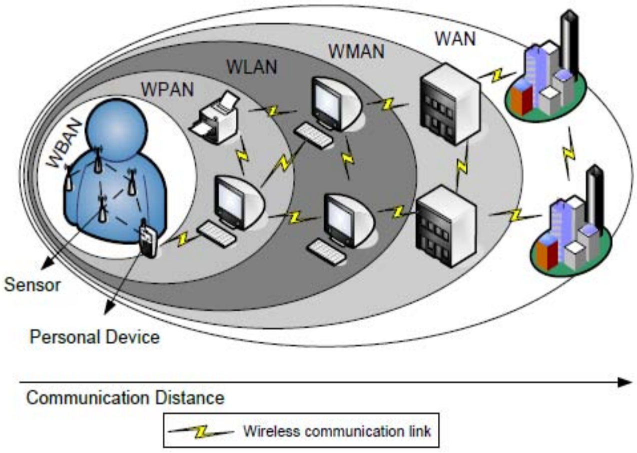

Figure 2. Positioning of a Wireless Body Area Network in the realm of wireless networks.

In Figure 2, a WBAN is compared with alternative sorts of wireless networks, like Wireless Personal (WPAN), Wireless Local (WLAN), Wireless Metropolitan (WMAN) and Wide Area Networks (WAN) [12].A WBAN is operated near the human body and its communication vary are going to be restricted to a couple of meters, with typical values around 1-2 meters. Whereas a WBAN is dedicated to interconnection of one person's wearable devices, a WPAN could be a network within the setting round the person. The communication vary will reach up to ten meters for top rate applications and up to many dozens of meters for low rate applications.

In many papers, Wireless Body Area Networks square measure thought-about as a special sort of a Wireless Sensor Network or a Wireless Sensor and Actuator Network (WSAN) with its own requirements. However, ancient Sensor networks don't tackle the precise challenges related to frame watching. The frame consists of a sophisticated internal setting that responds to and interacts with its external surroundings, however is during a means separate and self-contained. The frame setting not solely incorporates a smaller scale, however conjointly needs a special sort and frequency of watching, with totally different challenges than those two-faced by WSNs. The watching of medical data ends up in associate degree exaggerated demand for dependability. The convenience of use of sensors placed on the body results in tiny low type issue that has the battery and antenna half, leading to the next would like for energy potency. Sensor nodes will move with respect to one another.

IV. Requirements Of Wban

We categorized requirement of WBAN into two categories i.e. systems and security. Further detail is described in the following subsection

A. System Requirements

This sub-section provides brief description of system requirements that viewed in three different aspects such as type of devices, data rate and energy.

1) Types of devices

a) *Sensor node:* A device that responds to and gathers data on physical stimuli processes the data if necessary and reports this information wirelessly. It consists of several components which are sensor hardware, a power unit, a processor, memory and a transmitter or transceiver.

b) *Gateway (Personal Device):* It gathers all the information acquired by the sensor nodes and informs the users. The components are a power unit, memory and a transceiver. This device is also called a Body Control Unit (BCU), body gateway or a sink.

c) *Monitoring Server:* It is consists of database for data storage and processing and analysing software for delivering system intended services.

2) Data rates

The dependability of the data transmission is provided interims of the mandatory bit error rate (BER) that is employed as a live for the amount of packets lost. For a medical device, the dependability depends on the data rate. Low rate devices will address a high BER whereas devices with a better rate need a lower BER. The specified BER is additionally passionate about the criticalness of the info.

3) Energy

Energy consumption are often divided into three domains: sensing, communication and processing [2] [5].However, the energy consumption for communication is quite computation in WBAN. Further, higher security needs typically correspond to a lot of energy consumption for cryptographic discipline operations.

B. Security Requirements

The security and privacy of patient-related knowledge square measure two indispensable elements for the system security of the WBAN. By data security, it suggests that the protection of data from unauthorized users whereas data being keep and transferred and data privacy suggests hat right of people to regulate the gathering and use of private information concerning themselves. Security and privacy problems area unit raised automatically once the information is formed, transferred, hold on and processed in info systems [13]. The health Insurance Portability and Accountability Act (HIPAA) mandates that, because the sensors in WBAN collect the wearer’s health knowledge (which is thought to be personal information), care must be taken to guard it from unauthorized access and change of state [14][15].Because WBAN systems and their supporting infrastructure area unit operated with very rigorous constraints, they gift a larger challenge within the areas of outturn, information integrity and information security in comparison to ancient clinical systems.

The protection mechanisms utilized in WBAN for the later want specific options that ought to be taken into consideration once coming up with the protection design. Thus, the system has to adjust to the subsequent major security necessities as in TABLE 2 [15][16][17]:

TABLE II. MAJOR SECURITY REQUIREMENTS IN WBAN

Major security requirement	*Description*
Data storage security requirements	
Confidentially	Patient-related data should be kept confidential during storage periods. Especially, it's confidentially should be robust against node compromise and user collusion. Encryption and Access Control List are main methods providing data confidentiality.
Integrity Assurance	Patient-related data must not be modified illegally during storage periods.
Dependability	Patient-related data must be readily retrievable when node failure or data erasure happens.
Data access security requirements	
Access control (privacy)	A fine-grained data access policy shall be enforced to prevent unauthorized access to patient-related data generated by the WBAN.
Accountability	When a user of the WBAN abuses his/her privilege to carry out unauthorized actions on patient-related data, he/she should be identified and held accountable.
Revocability	The privileges of WBAN users or nodes should be deprived in time if they are identified as compromised or behave maliciously.
Non-repudiation	The origin of a piece of patient-related data cannot be denied by the source that generated it.
Other security requirements	
Authentication	The sender of the patient-related data must be authenticated, and injection of data from outside the WBAN should be prevented.
Availability	The patient-related data should be accessible even under denial-of-service (DoS) attacks.

C. Existing Security Mechanisms

Security mechanisms are processes that are used to detect, prevent and endure security attacks. although there are important security mechanisms for ancient networks (i.e., wired and ad hoc) they're typically in a roundabout way applicable to resource unnatural wireless medical sensor networks, therefore this sub-section discusses the problems regarding existing security mechanisms, as follows:

1) Cryptography

As wireless body area sensor networks alter sensitive physiological info, sturdy cryptographic functions (i.e., encryption, authentication, integrity, etc.) are unit preponderating necessities for developing any secure attention application. These cryptographic functions give patient privacy and security against several malicious attacks. Strong cryptography needs intensive computation and resources, so choosing acceptable cryptography area unit a difficult task for resource hungry medical device nodes that may provides most security while utilizing the minimum resources. Further,

The selection of cryptography system depends on the computation and communication capability of the sensor nodes. Some argue that asymmetric crypto systems are typically too high-priced for medical sensors and interchangeable crypto systems don't seem to be versatile enough [18]. However, applying the protection mechanisms to resource forced medical sensors ought to be chosen supported the subsequent considerations: Energy: what quantity energy is required to perform the crypto functions. Memory: what quantity memory (i.e., read only memory and random access memory) is required for security mechanisms. Execution-time: what quantity time is needed to execute the security mechanisms.

2) Key Management

Key management protocols are measure basic necessities to develop a secure application. These protocols are used to set up and distribute varied forms of cryptographic keys to nodes within the network. Generally, there are three styles of key management protocols, namely, trusty server, key pre-distribution and self imposing [19].

a) *Trusted server:* protocols consider a trusty base station accountable for establishing the key agreement within the network. it's thought-about that the trusty server protocols area unit compatible to hierarchal networks within the presence of unlimited resource gateways. Although, trusty server primarily based schemes give stronger security to hierarchal networks, in an exceedingly period atmosphere, a trusty server might become one purpose for the complete network failure; hence, they're not appropriate for vital applications (e.g., healthcare) [19].

b) *Key pre-distribution:* Protocols area unit supported symmetric key cryptography, wherever secret keys area unit hold on within the network before the network readying. The key pre-distribution protocols are simple to implement, and supply comparatively less procedure complexness, creating them additional appropriate for resource unnatural sensing element networks.

c) *Self enforcing:* protocols employing a public-key infrastructure offer several benefits, such as, strong security, quantifiability, and memory potency. Earlier public key based mostly solutions were thought to be too computationally overpriced (i.e., RSA [20] and Diffie-Hellman key exchange [21]) for wireless sensor networks. However, some researchers have shown those Elliptic curves cryptographic discipline based mostly schemes are viable on resource affected networks. In fact, in time period implementation, the ECC based mostly necessary cryptographic primitives (e.g., signature generation and verification) are measure still overpriced in term of the time complexness.

3) *Secure Routing*

In home care or disaster eventualities sensor devices might require sending their data to alternative devices outside their immediate radio vary [22]. Therefore, routing and message forwarding could be a crucial service for end-to-end communication. So far, several of routing protocols are projected for sensor networks; however none of them are designed with strong security as a goal. Karlof-Wagner mentioned the actual fact that routing protocols suffer from several security vulnerabilities, like associate degree offender may launch denial-of-service attacks on the routing protocol. An assailant may conjointly inject malicious routing info into the network, leading to inconsistencies within the routing. Further, most of current proposals area unit designed for static wireless sensor networks however quality has not been taken into account, whereas healthcare applications need quality supported routing protocols. Additionally, planning secure routing protocols for mobile networks could be an advanced task and current WMSNs healthcare security necessities can create it additional advanced after they become time period applications.

4) *Resilience to Node Capture*

Resilience against node capture is one in all the foremost difficult issues in sensor networks. In real time healthcare applications, the medical sensors are placed on a patient’s body, whereas, the environmental sensors are placed on hospital premises (e.g., ward room, operation area etc.) which can be simply accessible to attackers. Thus, an attacker might be able to capture a sensor node, get its cryptanalytic info and alter the sensor programming consequently. Later, he/she will place the compromised node into the network, which may endanger application success [23].The current cryptographic functions (i.e., node authentication and identification) might discover and defend against node compromised attacks to a point, however these compromised node attacks can't be detected instantly [23] that could be a massive issue for healthcare application. For instance, contemplate the case of a warning. One doable resolution to forestall this attack is to use tamper resistant hardware; but, tamper resistant hardware isn't a price effective resolution.

5) *Trust Management*

Trust signifies the mutual association of any two trustworthy nodes (i.e., sensor node and information aggregator node), that are sharing their data. In [24] trust is outlined as “the degree to that a node ought to be trustworthy, secure, or reliable throughout any interaction with the node”. Wireless health care applications rely upon distributed cooperation among the network nodes. The key side of healthcare applications may be a trust analysis on the behaviour of a node (i.e., data delivery and quality), so trust management systems area unit helpful to notice the degree of trust of a node. Boukerche-Ren [24], evaluated the trust for mobile healthcare system. However, trust management should still be enforced in period aid application mistreatment WMSNs, to confirm a clearer image of trait of the parties concerned (i.e., medical sensors, etc.).

6) *Secure Localization*

WBANs facilitate mobility for patient’s comfort, thus patient location estimations are required for the success of healthcare applications. Since, medical sensors’ sense physiological information of a personal, they additionally ought to report the patient’s location to a far off server. As a result, medical sensors need to remember of patient location, i.e., referred to as localization. In [24] the authors mentioned localization systems that were divided into: distance/angle estimation, position computation and localization algorithms, and more, they mentioned attacks on localization systems. In [23] the authors argue that quality supported secure localization protocols still ought to be explored.

7) *Robustness to Communication Denial-of-Services*

An offender tries to disrupt the network’s operation by broadcasting high-energy signals. If the broadcasting is powerful enough, then the complete network communication could be jammed. Different attacks are potential, like Associate in nursing opponent might delay communication by violating the medium access management protocol. Moreover, Associate in nursing opponent will transmit packets whereas a neighbour node is additionally transmission. As shown in Table 3. Since, the WBASN healthcare applications are mobile in nature; as a result, secure DoS attack countermeasures still would like any investigation for real time healthcare application exploitation WBANs.

TABLE III. DENIAL-OF-SERVICE ATTACKS AND COUNTERMEASURES AT EACH NETWORK LAYER

Network Layer	*Attacks*	*Countermeasures*
Physical Layer	Jamming	Detect and sleep, route around jammed areas
	Node tampering	Temper-proof boxing
Link Layer/medium access control	Collision, unfairness and	Authentication and anti-replay protection
	Denial of sleep	Authentication and anti-replay, detect and sleep, broadcast attack protection
Network and routing Layer	Neglect and greed, misdirection, spoofing, replaying, routing-control traffic or clustering	Authentication and anti-replay protection, Secure cluster formation
	Homing	Header encryption and dummy packets
	Hello floods	Pair-wise authentication, geographic routing
Transport Layer	Flooding	SYN cookies
	De-synchronization	Packet authentication
Application Layer	Overwhelming sensors	Sensor tuning, data aggregation
	Reprogramming attack	Authentication and anti-replay protection Authentication streams
	Path-based DoS	Authentication and anti-replay protection

As we have seen in the above section there are tremendous sturdy security mechanisms however these mechanisms aren't directly applicable to healthcare applications wherever resource strained devices are used. Consequently, the protection gap between the higher than securities are measure still has to look for attention applications.

V. RELATED RESEARCH

Several research groups have been developing the implantable or wearable devices for health observation in WBAN communications. However, these researches in the main specialize in building system design and in lesser extent on developing networking protocols. Besides, it's tough to get solutions providing security for WBAN and security has typically been lined individually. Some researches show the security for sensor nodes in or on the human body in WBAN. They show that the sensors have to be compelled to build use of cryptographic algorithms to encrypt the data they send to regulate node and therefore the random variety that is employed in security protocols will be generated by biometrics [25].

Biometrics approach uses associate degree intrinsic characteristic of the human body as the authentication identity or the means that of securing the distribution of a cipher key to secure inter-WBAN communications. At initial stage, many security schemes of WBAN are established by the symmetric cryptosystem due to restricted resources, however have issues like delaying the revealing of the symmetric keys and providing weak security comparatively since it's not resilient against physical compromise [26].Furthermore; the complexness of sensing element node’s key managements in WBAN provides every part overload.

On the contrary, some researches utilizing the asymmetric cryptosystem in mobile and ad hoc networks even have been planned, and tried to look at the distinctive characteristics of WBAN [13][27]. One concern about the asymmetric cryptosystem is a resource constraint problem but recent work has shown that performing ECC consumes a lot less of memory and computing power [27]. These researches addressed a scope of restricted WBAN however they exclude the ingrained sensor networks. The target of WBAN is additionally the implementation of body area network that may contact with everyplace in, on, and out the human body.

Otto et al. [28] and Jovanov et al. [29] present a system design that each handles the communication inside the WBAN and between the WBANs and a medical server in an exceedingly multi-tier telemedicine system. The communication between the sensors and also the sink is single-hop, slotted and uses ZigBee or Bluetooth. The slots are synchronous exploitation beacons sporadically sent by the sink. They use of the shelf wireless sensors to design a prototype WBAN like the Tmote sky platform from at one time Moteiv [30], currently sentilla [31].

The European MobiHealth project [32] provides a complete end-to-end mHealth platform for ambulant patient monitoring deployed over UMTS and GPRS networks. The MobiHealth patient/user is equipped with different sensors that constantly monitor vital signals, e.g. blood pressure, heart rate and electrocardiogram (ECG). Communication between the sensors and the personal device is Bluetooth or ZigBee based and is single-hop. The major issues considered are security, reliability of communication resources and QoS guarantees.

The French project BANET [33] aims to produce a framework, models and technologies to style optimized wireless communication systems targeting the widest vary of WBAN-based applications, within the shopper natural philosophy, medical and sport domains. They specialize in the study of the WBAN propagation channel, MAC protocols and existence of WBANs and alternative wireless networks.

The German BASUMA-project (Body Area System for Ubiquitous Multimedia Applications) [34] aims at developing a full platform for WBANs. As communication technique, a UWB-front-end is used and a MAC protocol based on IEEE 802.15.3. This protocol also uses time frames divided into contention free periods (with time slots) and contention access periods (CSMA/CA)

A flexible and economical WBASN answer appropriate for a large vary of applications is developed in [35]. The main target lies on posture and activity recognition applications by means that of sensible implementation and on-the-field testing. The sensors are WiMoCA-nodes, wherever sensors are delineated by tri-axial integrated MEMS accelerometers.

The Flemish IBBT IM3-project (Interactive Mobile Medical Monitoring) focuses on the research and implementation of a wearable system for health monitoring [36]. Patient data is collected using a WBAN and analysed at the medical hub worn by the patient. If an event (e.g. heart rhythm problems) is detected, a signal is sent to a health care practitioner who can view and analyse the patient data remotely.

By comparison, every approach has many problems to be thought of in terms of the safety services in WBAN.Further, there's a trade-off between performance and security. Associated with these, another analysis cluster has enforced these two heterogeneous cryptosystems in their analysis that provides security and privacy to WBAN. In [4], they believe that these two cryptosystems may be applied within the authentication of WBAN depleting every liability of them quickly. They primarily focus on the authentication within the overall coverage of WBAN together with in-, on- and out body to produce the robust and adequate security for WBAN.

VI. Conclusions

WBAN is an emerging and promising technology that will change people's healthcare experiences revolutionarily. It brings out a replacement set of challenges in terms of quantifiability, sensor deployment and density, energy potency, security and privacy and wireless technology. During this survey, we've reviewed the present development on Wireless Body Area Network and that we targeted in security problems faced by this technology. Specifically, this work presents an outline of the variations between Wireless Body Area Network and Wireless sensor Network. We tend to conferred variations of design in WBAN and different kind of Wireless sensor network. Several key applications can get pleasure from the advanced integration of WBAN and rising wireless technologies. They embrace remote health observance, military, sports training and plenty of others. It's additionally necessary to focus on here that WBAN poses with numerous sorts of security issues. Thus, we tend to believe that WBAN needs a robust security system and a part of its authentication. A secured authentication system is extraordinarily required in numerous applications WBAN technology notably in medical and military.

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