台北醫學大學醫學工程學院
拇山產學論壇

Data innovation and personal information protection in health care industry

PhD. J J Pan

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IPG

ACXIOM Kinesso™

PhD. JJ Pan

https://www.linkedin.com/in/docjjpan/

- APAC Data Privacy Officer, Acxiom, Kinesso, Matterkind, Interpublic Group (since 2012)
- Rotating chairperson, World Trustmark and trade Alliance (since 2018)
- Expert Guest, Digital Economy Steering Group, Asia Pacific Economic Cooperation (since 2010)
- Taipei Chapter Chairperson, Knowledge Net International Association of Privacy Professionals (since 2017)
- PhD. Intellectual Property Management and Technological Innovation, Chengchi University (since 2007)

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AGENDA

- Introduction
- Definition and scope
- Data Science and trend
- Protection of personal information
- Innovation of personal medical information
- Balance of technology, management and data ethics

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Summary

- The innovation will be emerging by understanding the definition of data and personal information in the health industry.
- The trend of big data and artificial intelligence changed the world and industry.
- The personal information and healthy data had been regulated and recognized as sensitive data. The innovation is kept developing based on needs of the market.
- A Sustainable health care business must stand on the balance of technology, management and data ethics

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Scope of Personal Information

Definition in laws

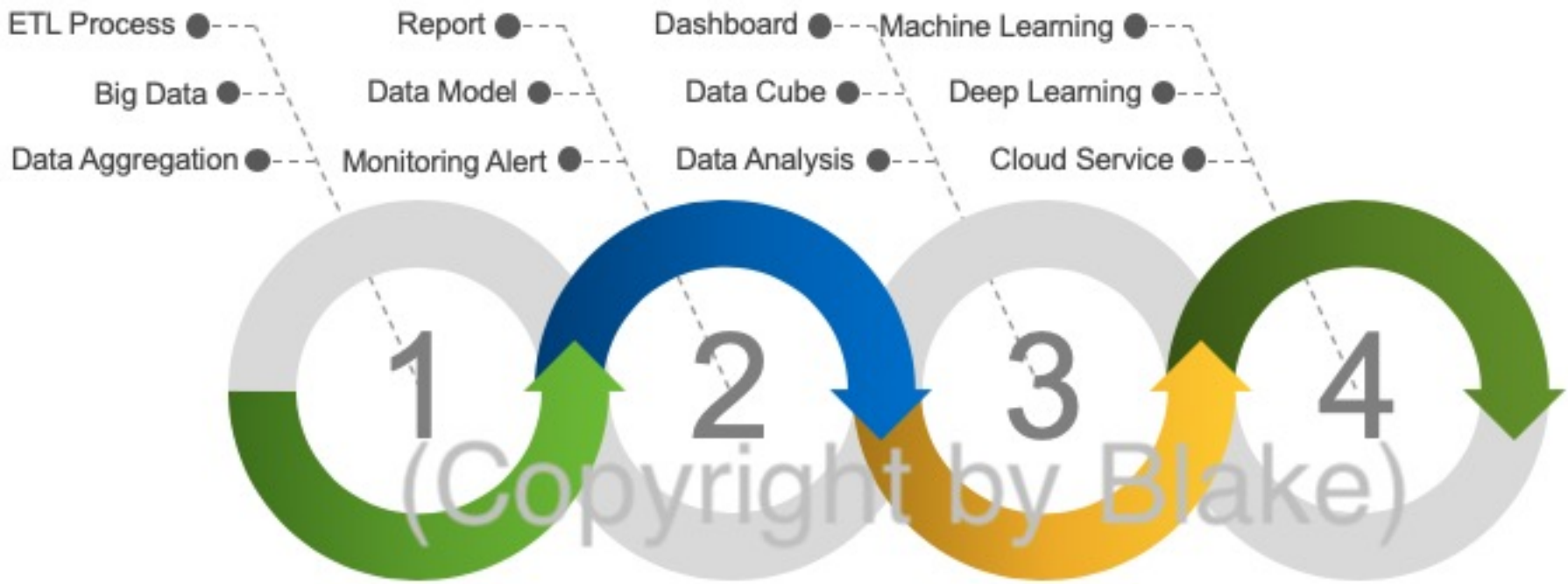
★ "Personal Information" means any information that *can identify a specific individual*. Including but not limited to,

★ name, birthday, ID number, address, telephone number, email address, account number, network address, driver's license number, travel license number, and]

★ other relevant information that can be used to identify that specific individual.

GDPR PRINCIPLES

資料科學 – 循序漸進四步驟



Row Data 資料

資料盤點 / 整理
資料萃取 / 清洗
資料處理 / 資料轉換

Information 資訊

資料視覺化 / 統計報表
KPI / 指標 / 監控追蹤
了解資料 / 分析資訊

BI 商業智慧

歸納 / 趨勢 & 規劃
輔助 / 管理 & 營運
知識探鑽 / Root cause

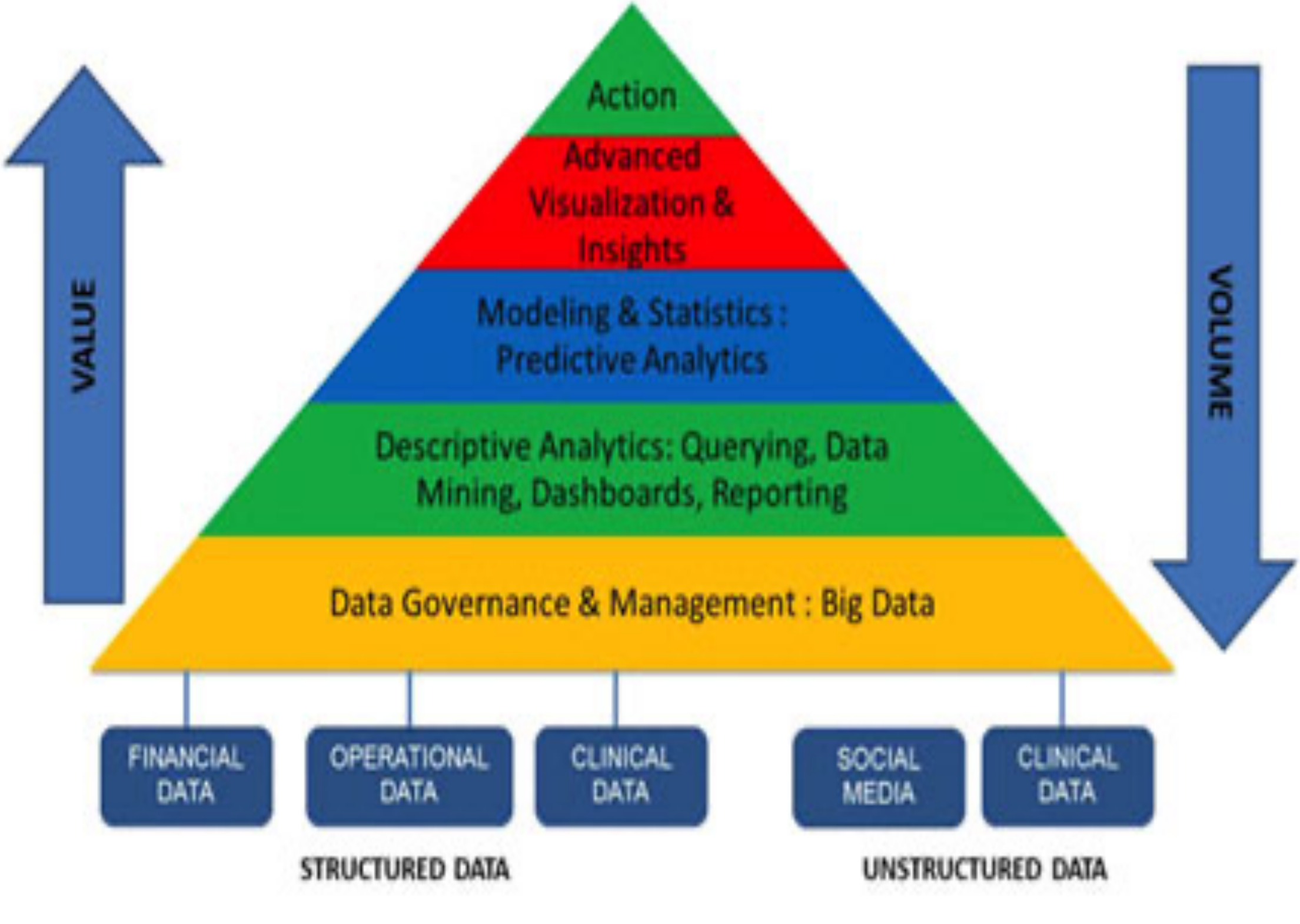
AI 人工智能

個性化 / 客戶導向 & 個人化
智能化 / 預測 & 輔助決策
自動化 / 流程 & 服務

The Process of Data Science

資料科學的處理步驟（不論是 BI 還是 AI）

Business Understanding	Data Acquisition & Understanding	Modeling	Deployment	Customer Acceptance
定義目標 整理資料來源 應用需求	搜集資料 探索資料 更新資料	特徵選取 建立模型 訓練模型	服務建置 系統操作 維運監控	測試驗證 上線使用 重新訓練
為什麼？	*怎麼做？*	*如何做？*	*做什麼？*	*做得如何？*


VALUE
VOLUME
Action
Advanced Visualization & Insights
Modeling & Statistics : Predictive Analytics
Descriptive Analytics: Querying, Data Mining, Dashboards, Reporting
Data Governance & Management : Big Data
FINANCIAL DATA
OPERATIONAL DATA
CLINICAL DATA
SOCIAL MEDIA
CLINICAL DATA
STRUCTURED DATA
UNSTRUCTURED DATA

TAIWAN's Personal Data Protection Act

TERRITORIAL SCOPE

Applies to processing personal data in Taiwan.

Extraterritorial – applies when the processing is to offer goods or services to people in Taiwan.

THE PLAYERS

National Development Council

PERSONAL DATA

SENSITIVE PERSONAL DATA

BASIC PRINCIPLE OF DATA PROCESSING

The collection, processing, and use of personal data shall be carried out in a way that respects the data subject's rights and interests, in an honest and good faith manner, not exceeding the necessary scope of specific purposes, and within legitimate and reasonable connections to the purposes of the collection.

RESPONSIBILITIES OF AGENCIES

LAWFUL PROCESSING

Lawful bases to process data include:

- required by law
- contract
- data subject consent
- promoting the public interest
- statistical or academic purposes when in the public interest and data has been de-identified
- data is lawfully publicly available
- obtained from publicly available sources
- when it will not infringe upon the data subject's rights and interests

CONSENT

Consent must be informed.

Consent may be presumed if data subjects are informed, do not object, and affirmatively provide personal data.

Secondary use requires new consent.

ENFORCEMENT

Enforced by the National Development Council. Also enforced by industry regulators.

Max fine up to 1 million new Taiwan dollars (about US $34,000).

Can order processing to be stopped or data to be deleted.

Data subjects may sue for compensation for violations.

INDIVIDUAL RIGHTS

Right to Make an Inquiry and Review

Right to Request a Copy

Right to Cessation

Right to Supplement or Correct

Right to Erasure

DATA BREACH NOTIFICATION

Requires notification of data breaches to affected data subjects – no specific timeframe is provided.

CROSS-BORDER DATA TRANSFER

Industry regulators have the discretion to impose cross-border transfer restrictions such as an adequate level of protection.

TEACHPRIVACY
www.teachprivacy.com
Privacy Training by Prof. Daniel J. Solove

Protection of Personal Medical Information in Taiwan (I)

Regulations

Personal Data Protection Act

Regulate the collection, processing, use, alteration, deletion and other matters of personal information

Protection of sensitive data (medical personal data).

Definition of "Sensitive Personal Data"

- Political stance
- The fact of being partisan or joining an organization
- Religious beliefs
- Economic or social status
- aptitude
- Health status
- Medical records
- Medical records Genomic data
- Criminal record

Sensitive personal information requires stricter security measures and separate consent

A complete information security policy should be planned, including but not limited to access control, data backup, data encryption, etc

take necessary technical and organizational measures to ensure the security of personal information

Protection of Personal Medical Information in Taiwan (II)

Regulations

Medical Law

The rights and obligations of medical institutions and medical personnel and their responsibilities are clearly stipulated	It is stipulated that medical institutions and their medical personnel shall keep the personal data of patients confidential

Health Screening and Health Promotion Act

When collecting or using the personal information of the subject, medical institutions or other institutions should clearly inform the subject of the purpose and scope of the information	and obtain the explicit and voluntary consent of the subject to protect the privacy and confidentiality of his personal information

Protection of Personal Medical Information in Taiwan (III)

Regulations

Hospital Information Security Policy

The hospital information security policy is an internal specification developed by the hospital to protect the security of patient data

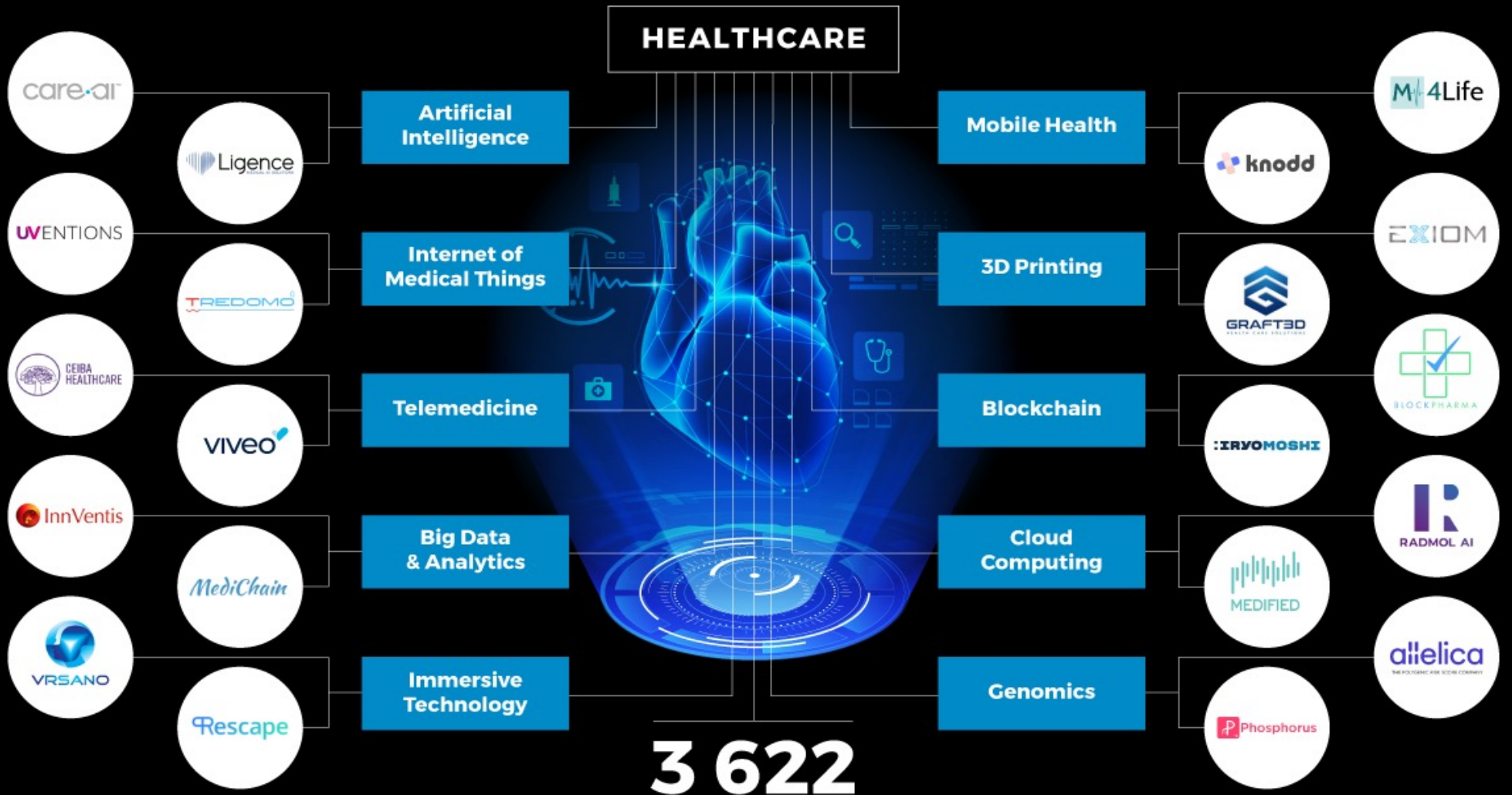
Those who collect, use or leak the personal information of the subject without the consent of the subject or the authorization of the law will be subject to administrative fines or criminal penalties

Code of Conduct for Electronic Information Processing Personnel

For electronic information processors, clearly stipulate the matters that should be paid attention to when handling personal data

Protection of medical personal data

Top 10 Healthcare Trends & Innovations in 2023



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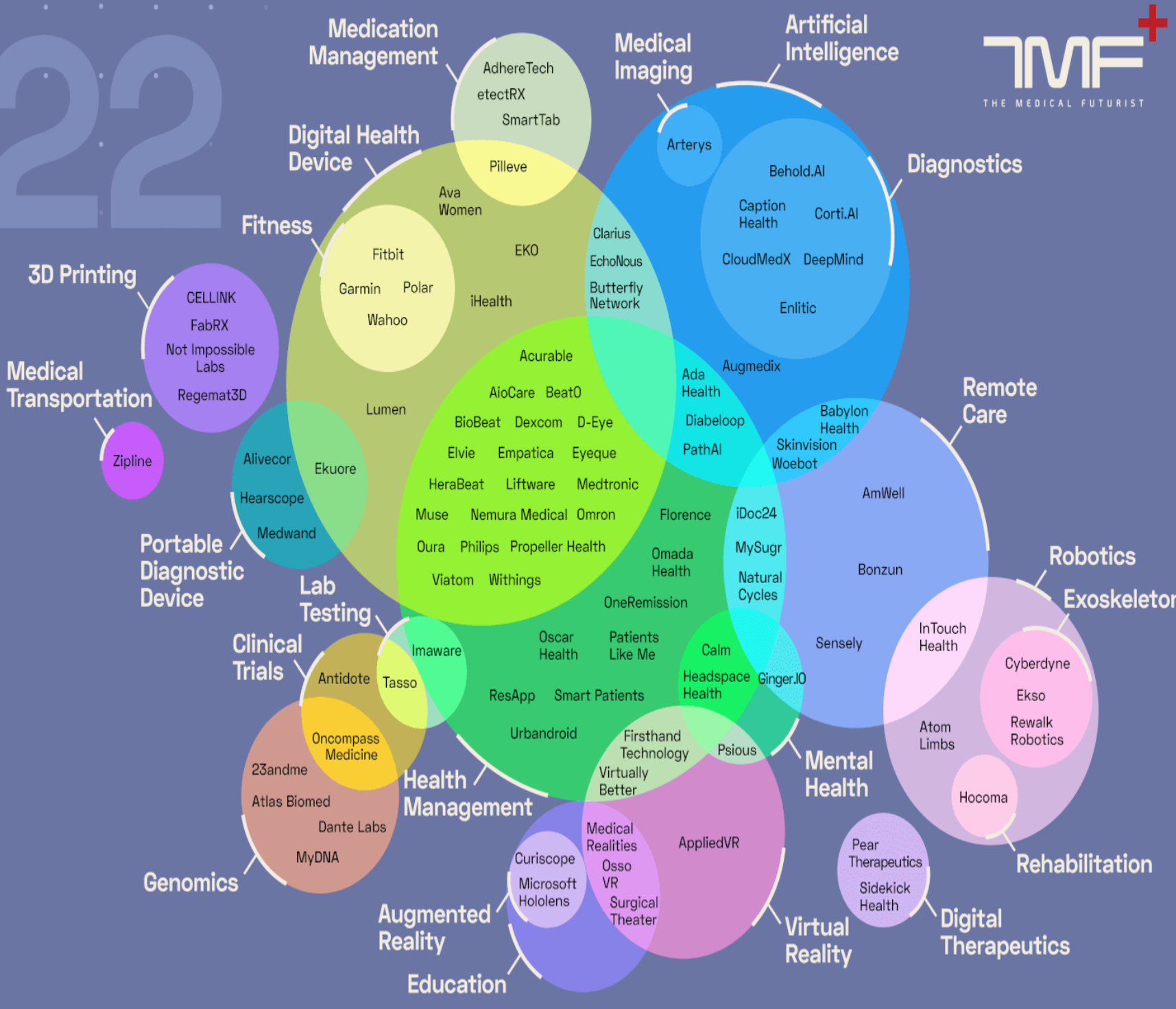
Startups & emerging companies analyzed

Data provided by StartUs insights • January 2023

Top 100 Companies 2022

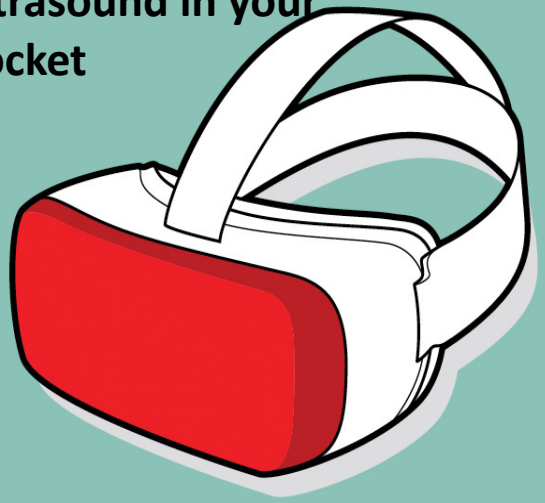


THE MEDICAL FUTURIST

Data visualition by The Medical Futurist

Data visualition by The Medical Futurist

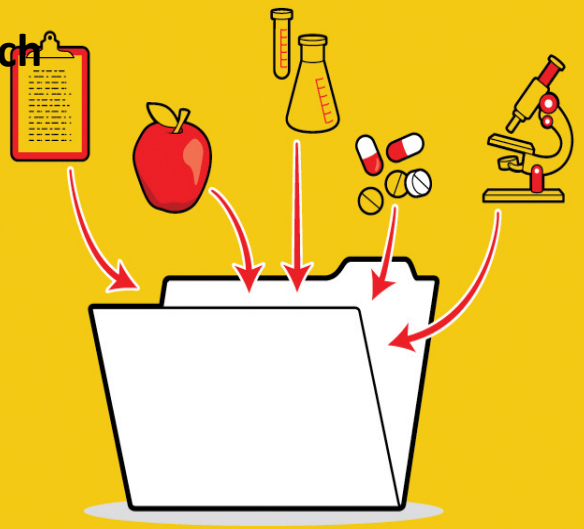
Jonathan Rothberg: An ultrasound in your pocket



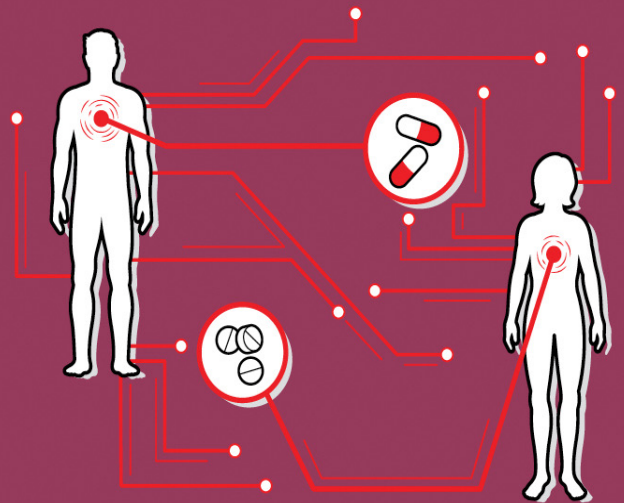
Jonathan Rothberg: An ultrasound in your pocket

David Abney: Drone-delivered medical supplies

Sean Parker: A disruptive approach to cancer research



Abasi Ene-Obong: A more diverse global bio bank



Doug Melton: A stem-cell cure for diabetes

Christine Lemke: The biggest Big Data

Healthcare Big Data Analytics Applications

DIAGNOSTICS

identification of disease causes

TELEMEDICINE

patient health monitoring

PATIENTS TREATEMENT

selecting treatment options

HEALTH POPULATION SUPPORT

Big Data monitoring to capture disease trends, outbreaks, etc.

PRECISION MEDICINE

treatment adjusted to a specific patient - personalized medicine

MEDICAL RESEARCH

data-driven medial research

PREVENTIVE MEDICINE

predictive analytics for disease prevention

COST REDUCTION

Greater insight into medical data translates into better patient care, resulting in long-term savings

HEALTH

YOUR OPPORTUNITIES

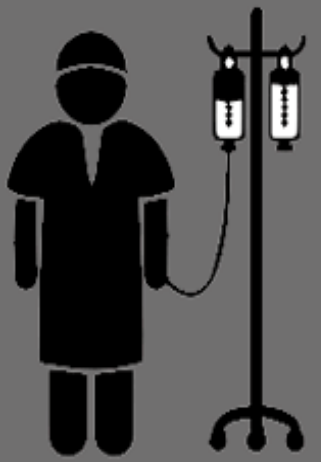
Indonesia's healthcare system is projected to reach $37 billion annual spending by 2020 and already includes over 1,500 private hospitals and 1,000 public hospitals.

THE MANDATE

A universal health mandate is driving change. Healthcare providers are seeking new value-added services and more efficiencies to remain relevant and competitive.

PROGRESS CREATES NEW CHALLENGES

A changing health profile is visible. More metabolic and respiratory diseases, coronary, neurological and oncological, as infectious diseases decline.



SYSTEMS & TECHNOLOGIES ARE CHANGING

Digital health and medical technologies are increasing in demand. Public and private hospitals, and laboratories are seeking improved administrative systems and clinical solutions.

THE GEOGRAPHY

Challenges delivering services at both ends of the income spectrum - to mining operations and to remote small villages across the archipelago.

MORE ON HEALTH

Australian businesses in the Indonesian Healthcare operate through JVs, a B to G partnerships start ups e.g: Ramsay Healthcare, Cochlear, PNORS and Spokle.

Health Artificial Intelligence in Health Care

Benefits and Challenges of Technologies to Augment Patient Care

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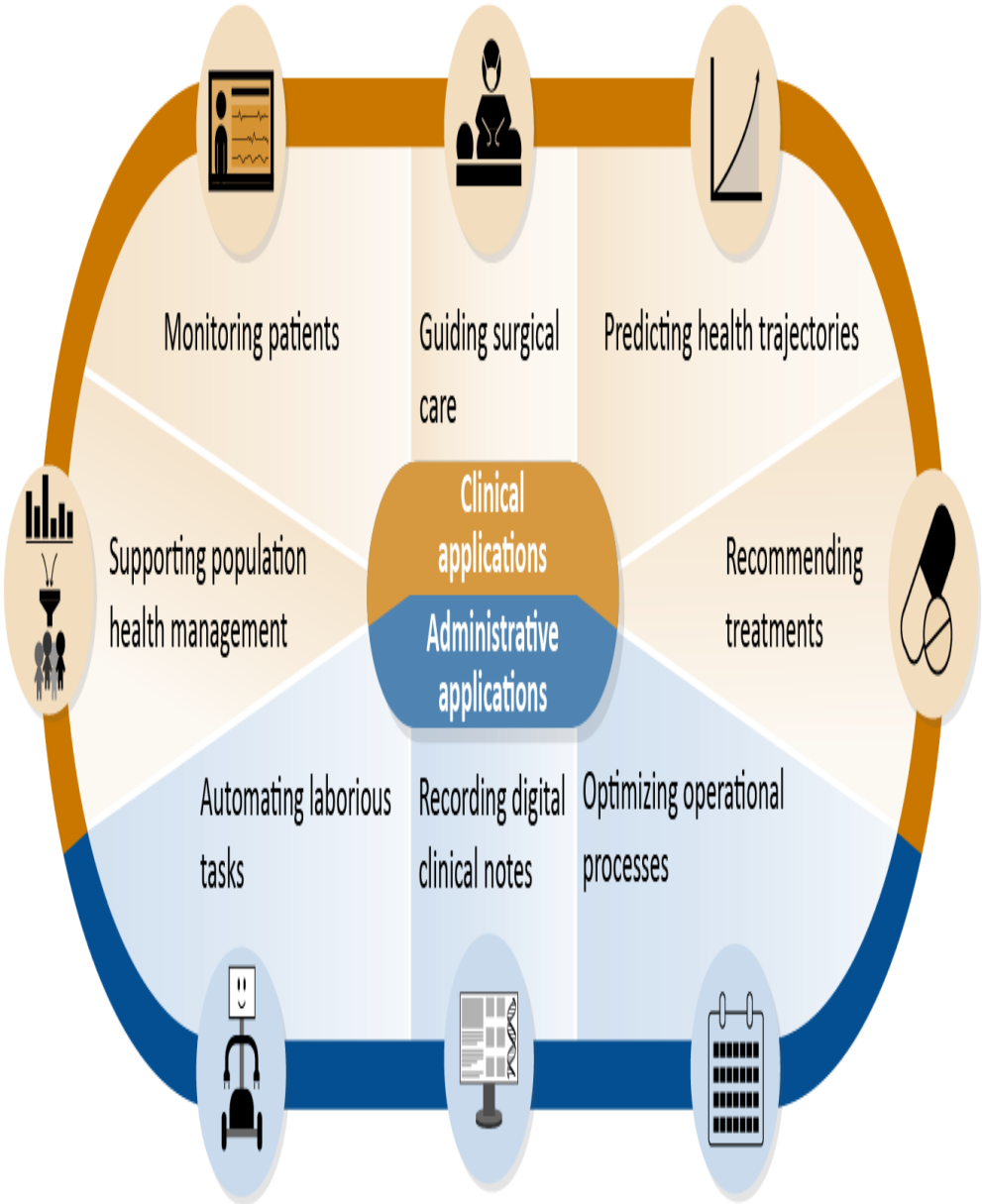


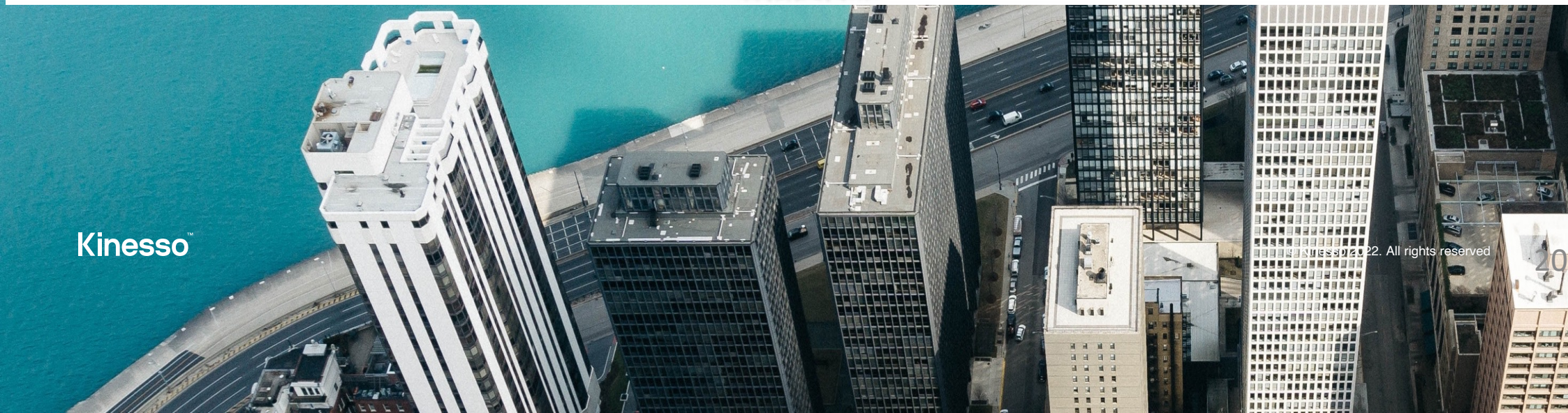
Balance of technology, management and data ethics

ETHICAL

Regulation
Privacy
Mitigation of Bias
Transparency
Relevance

LEGAL

Governance
Confidentiality
Liability
Accuracy
Decision Making



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