



# **USE OF TECHNOLOGY & INNOVATION IN STRENGTHENING GOVERNANCE AND REGULATION**

**HOW DO WE BECOME SMART REGULATORS**



# **ARTIFICIAL INTELLIGENCE IN HEALTHCARE**

# OUTLINE

- What is AI and Machine learning.
- Wave of change.
- Benefits of AI in healthcare.
- Risks of AI in healthcare.
- Role of Health regulators.
- Challenges in regulating AI in Healthcare.
- Pillars of AI regulations.



# DEFINITIONS

- **AI:** software used by computers to mimic cognitive aspects of human intelligence such as perceiving, reasoning, learning, problem solving, and interacting with an environment.
- **AI Healthcare:** The application of machine learning (ML) algorithms and other cognitive technologies in medical settings to improve patient experience, including diagnosis, treatment, and outcomes.



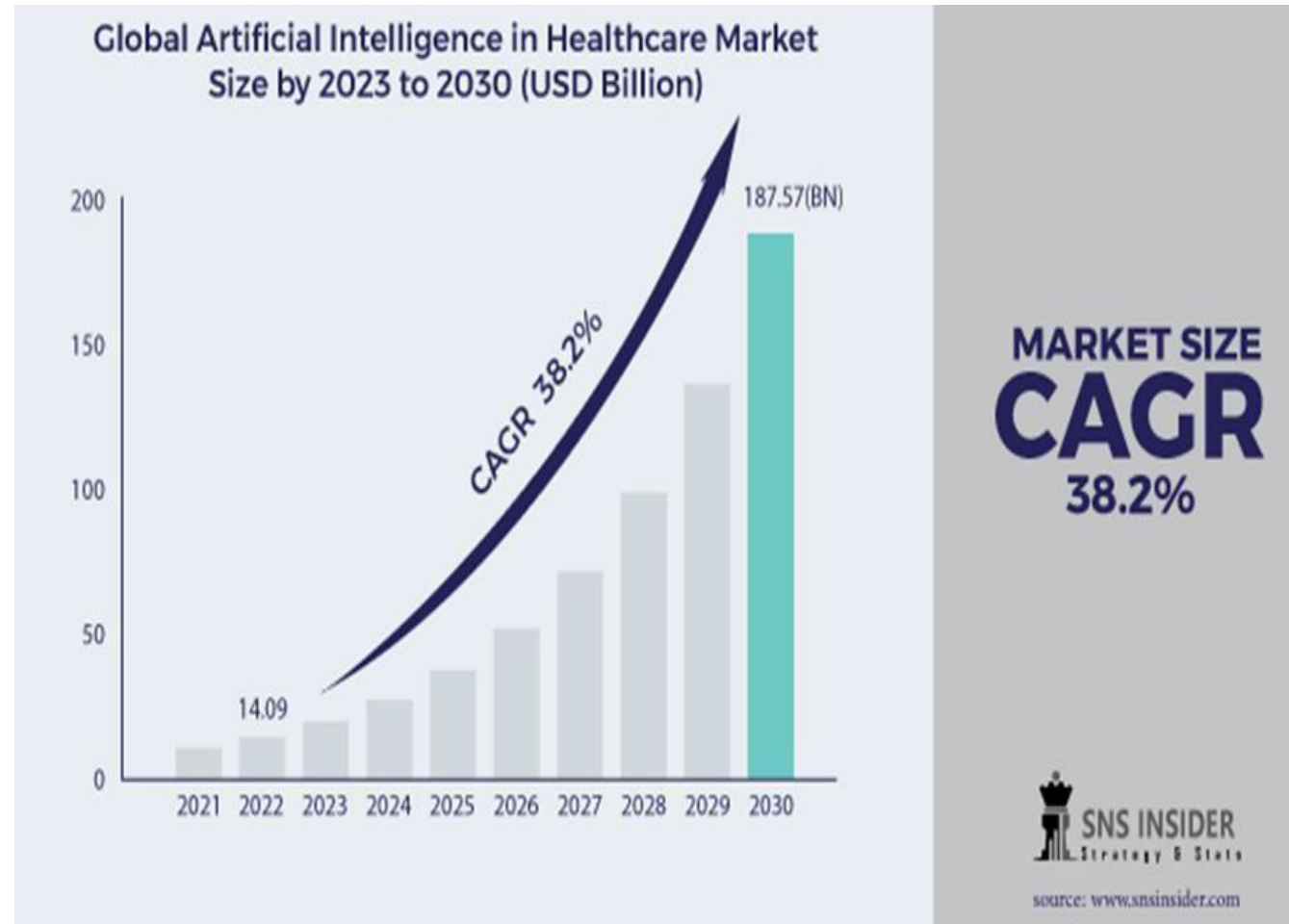
# DEFINITIONS

- **Machine learning (ML):** subfield of artificial intelligence (AI) that uses algorithms trained on data sets to create self-learning models capable of predicting outcomes and classifying information without human intervention.
- **Compound annual growth rate (CAGR):** is a mathematical formula that provides a "smoothed" rate of return. It is really a pro forma number that tells you what an investment yields on an annually compounded basis—indicating to investors what they really have at the end of the investment period.

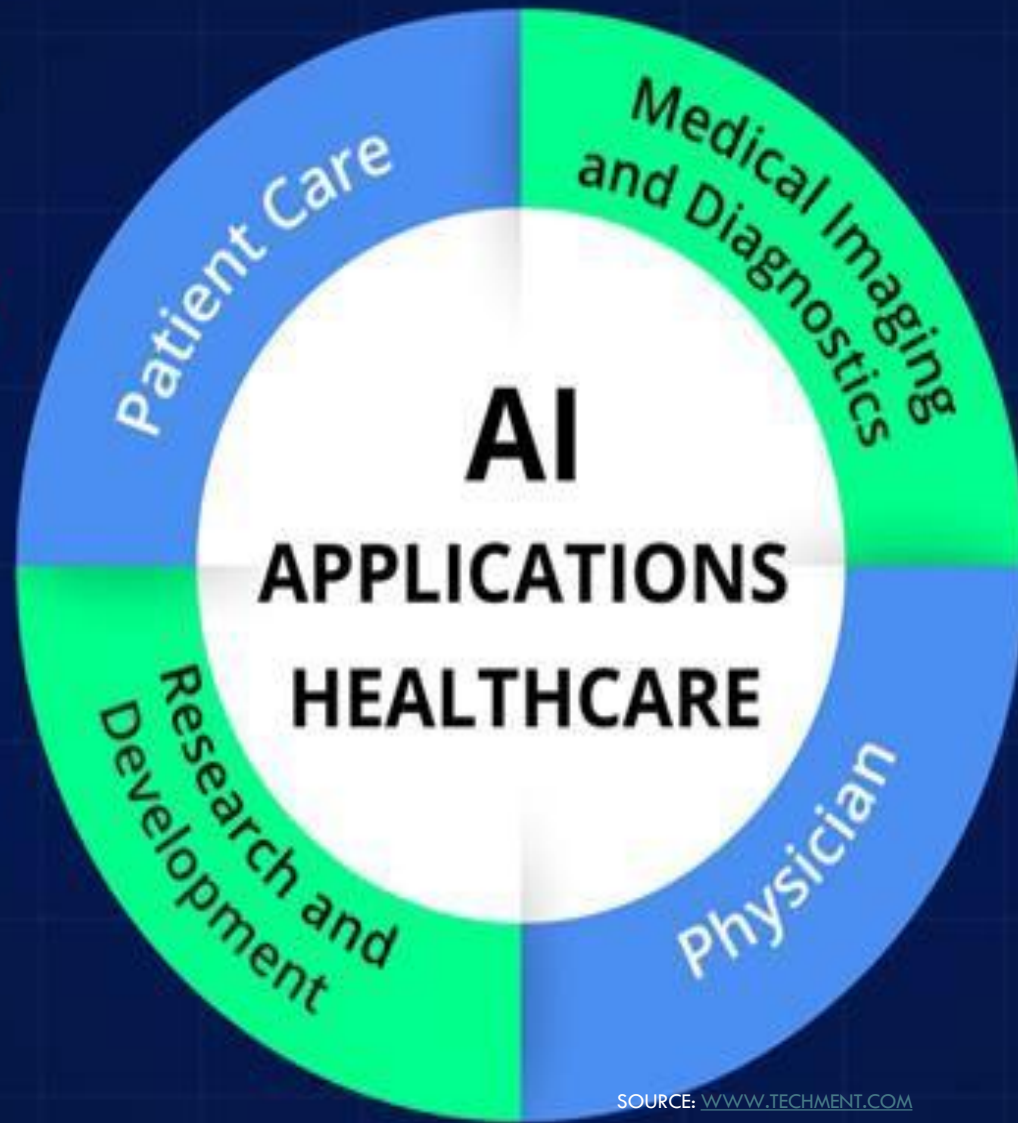


# WAVE OF CHANGE

- The Artificial Intelligence in Healthcare Market Size was valued at USD 14.09 billion in 2022 and is expected to reach USD 187.57 billion by 2030 and grow at a CAGR of 38.2% over the forecast period 2023-2030.



- Automated & Assisted Diagnosis and Treatment
- Real-time Patient Prioritization and Triage
- Pregnancy Management
- Health Assistants and Personal Trainers



- Error Free Diagnostic results
- Intelligent Symptom Analysis
- Predictive and Early diagnostic!
- Radiology Assistant
- Diagnosis via Medical Imaging

- Data Mining and Analytic
- Drug Discovery
- Drug Design
- Pandemic Detection
- Vaccine Development

- Surgical Robots
- Personalized medications & care
- Clinical Trials
- Alternative Diagnosis Prescription auditing

SOURCE: [WWW.TECHMENT.COM](http://WWW.TECHMENT.COM)

# TOP TRENDS OF AI IN HEALTHCARE

Healthcare Analytics

Medical Diagnostics

Telehealth

Medical Robots

Hospital Management

Clinical Decision Support

Clinical Trials

Public Health Management

Cybersecurity

Personalized Healthcare



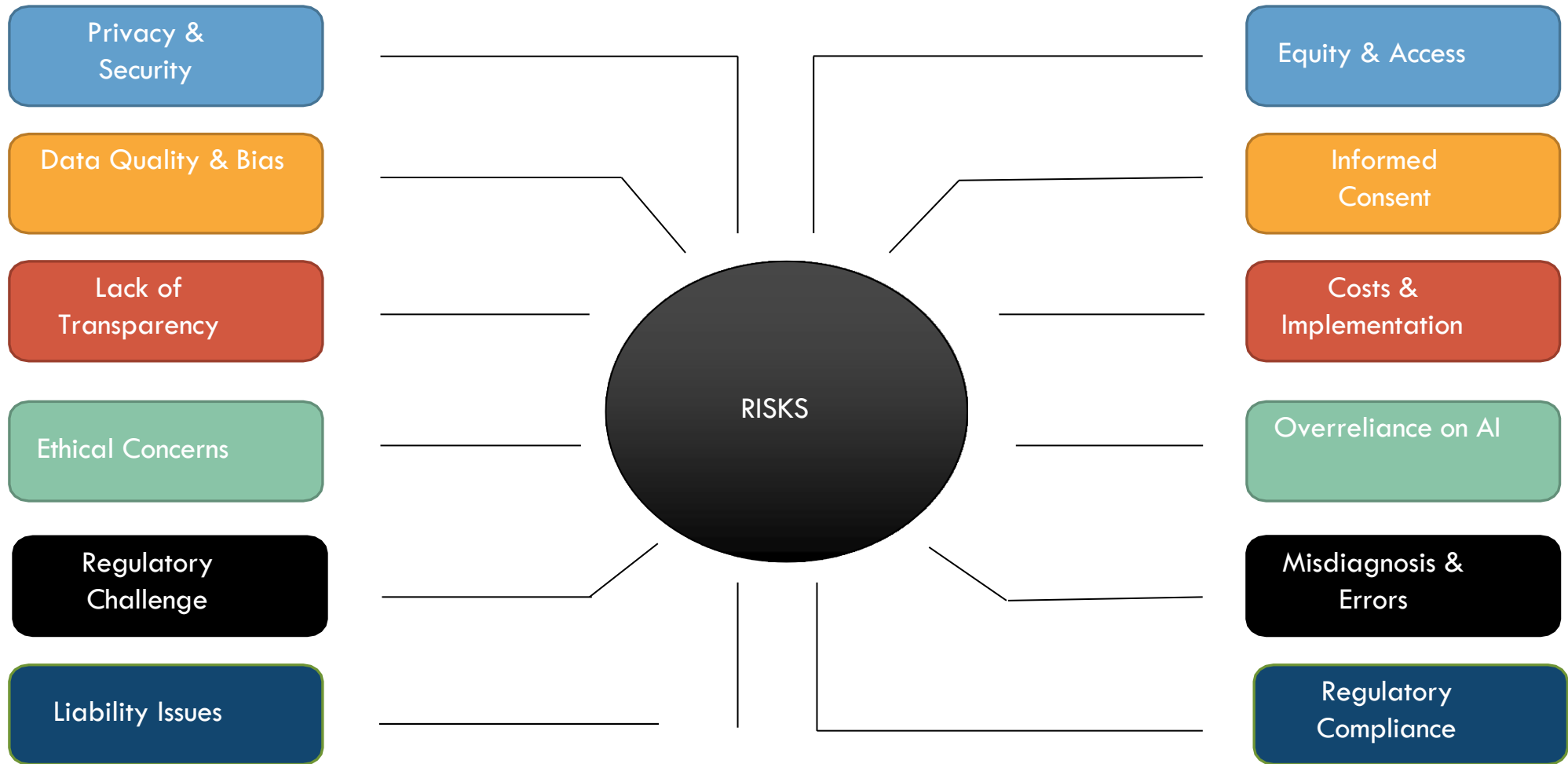




# BENEFITS OF AI IN HEALTHCARE

1. Improved Diagnostics
2. Early Disease Detection
3. Personalized Treatment
4. Enhanced Drug Discovery
5. Efficient Administrative Tasks
6. Telemedicine and Remote Monitoring
7. Improved Patient Outcomes
8. Resource Allocation and Workflow Optimization
9. Data Analysis and Predictive Analytics
10. Cost Reduction
11. Patient Engagement and Education
12. Research and Clinical Trials
13. Chronic Disease Management
14. Mental Health Support
15. Disease Prevention
16. Streamlined Clinical Documentation





# ROLE OF HEALTH REGULATORS

Health regulators play a crucial role in regulating AI in healthcare to ensure patient safety, data privacy, and the efficacy of AI-driven healthcare applications.



The objective is to strike a balance between fostering innovation and safeguarding patients and their data.

# CHALLENGES OF REGULATING AI IN HEALTHCARE

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Rapid Technological Advancements

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Interdisciplinary Nature

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Data Privacy and Security

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Ethical and Legal Concerns

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Interoperability

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Bias and Fairness

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International Standards

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Dynamic and Adaptive Systems

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Liability and Accountability

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User Education and Training

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Cost and Access Concerns

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Public Trust and Acceptance

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# PILLARS OF AI REGULATION

## Ethical standards

- respects patient autonomy, privacy, and confidentiality
- adherence to ethical principles such as beneficence, non-maleficence, and justice

## Legal Standards

- comply with applicable laws and regulations such as; data protection, intellectual property, and liability
- establish policies and procedures for the development, deployment, and use of AI systems to ensure legal compliance

## Technical Standards

- ensure that AI applications are safe, reliable, and effective
- standards related to data quality, interoperability, and cybersecurity
- establish processes for testing, validation, and monitoring



## Regulating artificial intelligence (AI) in healthcare is crucial to ensure patient safety, privacy, and ethical use of AI technologies. Here are some key considerations for regulating AI in healthcare:

1. **Safety and Efficacy:** Regulatory bodies should establish criteria for evaluating the safety and efficacy of AI systems in healthcare. This includes assessing the accuracy, reliability, and performance of AI algorithms, as well as monitoring their impact on patient outcomes. Standards and guidelines for testing, validation, and continuous monitoring of AI systems should be developed and enforced.
2. **Data Privacy and Security:** AI in healthcare often relies on vast amounts of patient data. Regulations should require strict data privacy and security measures to protect patient confidentiality and prevent unauthorized access or misuse of sensitive health information. Compliance with existing data protection regulations, such as the General Data Protection Regulation (GDPR), should be enforced.
3. **Transparency and Explainability:** AI algorithms should be transparent and explainable to ensure trust and accountability. Regulations should require developers and providers to disclose the underlying algorithms, data sources, and decision-making processes of AI systems. This enables healthcare professionals and patients to understand how AI is used and make informed decisions.
4. **Ethical Use of AI:** Regulations should address the ethical considerations surrounding AI in healthcare. This includes issues such as algorithmic bias, fairness, and equity. AI systems should be designed and implemented in a way that avoids discrimination and ensures equitable access to healthcare services for all individuals, regardless of their demographic characteristics.



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5. **Licensure and Credentialing:** The use of AI in healthcare may require specific qualifications, training, and certification. Regulatory bodies should establish guidelines for the licensure and credentialing of healthcare professionals who use AI technologies, ensuring that they have the necessary skills and knowledge to operate AI systems safely and effectively.
6. **Adverse Event Reporting:** Regulations should require the reporting of adverse events related to AI in healthcare. This facilitates the identification and mitigation of potential risks associated with AI systems and promotes continuous improvement in their safety and performance.
7. **International Collaboration:** Given the global nature of AI in healthcare, regulatory efforts should involve international collaboration and coordination. Sharing best practices, harmonizing standards, and addressing cross-border concerns can help ensure consistent regulation and facilitate the responsible use of AI technologies across different healthcare systems.

Regulating AI in healthcare requires a balance between fostering innovation and protecting patient interests. It should involve input from various stakeholders, including healthcare professionals, researchers, policymakers, and patient advocacy groups, to ensure that regulations address the unique challenges and opportunities presented by AI in healthcare.



## The use of technology and innovation has played a significant role in strengthening governance and regulation in healthcare. Here are a few examples:

1. **Electronic Health Records (EHRs):** EHRs have revolutionized healthcare by digitizing patient records, making them easily accessible to healthcare providers. This technology ensures accurate and timely documentation, reduces errors, and improves patient safety. It also enables better regulation and oversight of healthcare providers.
2. **Telemedicine:** Telemedicine allows patients to consult with healthcare professionals remotely through video calls or online platforms. This technology has improved access to healthcare, especially in rural or underserved areas, and has helped regulate and monitor healthcare services provided through virtual platforms.
3. **Health Information Exchange (HIE):** HIE systems enable the secure exchange of patient information between healthcare providers, ensuring continuity of care and reducing duplication of tests and procedures. These systems also facilitate regulatory compliance by providing access to comprehensive patient records for auditing and monitoring purposes.





## The use of technology and innovation has played a significant role in strengthening governance and regulation in healthcare. Here are a few examples:

4. **Artificial Intelligence (AI) and Machine Learning:** AI and machine learning algorithms can analyze large amounts of healthcare data to identify patterns, predict outcomes, and support decision-making. These technologies can help regulators monitor healthcare providers, detect fraud, and identify areas for improvement in governance and regulation.
5. **Blockchain Technology:** Blockchain technology can enhance transparency and accountability in healthcare by providing a secure and decentralized system for recording and verifying transactions. This technology has the potential to improve the integrity of healthcare data, streamline regulatory processes, and prevent data breaches.
6. **Mobile Health (mHealth) Applications:** mHealth applications enable patients to monitor their health, access educational resources, and communicate with healthcare providers. These applications can also help regulators gather data on healthcare outcomes, track compliance with regulations, and ensure the quality of healthcare services.



Overall, technology and innovation have empowered regulators to enhance governance and regulation in healthcare by improving data management, increasing access to care, and facilitating monitoring and oversight of healthcare providers



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enkosi  
thank you  
ngiyabonga  
ke a leboha haholo  
ndo livhuwa  
ndza nkhenisa

