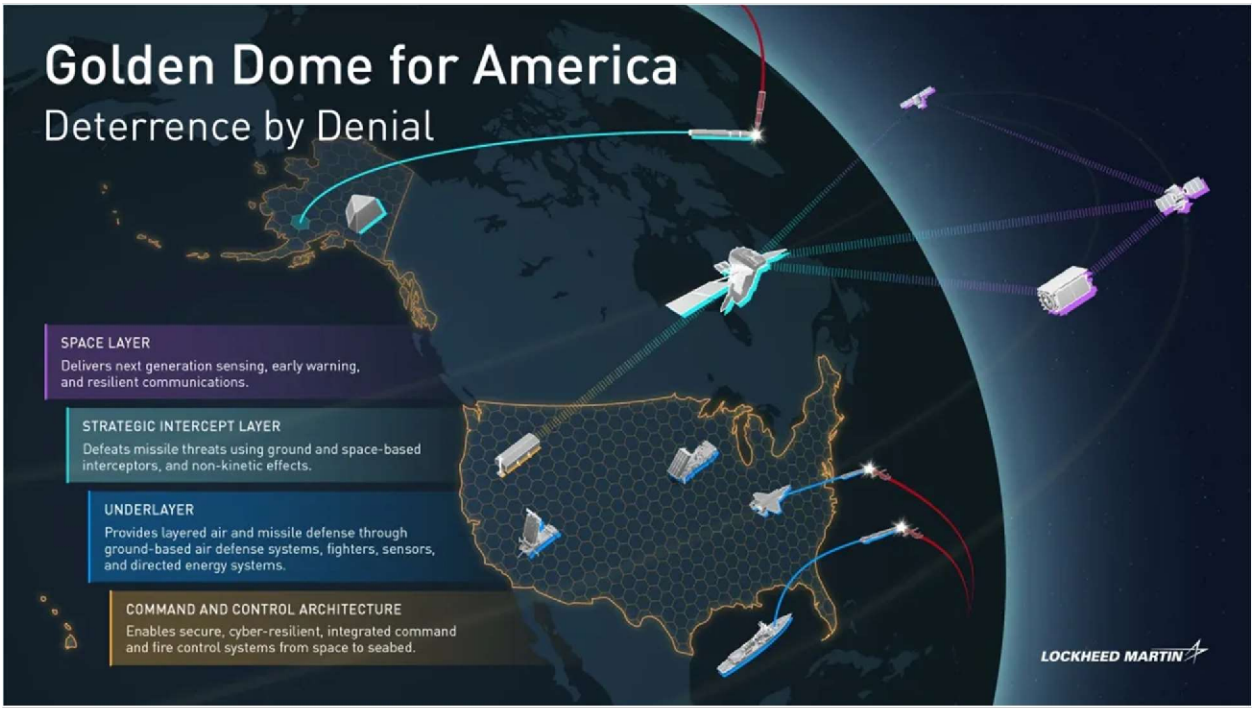
Psinergy “golden dome” PDF

https://www.lockheedmartin.com/en-us/capabilities/missile-defense/golden-dome-missile-defense.html



Golden Dome stands as a layered defense shield, safeguarding the American homeland with unwavering precision, ensuring the security and resilience of our nation.

Golden Dome for America is a revolutionary concept to further the goals of peace through strength and President Trump’s vision for deterring adversaries from attacks on the homeland. This next generation defense shield will identify incoming projectiles, calculate trajectory and deploy interceptor missiles to destroy them mid-flight, safeguarding the homeland and projecting American Strength.

THE CHALLENGE: Mobilize American industry and innovation to deliver the first Golden Dome for America defenses by the end of next year.

While we deploy that combat-proven foundation, we will bring in the best and brightest of American innovation to rapidly develop game-changing tech – like space-based interceptors and hypersonic defenses – that will ensure America’s Golden Dome stays well ahead of adversary threats.

THE APPROACH: The fastest, most efficient path to a Golden Dome for America is to bring the best of the defense and commercial industries together as a whole of industry approach.

This is a Manhattan Project-scale mission, one that is both urgent and crucial to America’s security.

Lockheed Martin is ready to partner with the best in industry, emerging and large technology companies together to safeguard our nation. We lead the MDA’s National Team for C2BMC and successfully built the world’s most powerful missile defense software network, which connects forces around the world 24x7. We’ve proven our ability to work across industry to bring the best of the best to the warfighter, and we have existing

partnerships with defense, commercial tech companies and newer contractors to bring both proven and next-generation capabilities to the fight.

THE RISK: If a missile is coming over the horizon, that's not the time to do beta testing. Build on a combat-proven foundation today, while you innovate for the future.

This mission is too vital to leave to chance. Missile defense requires more than just AI or software expertise. It's about connecting a global array of complex systems that need to work at lightning speed and with pinpoint precision at the mission's moment of truth.

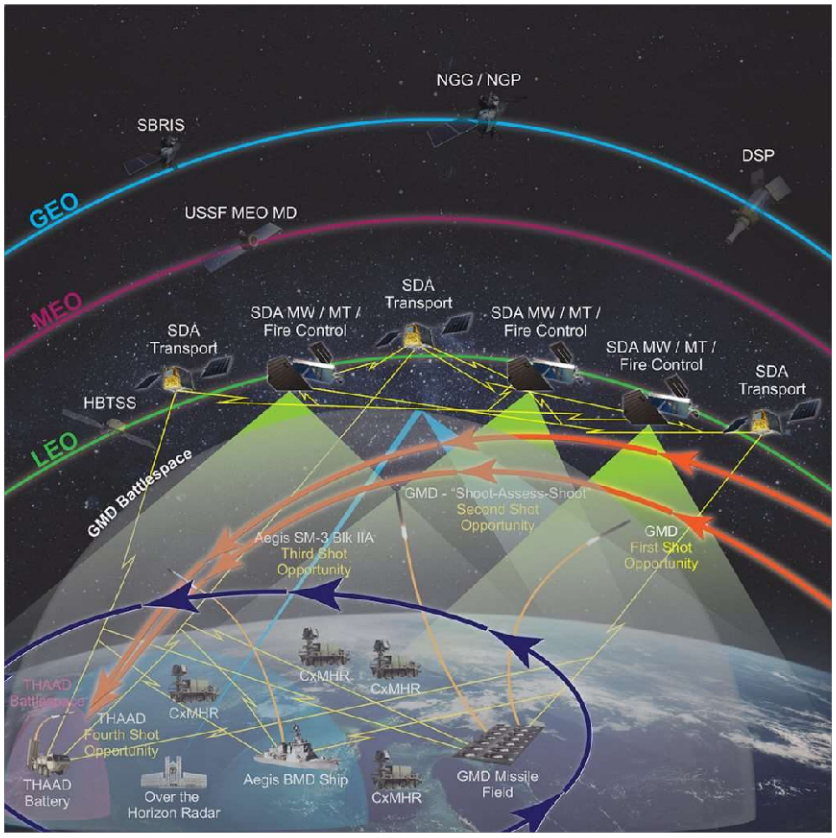
THE SOLUTION: Lockheed Martin has the proven, mission-tested capabilities and track record of integration to bring this effort to life.

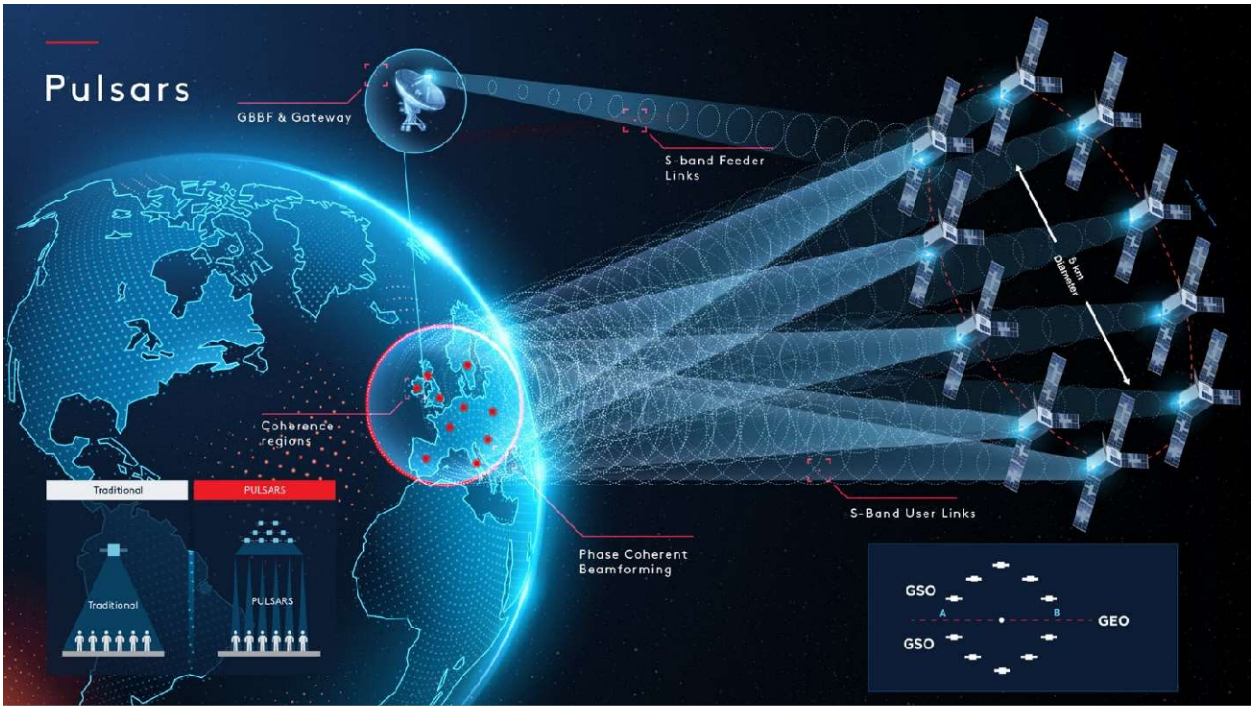
With that combat-proven foundation in place, our open architecture approach allows the best of commercial, defense and newer contractors to build game-changing innovations into the system as they become available, expanding range, territorial coverage, accelerating timelines, and strengthening deterrence.

This mission can't be left to chance with unproven technology – the mission must be met with proven capability providers, who can deliver the greatest innovation, with high reliability, at scale, and ahead of need.

Focused on the mission and the partnerships needed to succeed, our innovative solutions will safeguard our homeland and ensure America's continued security and prosperity.

https://www.leonardodrs.com/what-we-do/our-solutions/advanced-sensing/golden-dome-missile-defense/



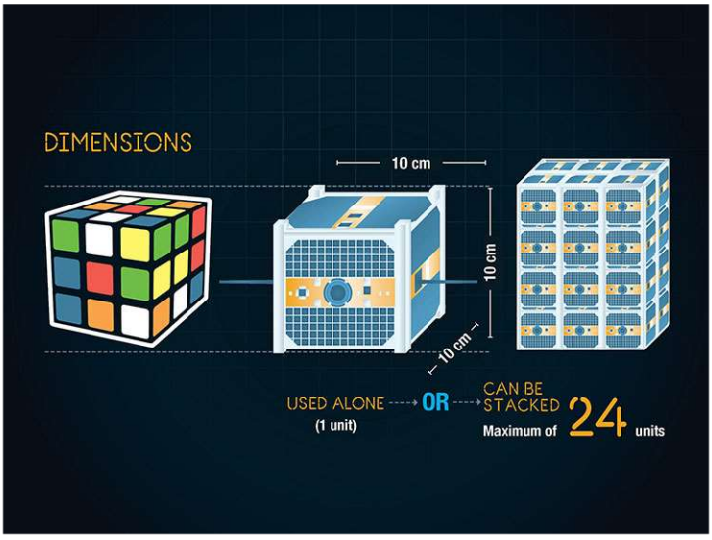


https://www.esa.int/ESA_Multimedia/Images/2023/10/Collaborating_CubeSats_for_monitoring_Earth3

Collaborating CubeSats for monitoring Earth

GBBF, or Ground-Based Beam Forming, is a technology used in satellite communications where the gateway ground station controls the formation and steering of spot beams from a satellite. In the S-band spectrum, this approach is commonly used in mobile satellite services (MSS) to simplify the satellite design and maximize flexibility.

A CubeSat is a standardized, cube-shaped miniaturized satellite used for space research and missions, defined by a modular "1U" unit of 10x10x10 centimeters. These nanosatellites are built from low-cost, readily available commercial components and can be launched as secondary payloads on rockets or from the International Space Station. CubeSats provide a cost-effective platform for students, universities, and commercial companies to develop and test new technologies, conduct scientific observations, and build constellations for various space-based applications

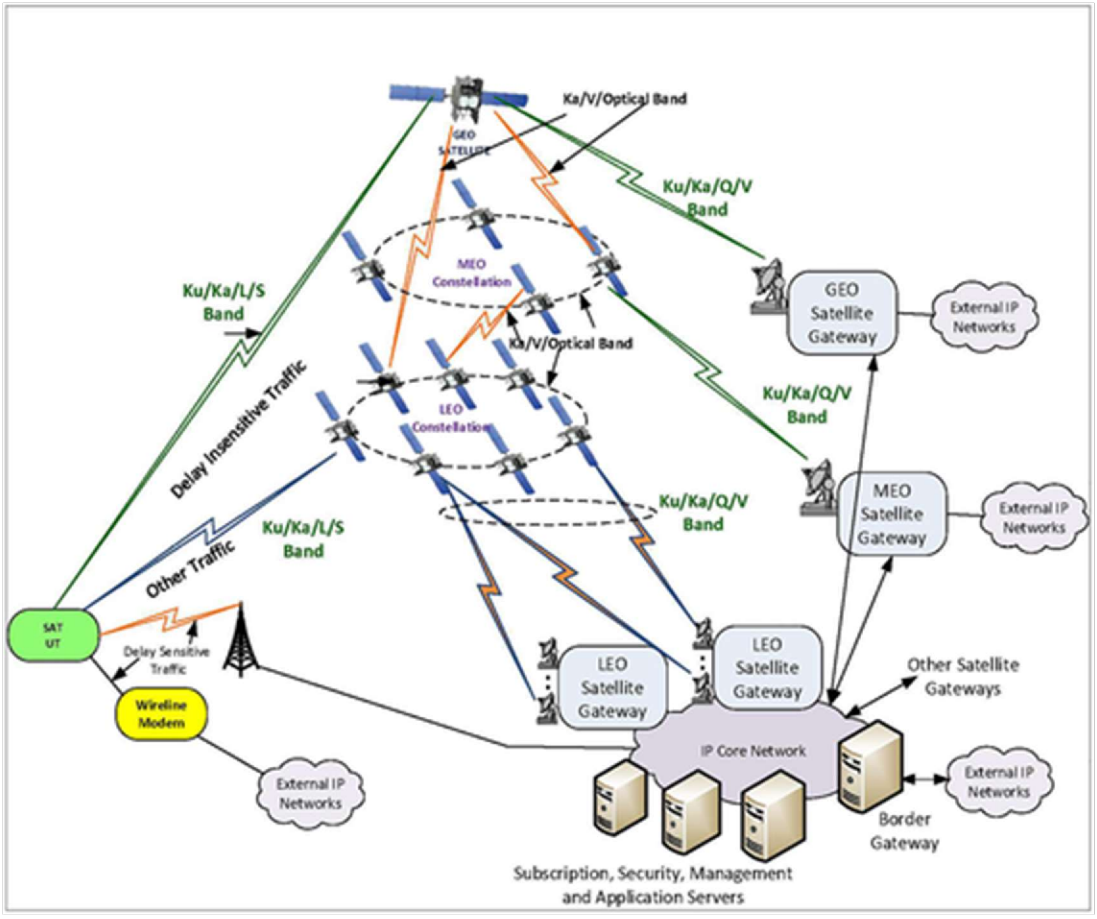


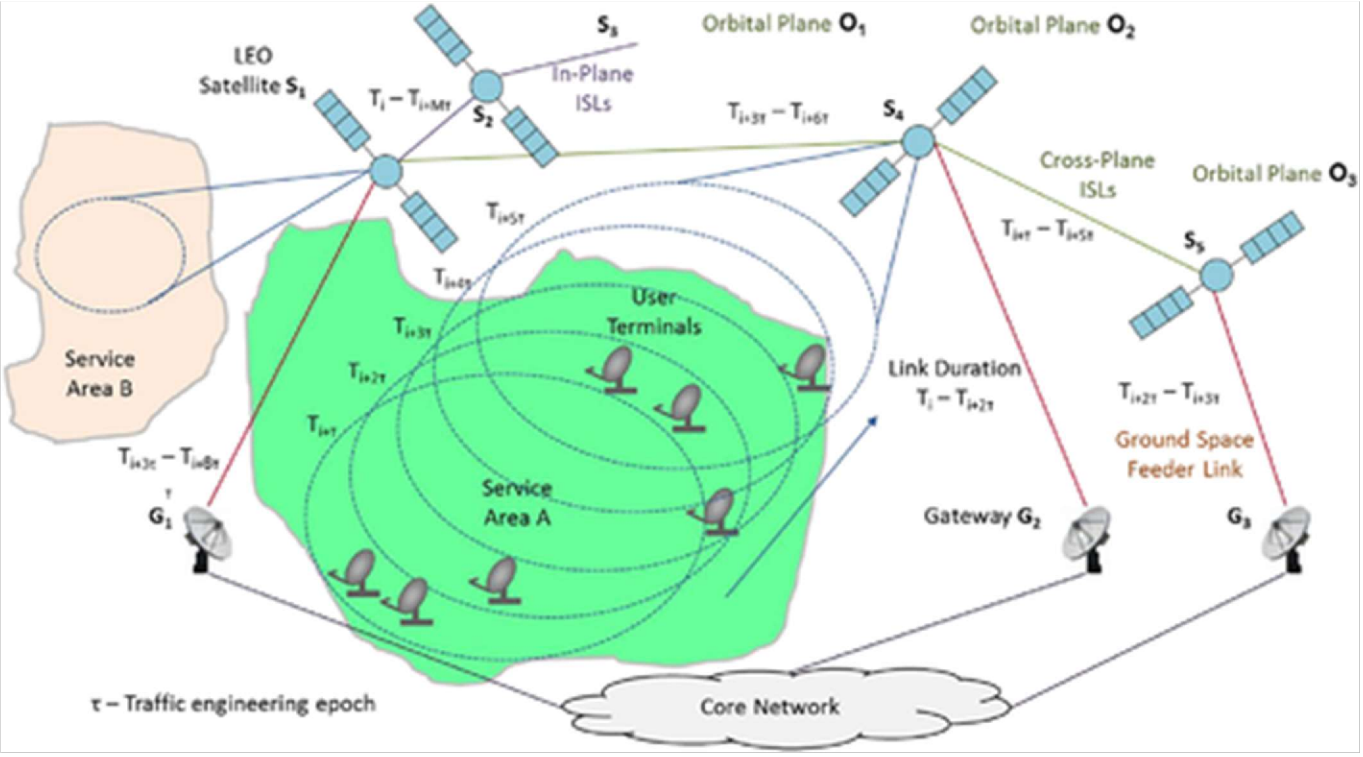
https://onlinelibrary.wiley.com/doi/10.1002/sat.1351

Next-generation global satellite system with mega-constellations

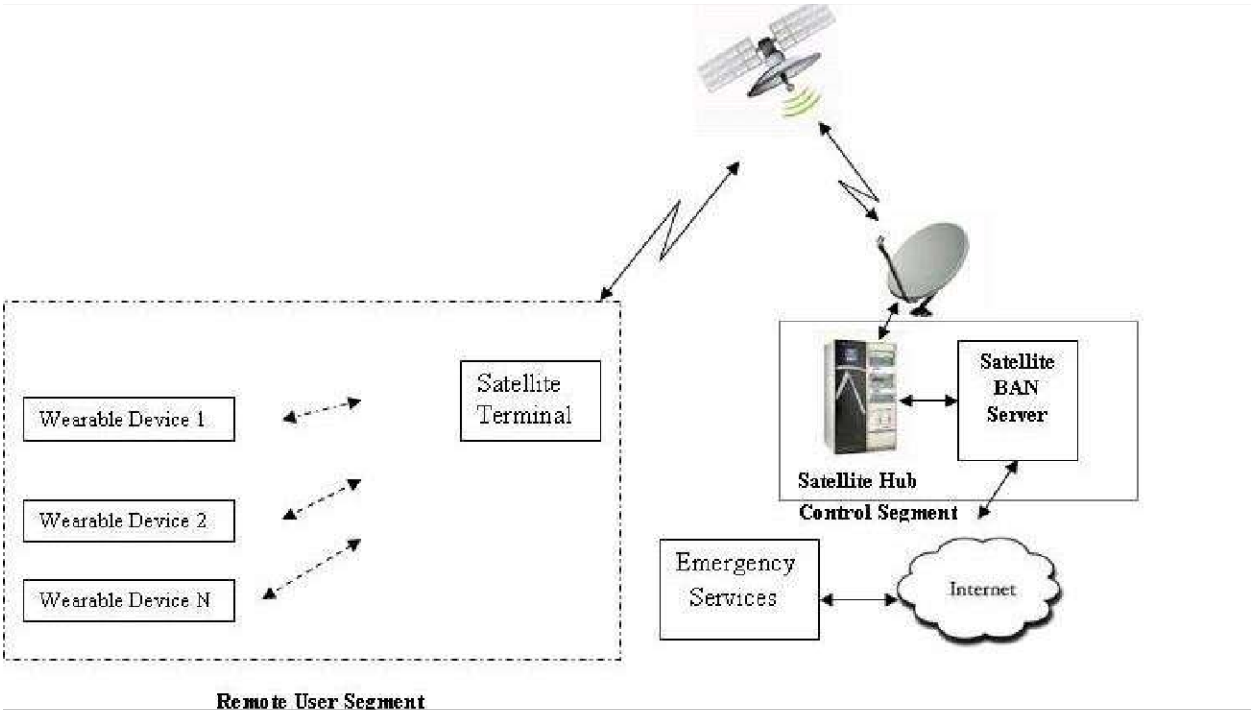
First published: 24 July 2020

Mega satellite constellations in low earth orbit (LEO) will provide complete global coverage; rapidly enhance overall capacity, even for unserved areas; and improve the quality of service (QoS) possible with lower signal propagation delays. Complemented by medium earth orbit (MEO) and geostationary earth orbit (GEO) satellites and terrestrial network components under a hybrid communications architecture, these constellations will enable universal 5G service across the world while supporting diverse 5G use cases. With an unobstructed line-of-sight visibility of approximately 3 min, a typical LEO satellite requires efficient user terminal (UT), satellite, gateway, and intersatellite link handovers. A comprehensive mobility design for mega-constellations involves cost-effective space and ground phased-array antennas for responsive and seamless tracking. An end-to-end multilayer protocol architecture spanning space and terrestrial technologies can be used to analyze and ensure QoS and mobility. A scalable routing and traffic engineering design based on software-defined networking adequately handles continuous variability in network topology, differentiated user demands, and traffic transport in both temporal and spatial dimensions. The space-based networks involving mega-constellations will be better integrated with their terrestrial counterparts by fully leveraging the multilayer 5G framework, which is the foundational feature of our hybrid architecture.





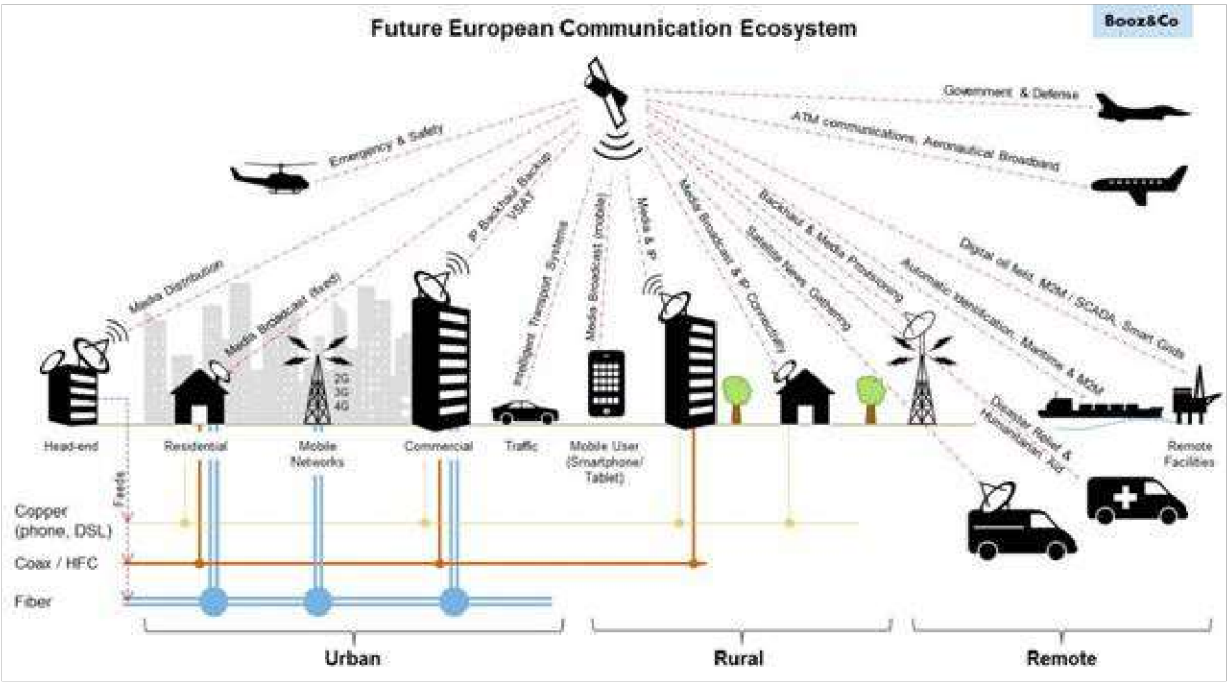
https://www.researchgate.net/publication/268446531_Satellite_based_Body_Area_Network



ABSTRACT A Body Area Network is a Wireless Network of wearable computing devices. With the advancement of microelectronics, communication and medical sciences, a Body Area Network, with the help of bio-signal sensors can collect relevant vital medical parameters in real-time and transfer it into a network for proactive healthcare and emergency mitigation services. In this paper, an attempt has been made to bring out the challenges for the development of a Satellite based Body Area Network. The paper discusses on the feasibility for the development of such a network, considering the available and future technologies. In this paper, the

author addresses on the architecture, design, and development issues of such a novel network and come up with the applications and outcomes with possible services, which this type of network can offer both on a national and global scale. A Satellite based Body Area Network does not exists now, so the author also tries to bring out the necessary technological challenges, which may be faced for the realization of such a network and deployment of associated services. General Terms Protocol, Health Care, Wi-Fi, DVB-RCS, Stroke, Heart Attack Keywords Body Area Network, Proactive Health Care, Satellite, WSN

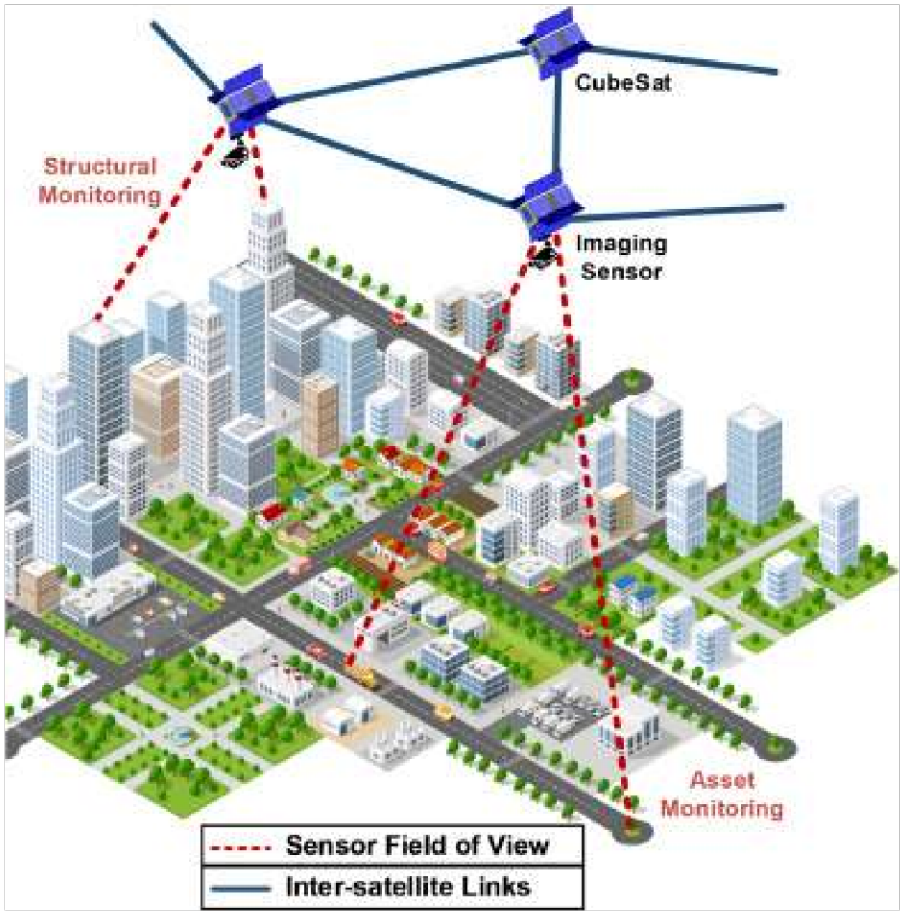
https://iot.ieee.org/articles-publications/newsletter/march-2016/the-internet-of-space-ios-a-future-backbone-for-the-internet-of-things.html



The Internet of Space Things (IoST) extends the Internet of Things (IoT) beyond Earth by using a network of small satellites, such as CubeSats, to provide global, scalable, and reliable connectivity for sensors and devices in remote or hard-to-reach locations on Earth and even in space. IoST overcomes the limitations of terrestrial networks by offering global coverage, enabling applications like remote monitoring of assets, tracking in maritime and transportation sectors, and facilitating advanced space exploration and colonization through interconnected robots and sensors

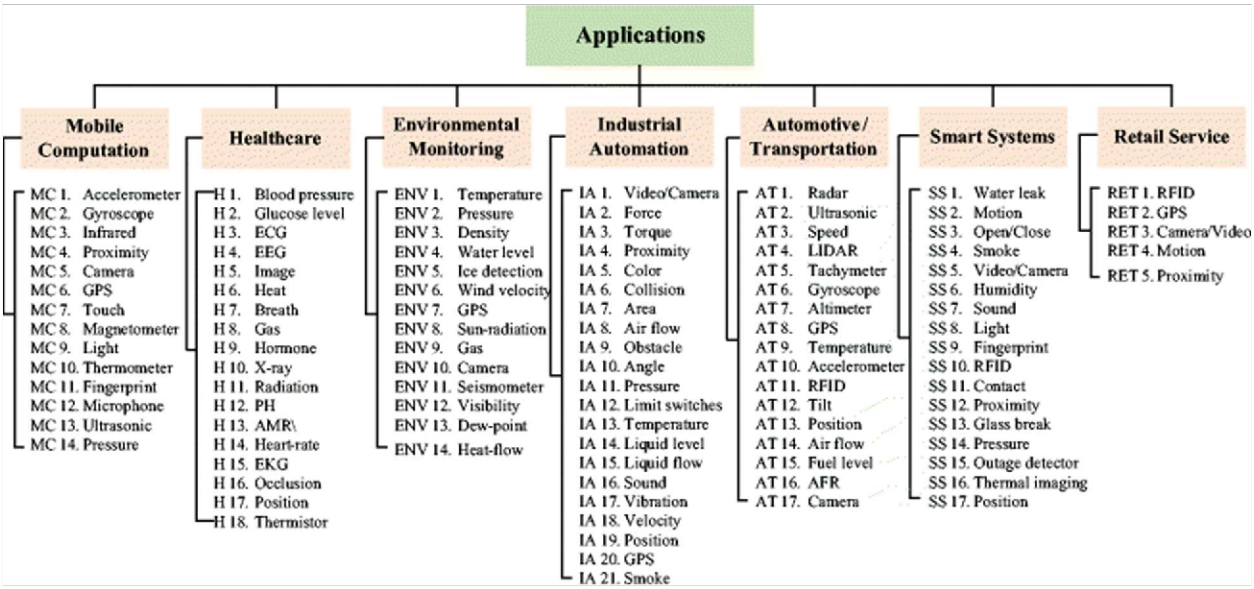
https://www.sciencedirect.com/science/article/abs/pii/S1389128618314191

The Internet of Space Things/CubeSats: A ubiquitous cyber-physical system for the connected world



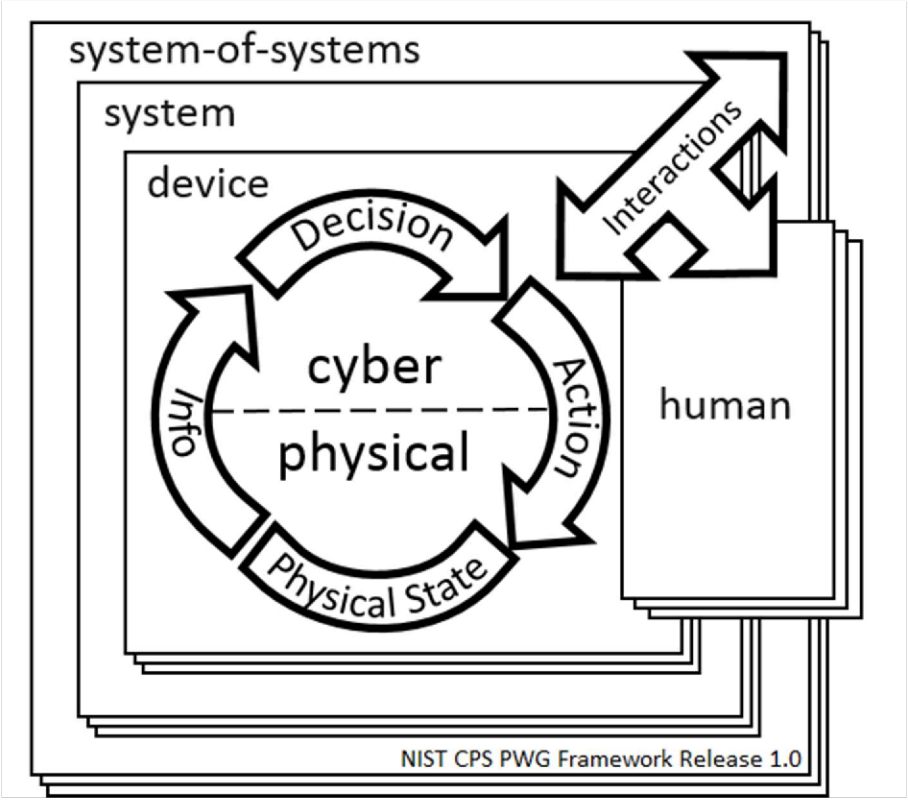
The Internet of Things (IoT) has been recognized as a key driver of 5G wireless communications, with a projected 50 billion endpoints by 2020 ranging from connected temperature sensors to unmanned aerial vehicles. The long term success of IoT is tied to its pervasiveness, an area where the heterogeneous connectivity solutions of today fall short by a large margin. The true potential of IoT can only be realized when it is augmented with a ubiquitous connectivity platform capable of functioning even in the most remote of locations. In this paper, a novel cyber-physical system spanning ground, air, and space, called the Internet of Space Things/CubeSats (IoST) is introduced. Centered around CubeSats, IoST is envisioned as a means to achieving global connectivity at low costs, which is further bolstered by the use of Software-Defined Networking and Network Function Virtualization which provide fine-grained control over the system hardware, improve network resource utilization, and simplify network management. In addition to a detailed component-level system description, novel solutions for tackling peculiarities of the space environment are also provided. Furthermore, the system's potential is showcased through a preliminary performance evaluation targeting key metrics such as latency and throughput.

https://www.researchgate.net/figure/Trillion-sensors-application-domains_fig2_321350132



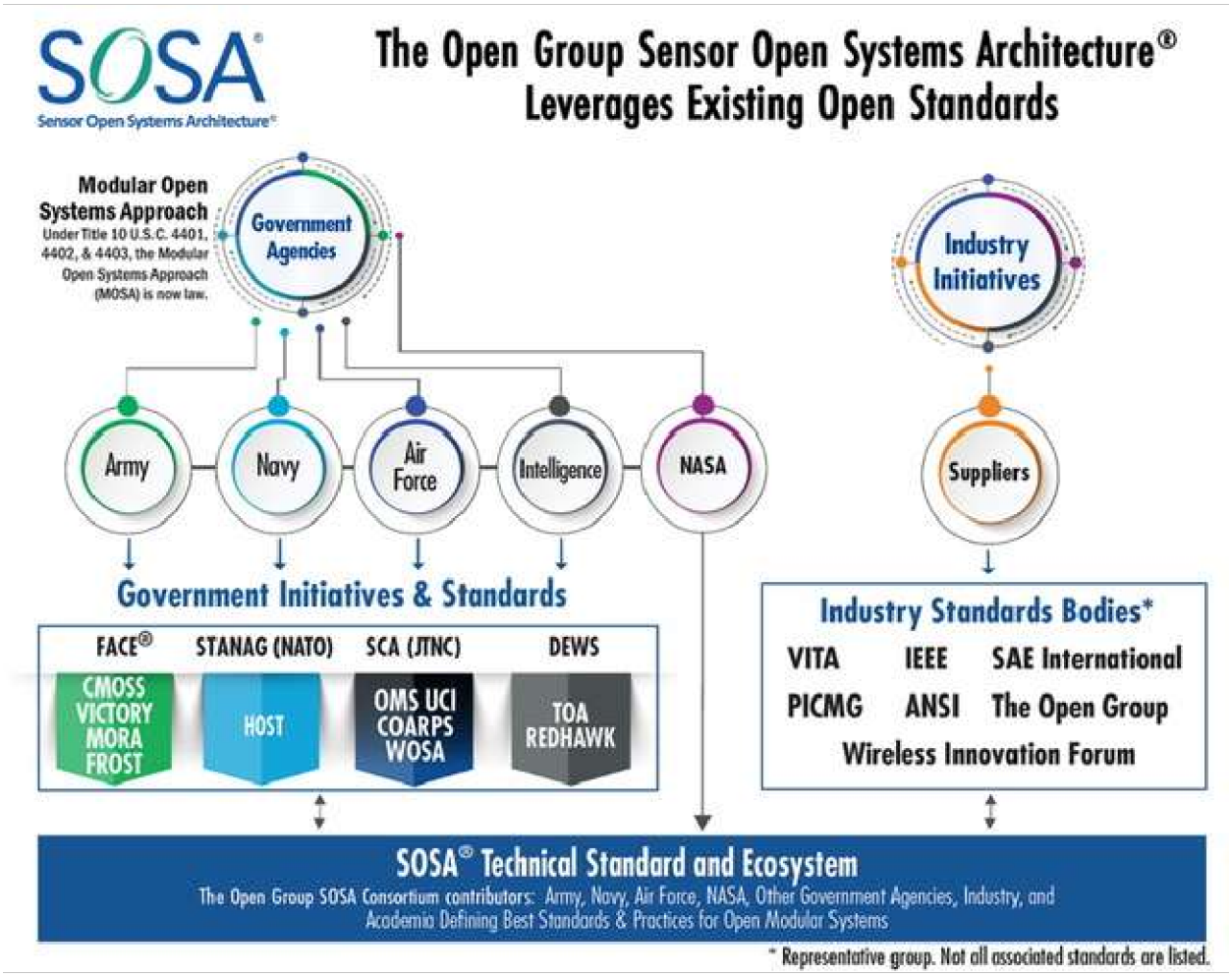
With the advancement of ubiquitous computing under the hood of Internet of Things (IoT) and Cyber-Physical Systems (CPS), the number of connected devices is expected to grow exponentially in the following decade. Pervasive sensing is the backbone of any IoT/CPS application. Billions of connected devices each having multiple sensors will lead us to...

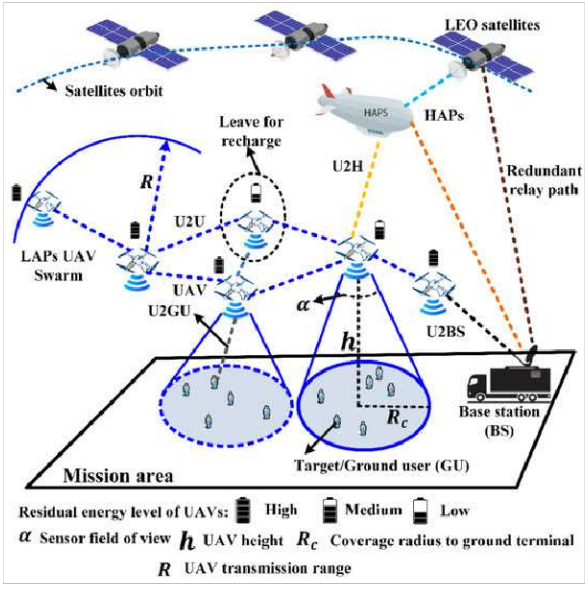
https://pages.nist.gov/cpspwg/



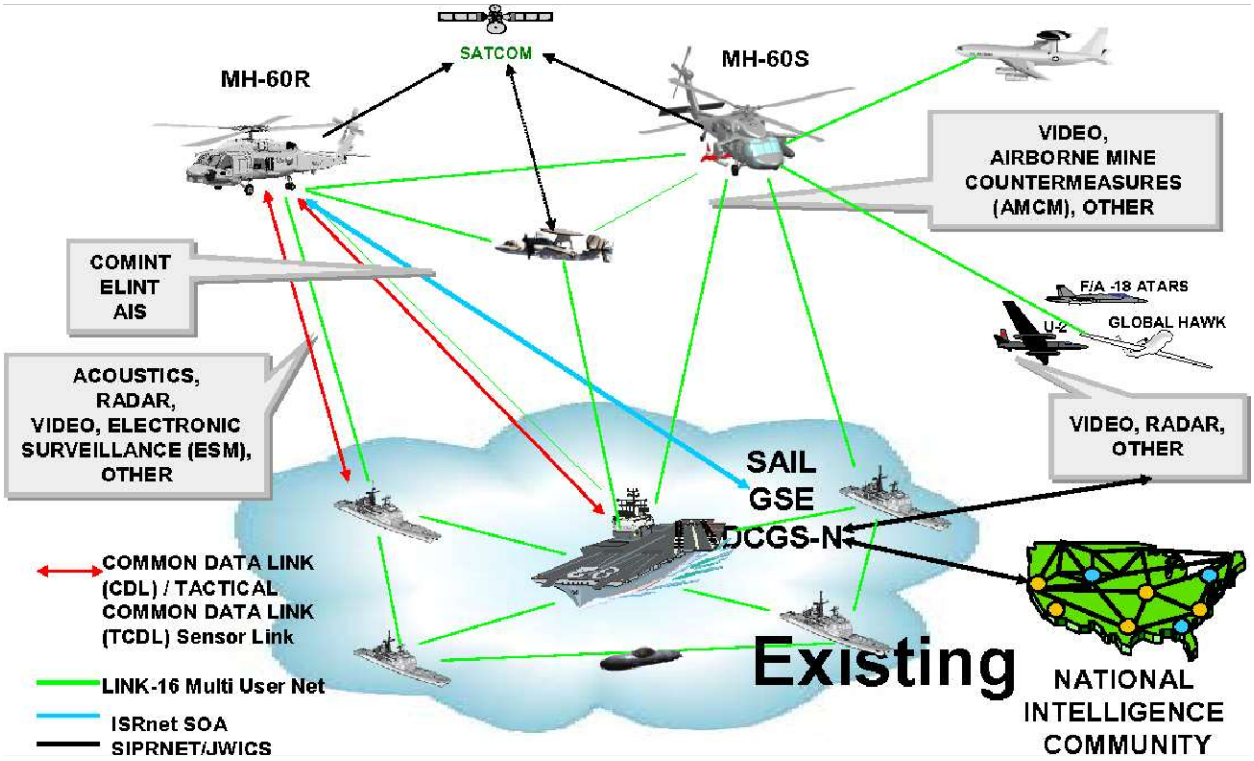
What is SOSA? The Open Group® Sensor Open Systems Architecture (SOSA™) is a standard that transitions sensor systems to an open architecture to facilitate interoperability, reuse and rapid technology insertion for faster response to emerging threats

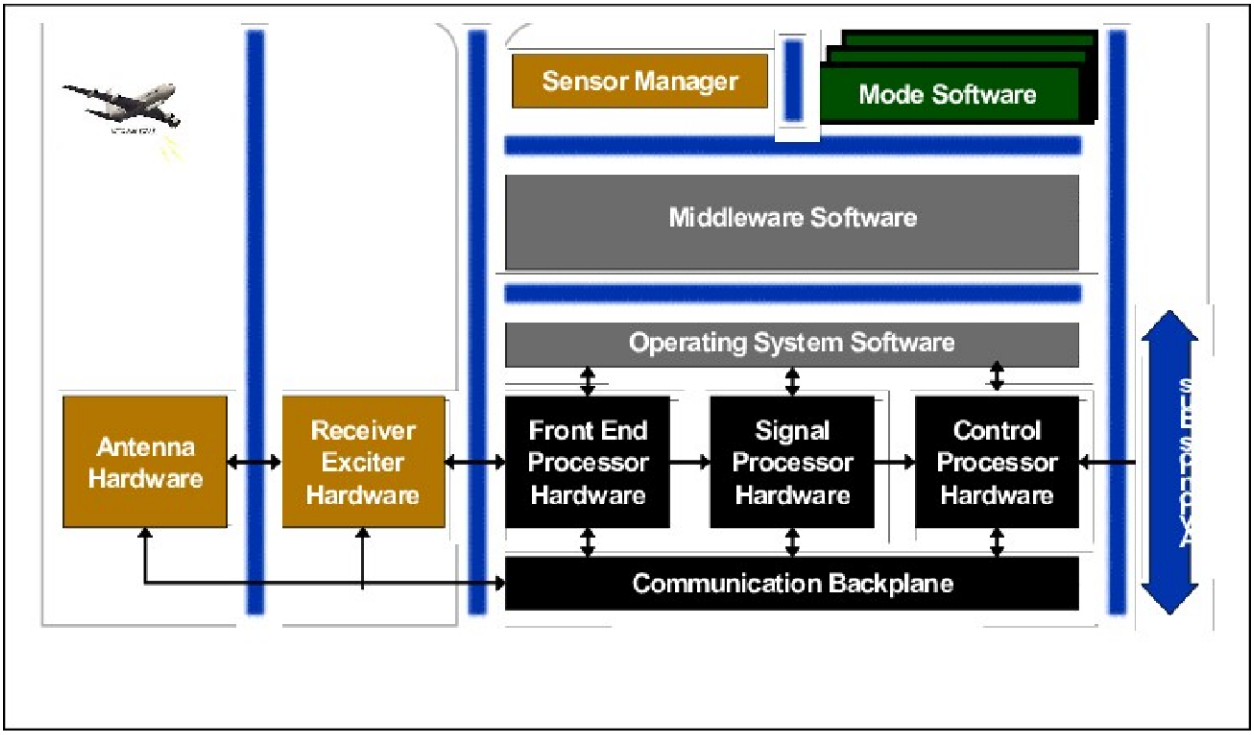
https://www.opengroup.org/sosa





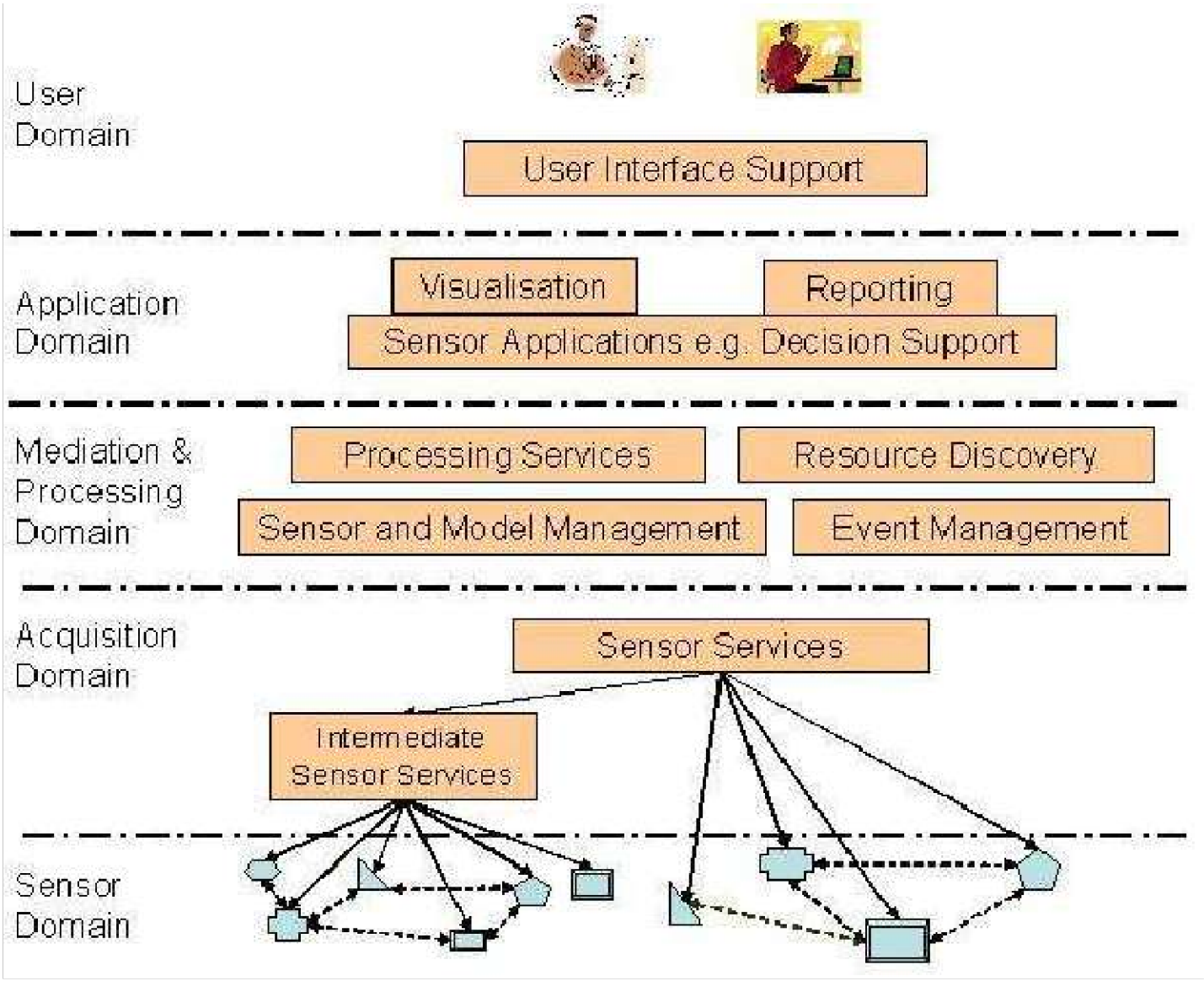
https://www.semanticscholar.org/paper/Optimizing-an-incremental-Modular-Open-System-in-Gaska/f6c3b14048af4ac64074cf21b22a321eee986942





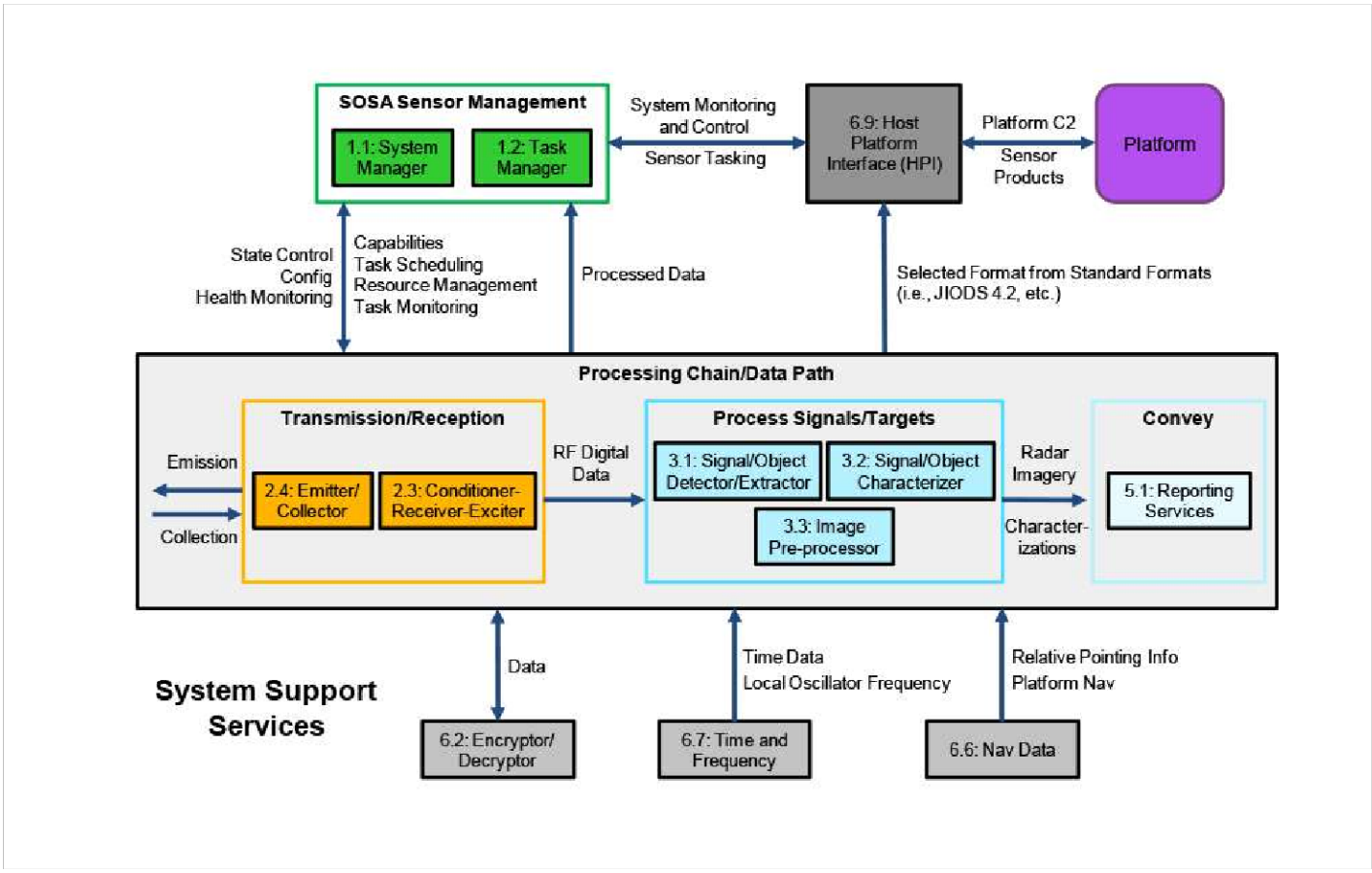
https://www.researchgate.net/figure/Open-Architecture-Radar-System_fig1_291331253

As the airborne ISR application space evolves, the quantities of data acquired by remote sensing systems such as radar, electro-optical, and infrared systems are growing larger, and advanced algorithms are imposing more challenging computational requirements for real-time processing. While the difficulties in processing sensor data in real-time is...



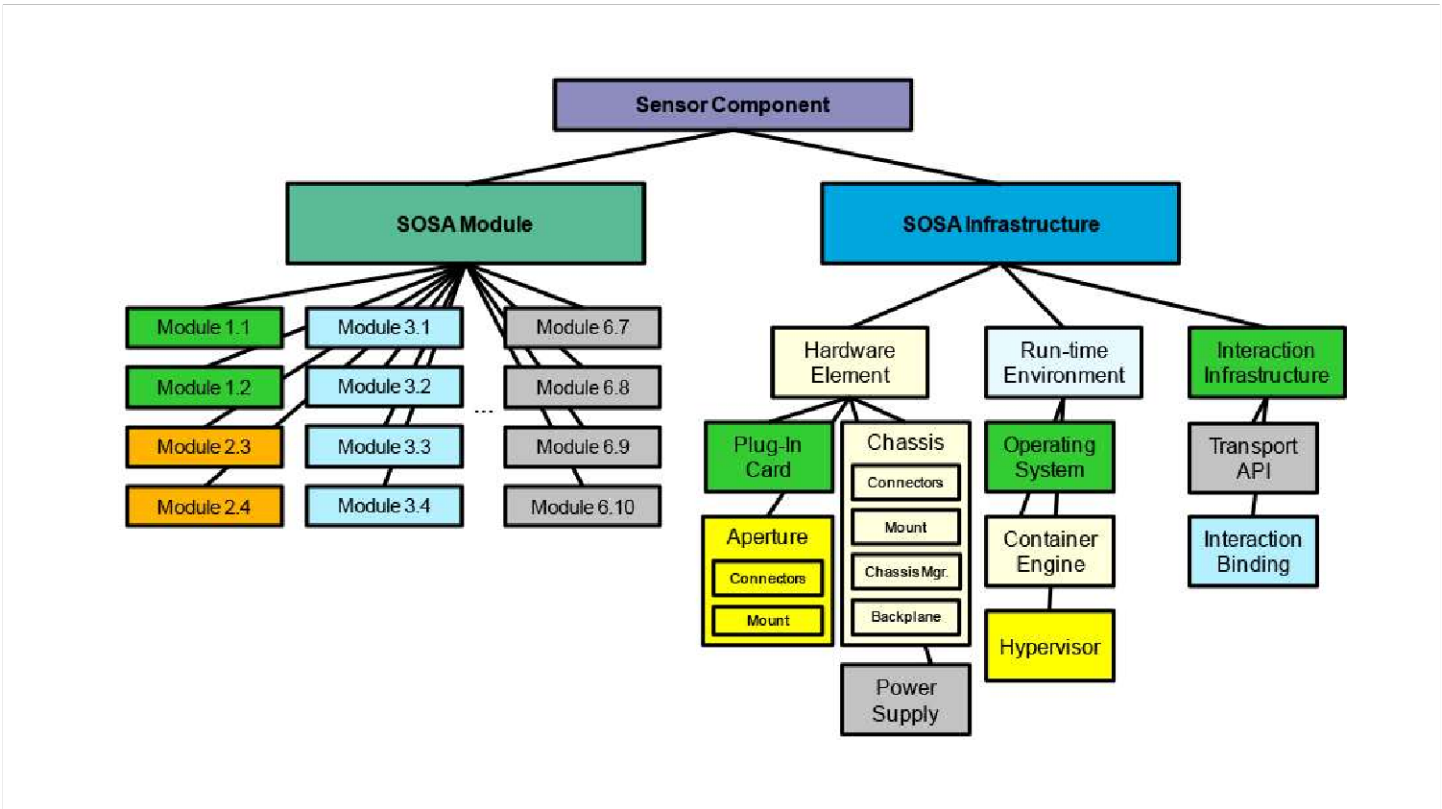
https://www.researchgate.net/figure/Functional-Domains-of-an-Open-Sensor-Service-Architecture-OGC-2009_fig6_233381151

In order to address part of today's grand scientific challenges and political agendas related to future Information and Communication Technology (ICT), the Information Society and Media Directorate General of the European Com-mission provided a novel scheme for innovation projects funded by the European Commission: the Future Internet Public-Privat.



With the highly anticipated release of Version 1.0 of the Sensor Open Systems Architecture Technical Standard in September 2021, there are more and more Requests for Information and contracts asking specifically for SOSA. The SOSA Technical Standard is targeting five sensor modalities: electro-optical/infrared (EO/IR), electronic warfare (EW), radar, and signals intelligence (SIGINT). What does the first version of the SOSA Technical Standard have to offer a system designer? Specifically, how can SOSA be applied to radar systems?

https://militaryembedded.com/radar-ew/rf-and-microwave/leveraging-the-sensor-open-systems-architecture-sosa-for-radar-applications



https://www.mdpi.com/2071-1050/16/16/7039

The Role of 6G Technologies in Advancing Smart City Applications: Opportunities and Challenges

Sustainability **2024**, *16*(16), 7039; **https://doi.org/10.3390/su16167039**

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(This article belongs to the Section **Sustainable Urban and Rural Development**)

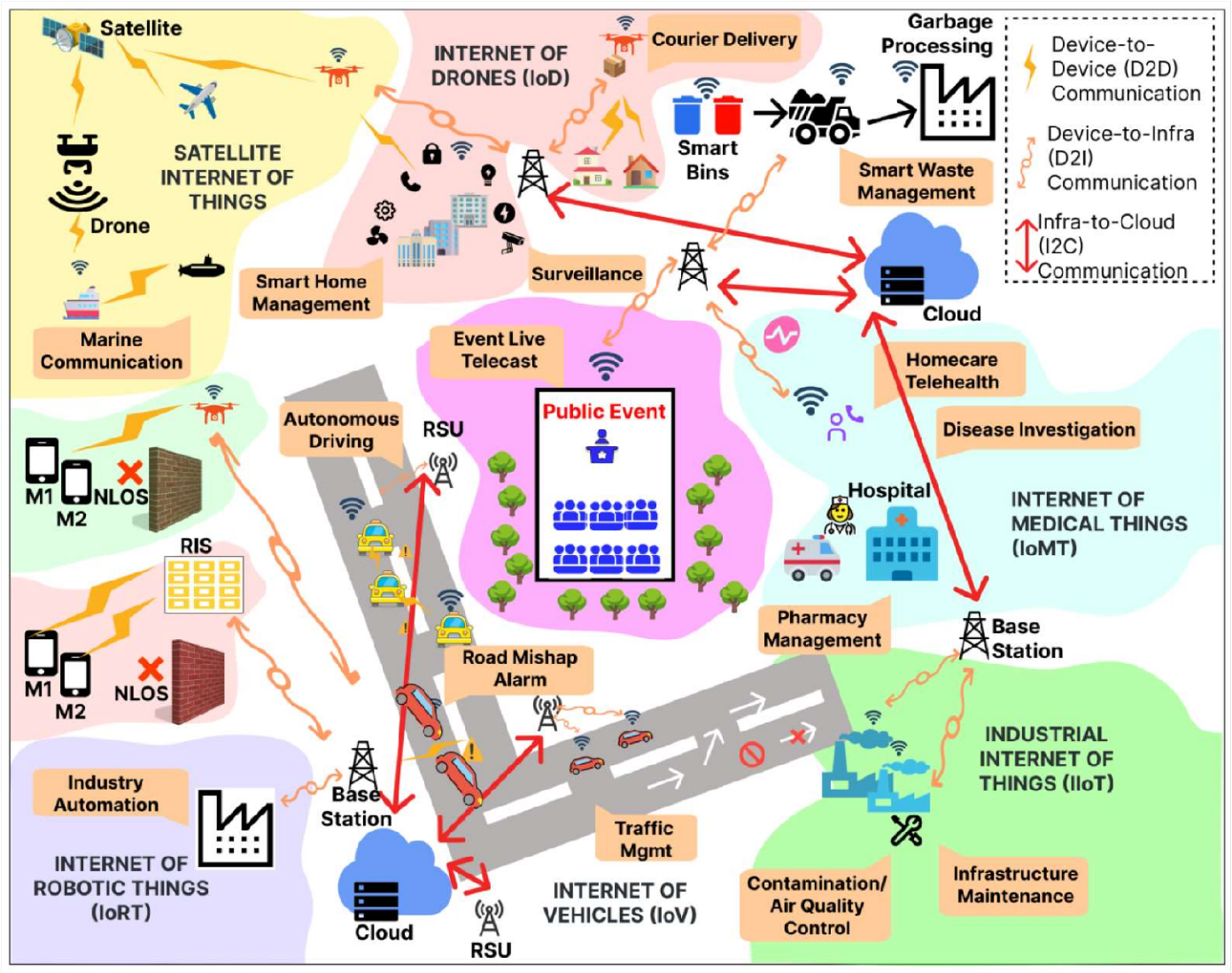
Abstract

The deployment of fifth-generation (5G) wireless networks has already laid the ground-work for futuristic smart cities but along with this, it has also triggered the rapid growth of a wide range of applications, for example, the Internet of Everything (IoE), online gaming, extended/virtual reality (XR/VR), telemedicine, cloud computing, and others, which require ultra-low latency, ubiquitous coverage, higher data rates, extreme device density, ultra-high capacity, energy efficiency, and better reliability. Moreover, the predicted explosive surge in mobile traffic until 2030 along with envisioned potential use-cases/scenarios in a smart city context will far exceed the capabilities for which 5G was designed. Therefore, there is a need to harness the 6th Generation (6G) capabilities, which will not only meet the stringent requirements of smart megacities but can also open

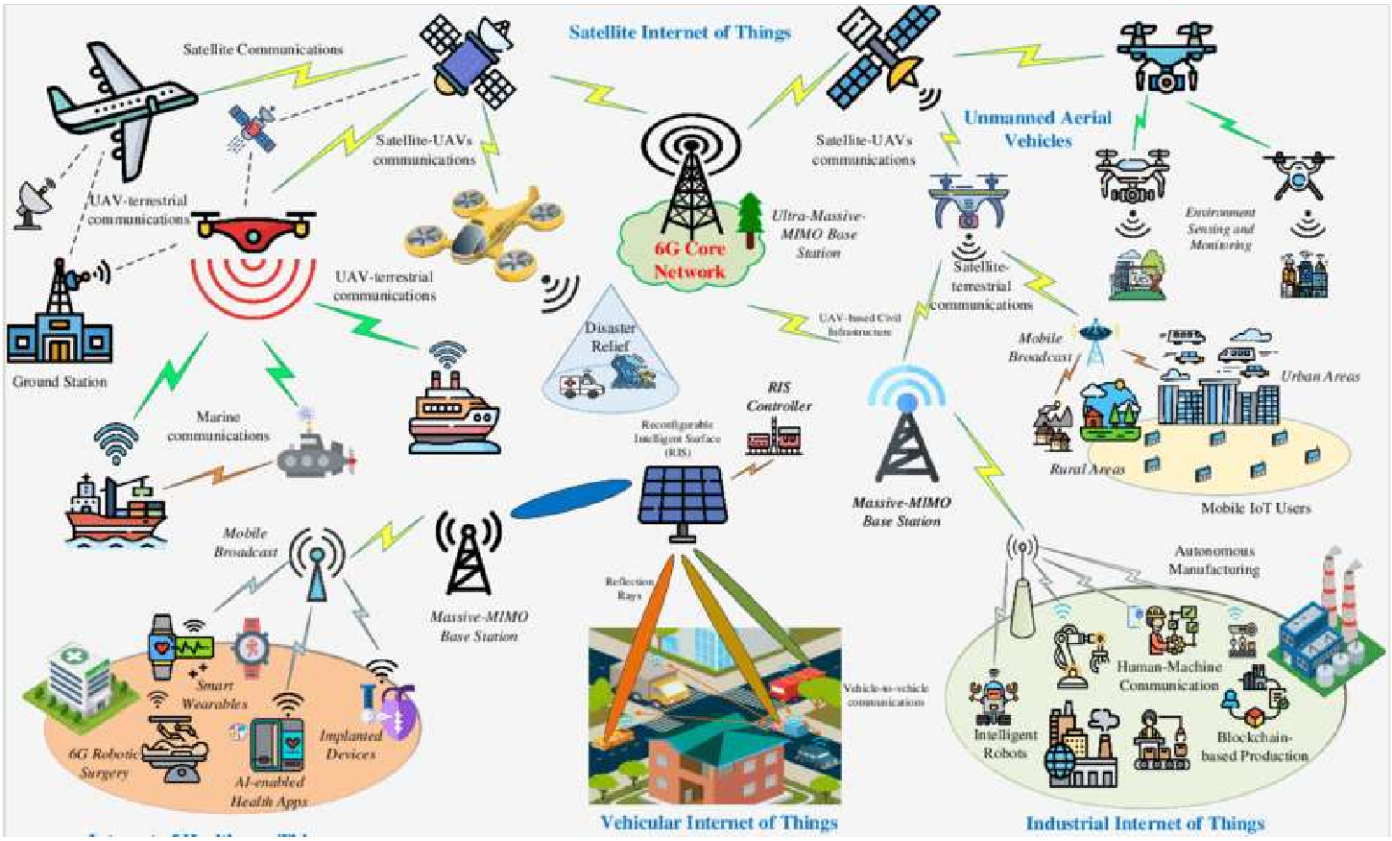
up a new range of potential applications. Other crucial concerns that need to be addressed are related to network security, data privacy, interoperability, the digital divide, and other integration issues. In this article, we examine current and emerging trends for the implementation of 6G in the smart city arena. Firstly, we give an inclusive and comprehensive review of potential 6th Generation (6G) mobile communication technologies that can find potential use in smart cities. The discussion of each technology also covers its potential benefits, challenges and future research direction. Secondly, we also explore promising smart city applications that will use these 6G technologies, such as, smart grids, smart healthcare, smart waste management, etc. In the conclusion part, we have also highlighted challenges and suggestions for possible future research directions. So, in a single paper, we have attempted to provide a wider perspective on 6G-enabled smart cities by including both the potential 6G technologies and their smart city applications. This paper will help readers gain a holistic view to ascertain the benefits, opportunities and applications that 6G technology can bring to meet the diverse, massive and futuristic requirements of smart cities.

Keywords:

smart cities; mega cities; 6G; ISAC; IoT; UAV; non-terrestrial networks (NTN); V2X; smart healthcare; smart waste



https://www.researchgate.net/figure/sion-of-future-6G-based-IoT-applications_fig2_353792480

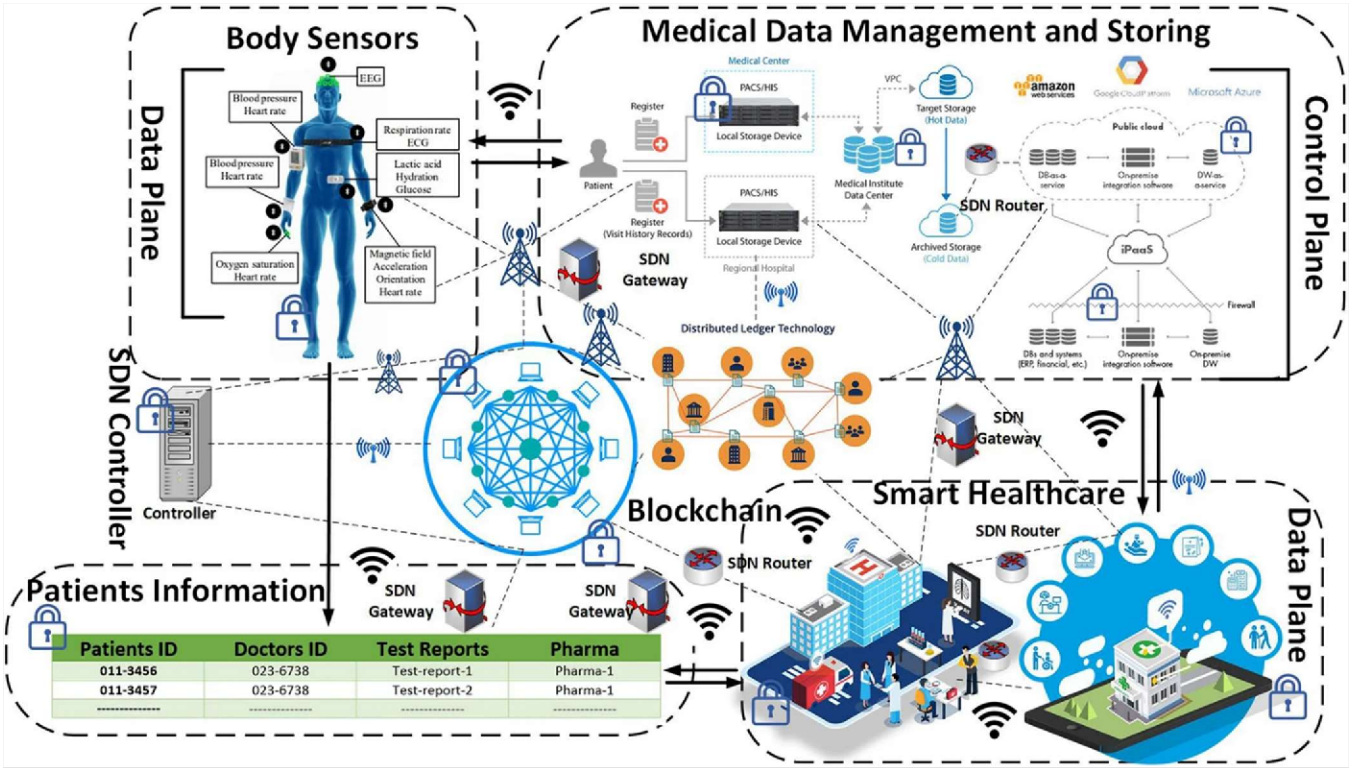


The sixth generation (6G) wireless communication networks are envisioned to revolutionize customer services and applications via the Internet of Things (IoT) towards a future of fully intelligent and autonomous systems. In this article, we explore the emerging opportunities brought by 6G technologies in IoT networks and applications, by conducting..

https://www.nature.com/articles/s41598-024-55662-w

Internet of medical things and blockchain-enabled patient-centric agent through SDN for remote patient monitoring in 5G network

- **First of all, we propose an IoMT architecture for a remote patient health monitoring system through the patient-centric agent in a 5G network.**
- **Moreover, we employ three emerging technologies, SDN, Blockchain, and 5G, to control different sensor networks and secure healthcare data in the IoMT.**
- **In addition, we also utilize a combined SDN and Blockchain technology in the 5G network to preserve the patient's personal data.**


Body Sensors
Data Plane
EEG
Blood pressure Heart rate
Respiration rate ECG
Blood pressure Heart rate
Lactic acid Hydration Glucose
Oxygen saturation Heart rate
Magnetic field Acceleration Orientation Heart rate
Medical Data Management and Storing
Control Plane
Medical Center
PACS/HIS
Local Storage Device
Register
Patient
Register (Visit History Records)
PACS/HIS
Local Storage Device
Regional Hospital
VPC
Target Storage (Hot Data)
Medical Institute Data Center
Archived Storage (Cold Data)
SDN Router
SDN Gateway
Distributed Ledger Technology
Public cloud
DBaaS service
On-premise integration software
DW-as-a-service
IPaaS
Firewall
DBs and systems (ERP, financial, etc.)
On-premise integration software
On-premise DW
SDN Controller
Controller
SDN Gateway
Blockchain
Smart Healthcare
SDN Router
SDN Router
Data Plane
Patients Information
SDN Gateway
SDN Gateway
Patients ID
Doctors ID
Test Reports
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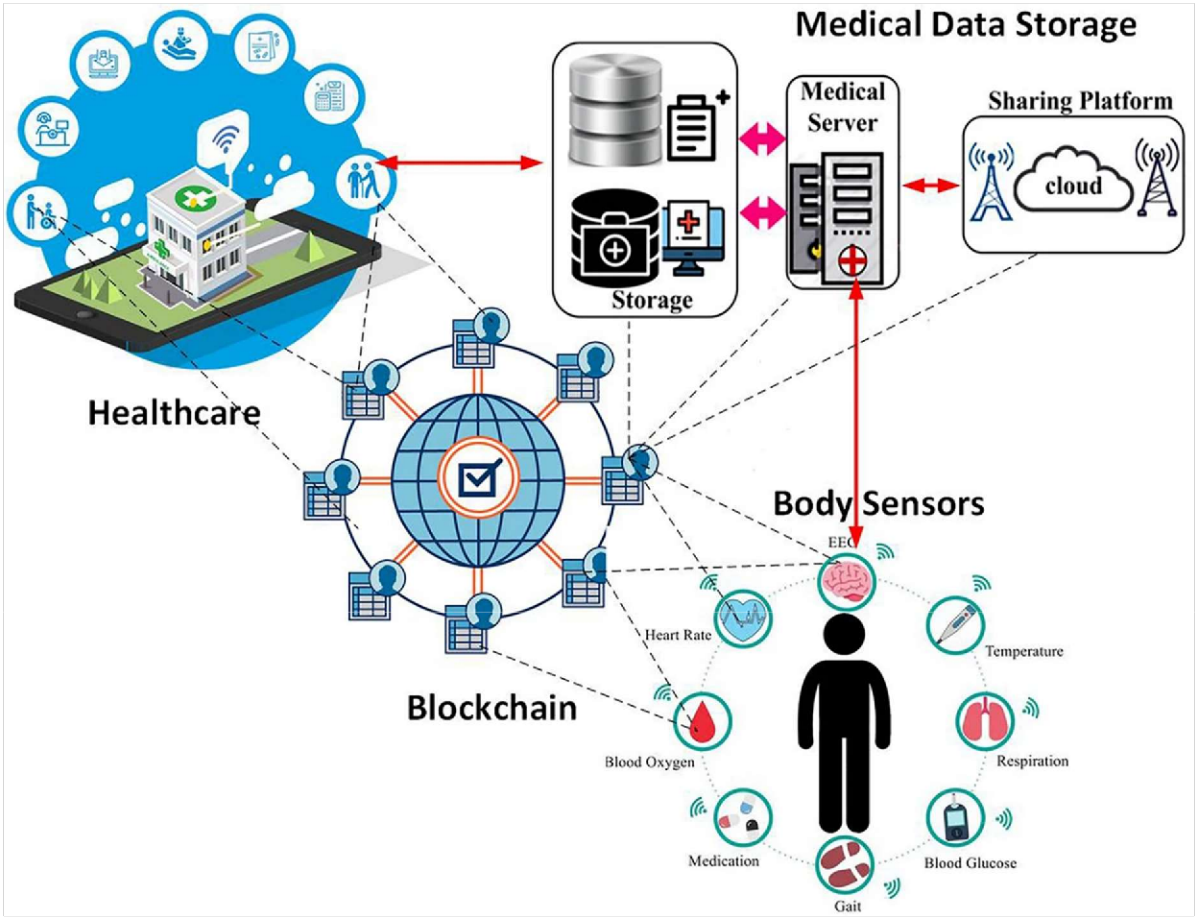
023-6738
Test-report-1
Pharma-1
011-3457
023-6738
Test-report-2
Pharma-1


Medical Data Storage
Medical Server
Sharing Platform
cloud
Storage
Healthcare
Body Sensors
EEG
Heart Rate
Temperature
Blockchain
Blood Oxygen
Respiration
Medication
Blood Glucose
Gait