Digital Health

GIO Round Table 7, Feb. 22, 2021

Joann O’Brien (TM Forum)

Collaborating for Digital Economy Growth,
Building a Better Intelligent World.

tmforum

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Digital Health

The Working Group is focused on the promotion and acceleration of Digital Health in a medium/long term perspective as a key enabler of Digital Transformation in the Industry.

List of participant organisations

TM Forum
5GSA
China/Japan Friend Hosp. /5GDNA
GIO
Earthmedic
Global He@lth 2030

List of participant professionals/experts

Ms Joann O'Brien--TMForum
Mr Luigi Licciardi--5GSA
Dr Quingun Lu – 5GDNA
Dr James Hospedales – Earthmedic
Global Health 2030
Martin Creaner--GIO

List of achieved deliverables in 2020 and timeline

- *Virtual Workshop May 26th – kick off*
- *Virtual RoundTable & Report June 10th*
- *Digital Health Webinar & Report July 24th*
- *Participation in WHO RoundTable Sept 3rd*
- *Digital Health Round Table & Report Sept 24th*
- *Digital Health Industry Report Sept 30th*
- *Digital Health Round Table Dec 10th*
- *Roundtable report*

Digital Health Plan for 2021

- Industry Report on role of 5G in accelerating Digital Transformation of Healthcare
- Feb. 2021
- Digital Health Round Table March 2021
- Webinar 2: *5G Digital Health – SDO main achievements* April 2021
- Round Table Digital health May 2021
- Round Table Sept 2021

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Agenda

- *Increased focus on Digital Health at WHO Level*
- *Role of GIO & TM Forum in co-innovation and best practise / standards development*
- *Role of Trusted data in Emergencies, Pandemic / Climate alerts*
- *Role of 5G & Connectivity in Digital Health – 5G use cases*
- *Navigating the complex Health Ecosystem*
- *Discussion on the need to model the health ecosystems in the future*
- *Conculsions*

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DIGITAL HEALTH & INNOVATION

STRATEGIC INITIATIVES

Concepts and upcoming areas of investment to strengthen digital health solutions and innovation

Global Strategy on Digital Health

Global call to action, and support to governments, WHO and partners to coordinate financial and technical investments, monitor progress and leverage global goods for impact.

Build Capacity, Learning & Collaboration

Address persistent gaps in country capacity at country-level, to understand and collectively learn digital systems and interoperability, and to invest and govern, establishing a WHO training academy, and Network of Networks community of practice

Digital Solutions for PHC & Country Preparedness

- **Digital Clearinghouse** of WHO-vetted digital solutions and services;
- **Standards for assessment** and product development, including **AI benchmarking**
- Global & national **Disease Surveillance and Early Warning** systems

Digitizing WHO Guidelines – Smart guidelines

Mechanisms to drive country digital adoption of WHO guideline and data recommendations “Computable and Living Guidelines”, Digital Guidelines Exchange to support vendors and country adoption of standards for interoperability and quality solutions

WHO Innovation Scaling Framework

- Scale and sustain innovations in response to country demand
- Develop 3-level network to assess country demand for health innovation
- Engage and align with SDG GAP innovation accelerator agencies
- Build partnership with International Development Innovation Alliance

Digital Yellow Card for Immunization and Personal Data

Digitizing the immunization card to support COVID and personal records; WHO issues certificate; built on decentralized ledger; uses FHIR on Android SDK, facilitates a global interoperable standard.

STRATEGY & GOVERNANCE UNIT

Five-Years Implementation of global strategy on digital health

Promote global collaboration and advance the transfer of knowledge on digital he

- Global multi-stakeholder **collaboration** and **partnerships**
- **National framework** for collaboration and **capacity building**
- **National Disease Surveillance and Early Warning**

$95 Million

Advance the implementation of national digital health strategies

- Accelerated Digital health **implementation at national level**
- **Digital Dynamic maturity** assessment to prioritize investment and support PHC & UHC

$140 Million

Strengthen governance for digital health at global, regional and national levels

- Governance established
- Global interoperability guidelines
- Guidance on digital hospitals, digital clinical trials and digital therapeutics
- Guidance on health data security

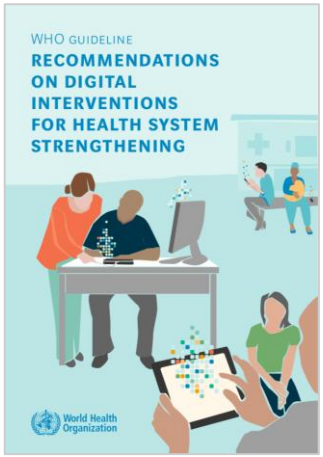
$90 Million

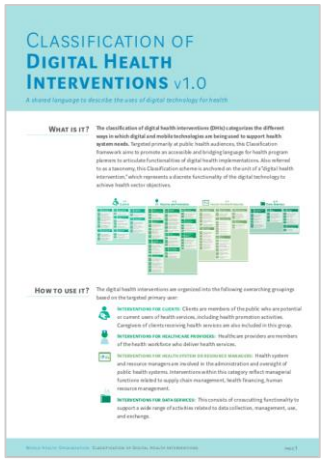
Advocate people-centered health systems that are enabled by digital health

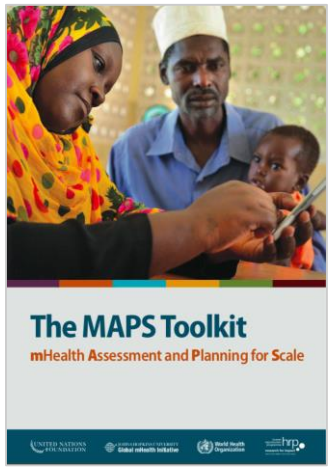
- Improved digital health literacy
- Framework on digital health tools
- global minimum health data standards for prioritized digital health technologies
- Guidance on personalised medicine

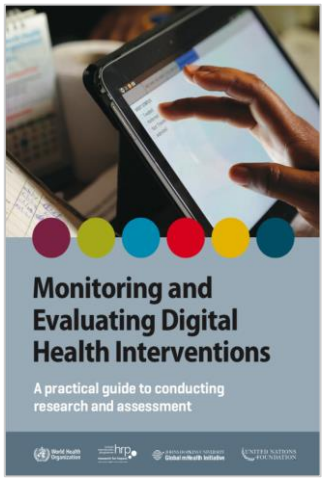
$70 Million

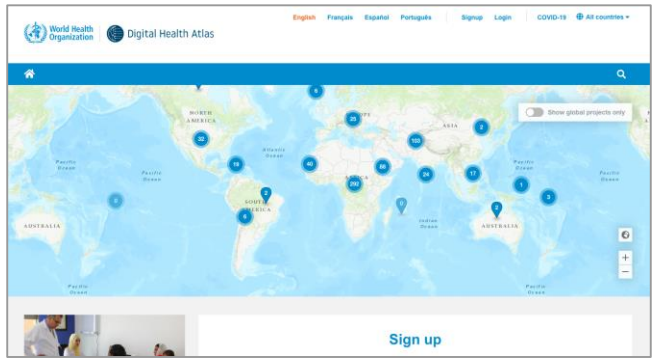
Digital Health Toolkits and Guidelines

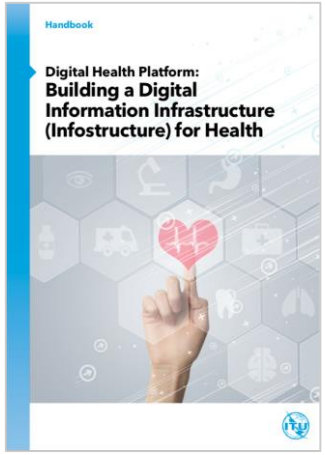


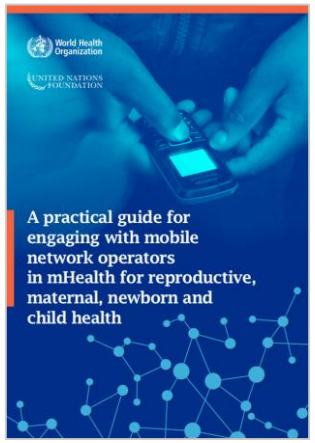


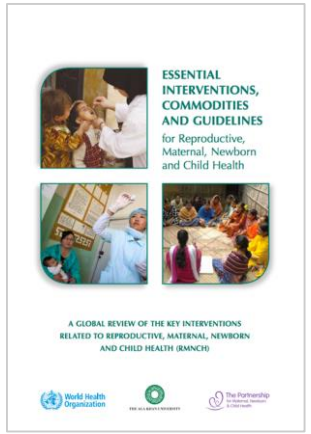


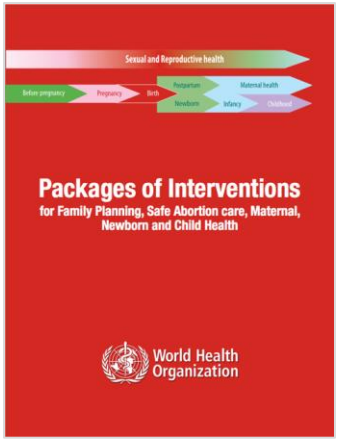












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Innovation & Standards

WHO Industry

Network of Networks

Invitation to be shared with GIO & TM Forum members

GIO member organisations to channel contribution:

Reduce reinvention

ITU-T / WHO

Common Governmental components:

- Payments
- Identity
- Privacy
- Registers
- Exchange

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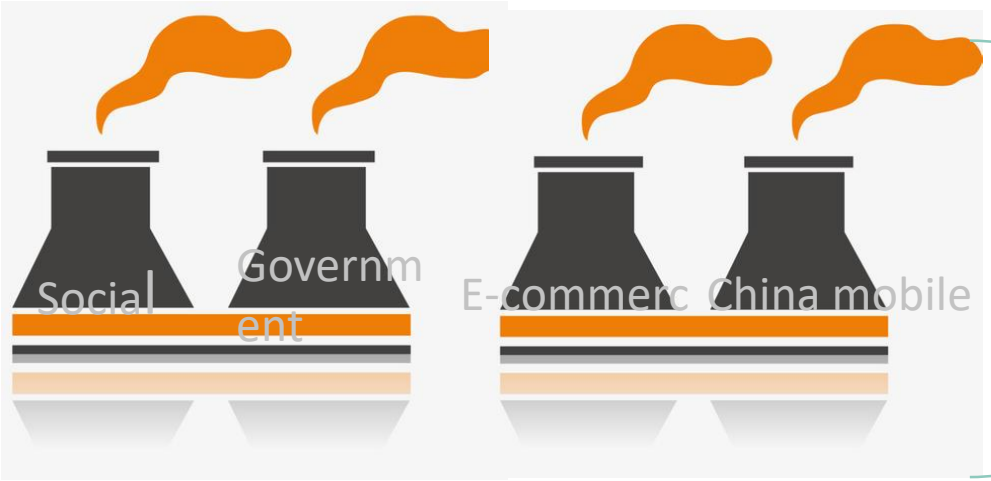
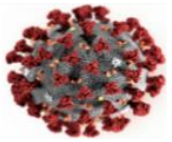
Trusted Data Sharing – Covid-19 Pandemic

Application build on top of trusted cross-domain data-sharing system plays a critical role in the control of corona virus and the prevention of future pandemics. Ultimately it will fast-forward the digital transformation for a sustainable development of humanity.

Mass Data and Information Island



COVID-19



Public sectors run separately

Poor communication in all circles

Unmanageable supply chain

Shock-Response Pattern

Smart Emergency Management of Digital Society

Government and residents

Cities and communities

Industry and supply chain

Daily monitoring and emergency response

Whole-domain Big Data

Telco operators

Partners' data platform

Public data of third party

Three challenges

Not willing —— Vested interests of stakeholders

Not daring —— Lack of data security protection and supervision

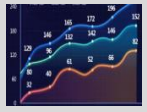
Not able ——— Poor data sharing channels

Trusted Data Sharing Architecture

Data driven Software as a Service

Social Governance

Smart Livelihood


Public Safety

Smart Tourism

Intelligent Transportation

Urban Credit

Omni-channels

amazon web services · 阿里云 aliyun.com · 华为企业云 HUAWEI · Microsoft Azure

Trusted Data-sharing Platform (joint construction by stakeholders)

Data Circulation (Block Chain)

- Smart contract
- Copyright traceability
- Authorization preservation

Data Hub

- Data Asset: Catalogue, Data map, Subscription, Publish
- Data Query: Search, Navigation
- Analytic Service: Report, Graph, Summary, Data Mining
- Common Service: Crowd, Logistic, Credit, Location

Data Virtualization

- Meta data
- Schema
- Router
- Cache
- Scheduler
- In-Memory Data Fabric
- Data Mapping

Privacy Computing

- Federated Learning
- Secure Multi-party Computation (SMC)
- Trusted Execution Environment (TEE)

Operation Console

- Membership Management
- Supply Chain Management
- Computing Service
- Data Service
- Resource Management

MPC Worker	Open Data API	Operator BigData Platform	MEC	MEC
MPC Worker	Open Data API	China Mobile BigData Platform	MEC	MEC
MPC Worker	Open Data API	China Telecom BigData Platform	MEC	MEC
MPC Worker	Open Data API	China Unicom BigData Platform	MEC	MEC
MPC Worker	Open Data API	Public Service: Citizen, Enterprise, . . .	Government	
MPC Worker	Open Data API	Industries/Internet	GLOBAL INDUSTRY ORGANIZATIONS	

Covid-19 Emergency Management Data Platform

Decision-makers

CDC staff

The public

Epidemic prevention and control center

- Regional Risk Control
- National Epidemic Management
- Infection Risk Analysis
- International Travel Advising
- Vulnerable Crowd Care
- Business Re-open Evaluation

Health analysis service

Propagation panoramic

- Super spreader
- Critical path
- Gathering finding
- Companion analysis
- Time series analysis
- Source tracing
- Trail studying
- Clues finding
- Dispatch optimization
- Public opinion tracking

- Emergency Instruction
- Key warning
- Solution generating

- Intelligent service
- Dynamic releasing
- Online collaboration

Data Circulation

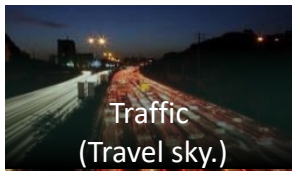
- Personnel management
- Clues management
- Trail extraction
- Connection weights
- Map building

Data virtualization

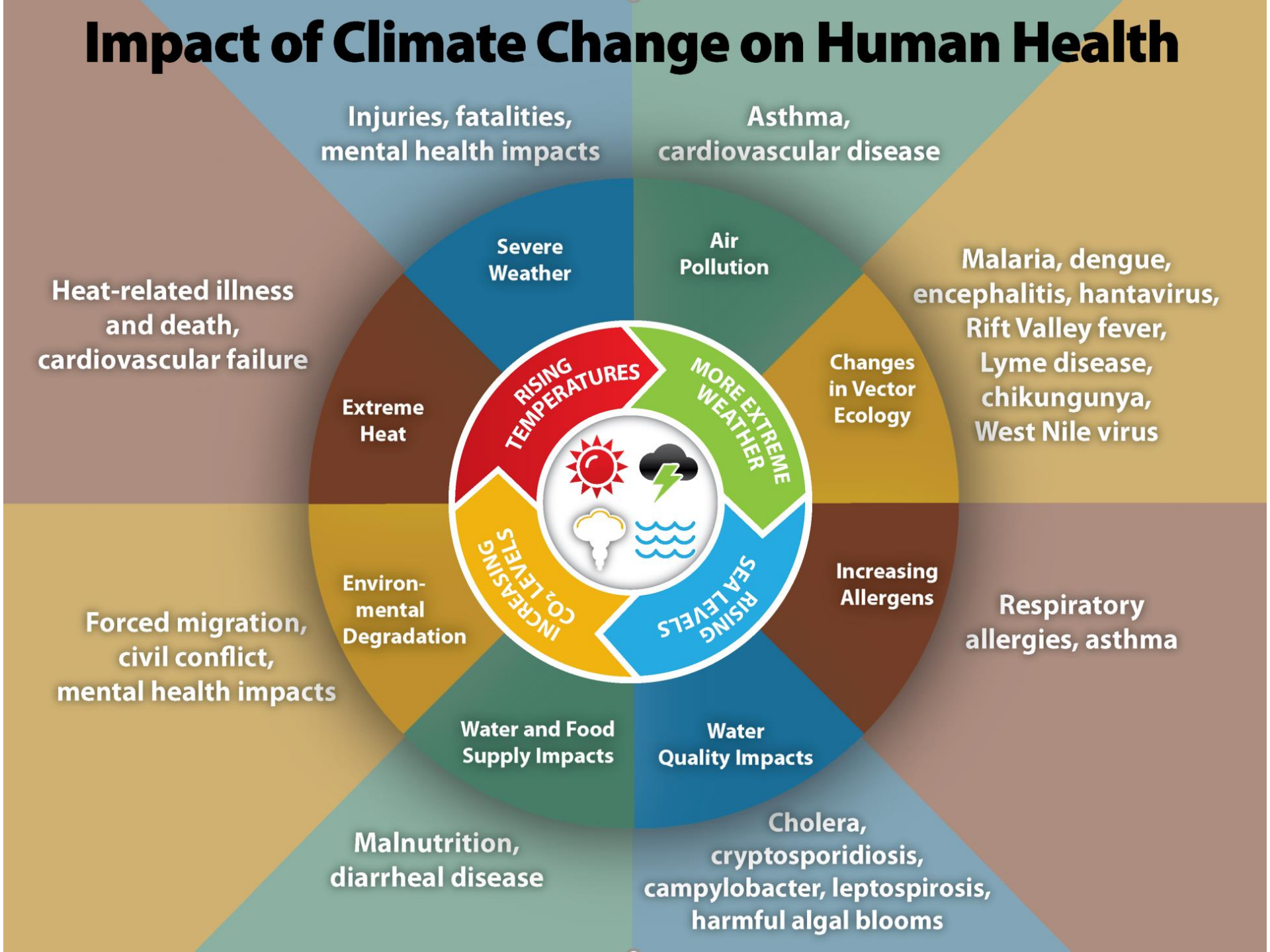
- Data cleaning
- Data processing
- Data storage

- Personnel: country, name, gender, birthday, SN, workplace, address
- Transportation: user, time, transportation, origin, destination
- Clues: person, place, time, object, event, item, action...
- Accommodation: user, time, hotel name, room number
- more data...

Data source



Impact of Climate Change on Human Health



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EarthMedic EarthNurse

- The Situation: 6th Great Extinction Event
- DUTY OF CARE OF HEALTH PROFESSIONALS – TO PEOPLE AND PLANET

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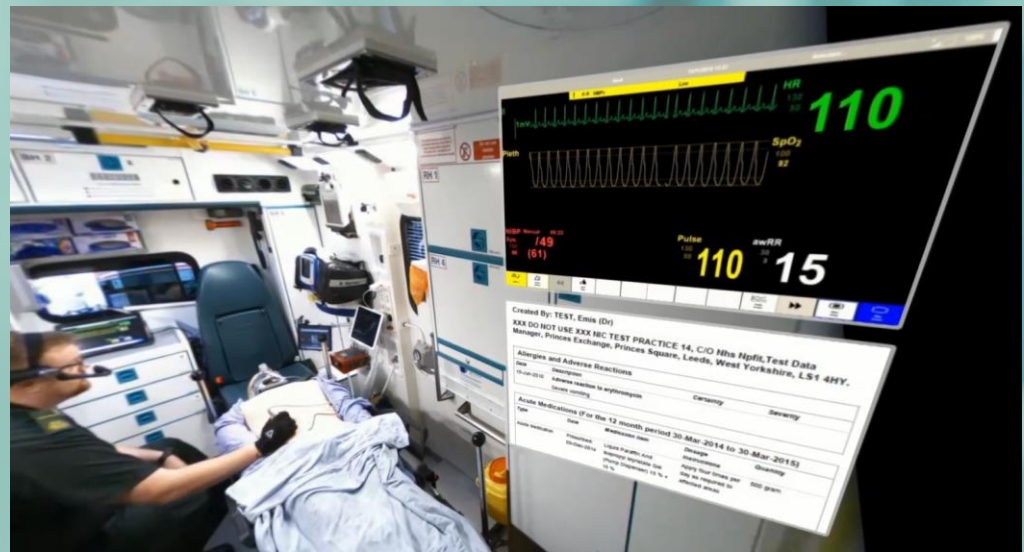
The **power of 5G** enabling early triage and diagnosis

Clinician guiding paramedic via **robotic technology**

Connected Ambulance

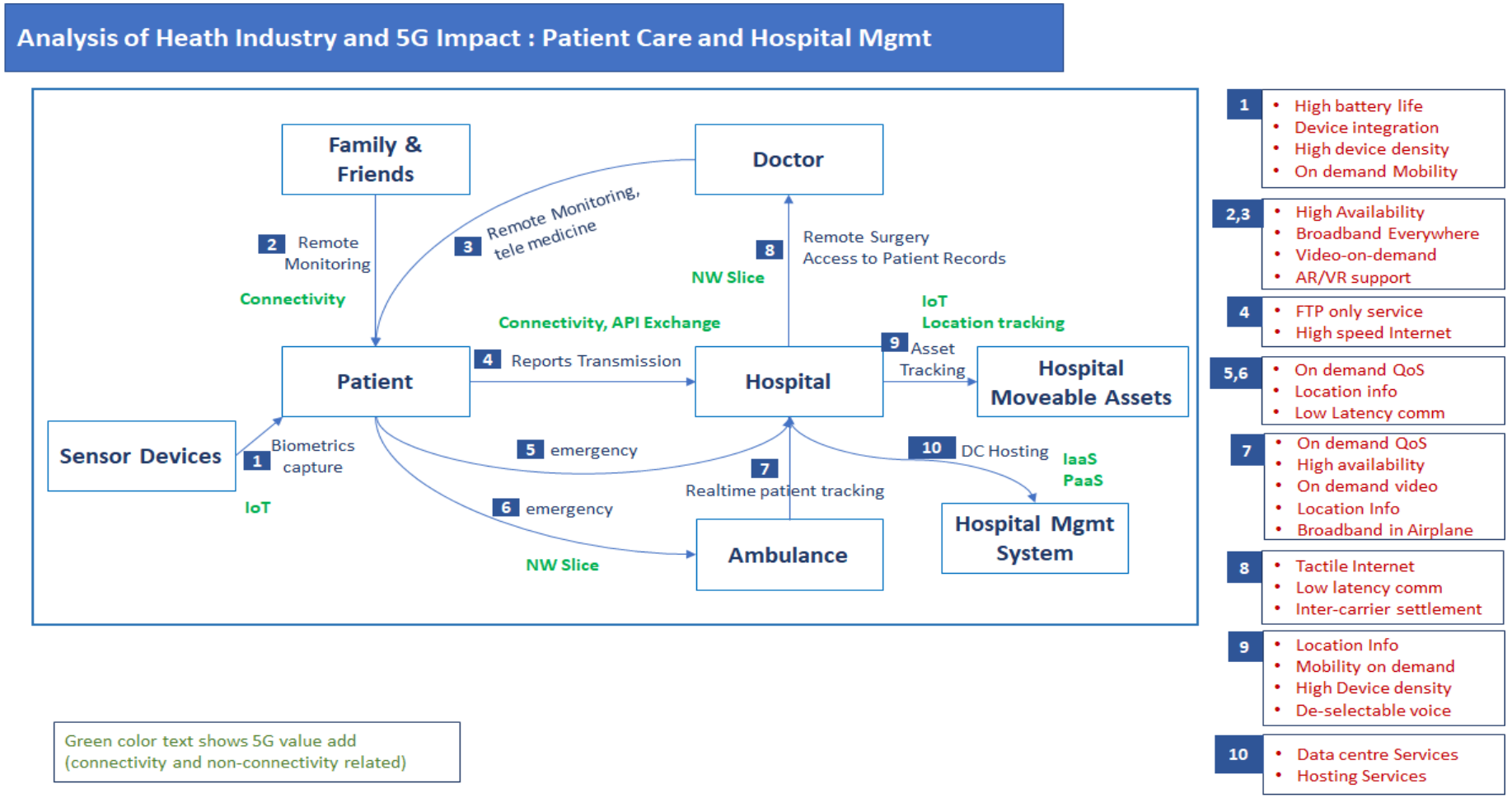
Virtual reality providing clinician **fully immersive experience** of the ambulance

Patient information relayed in **real time**



NHS
University Hospitals Birmingham
NHS Foundation Trust

Role of 5G & Connectivity in Digital Health



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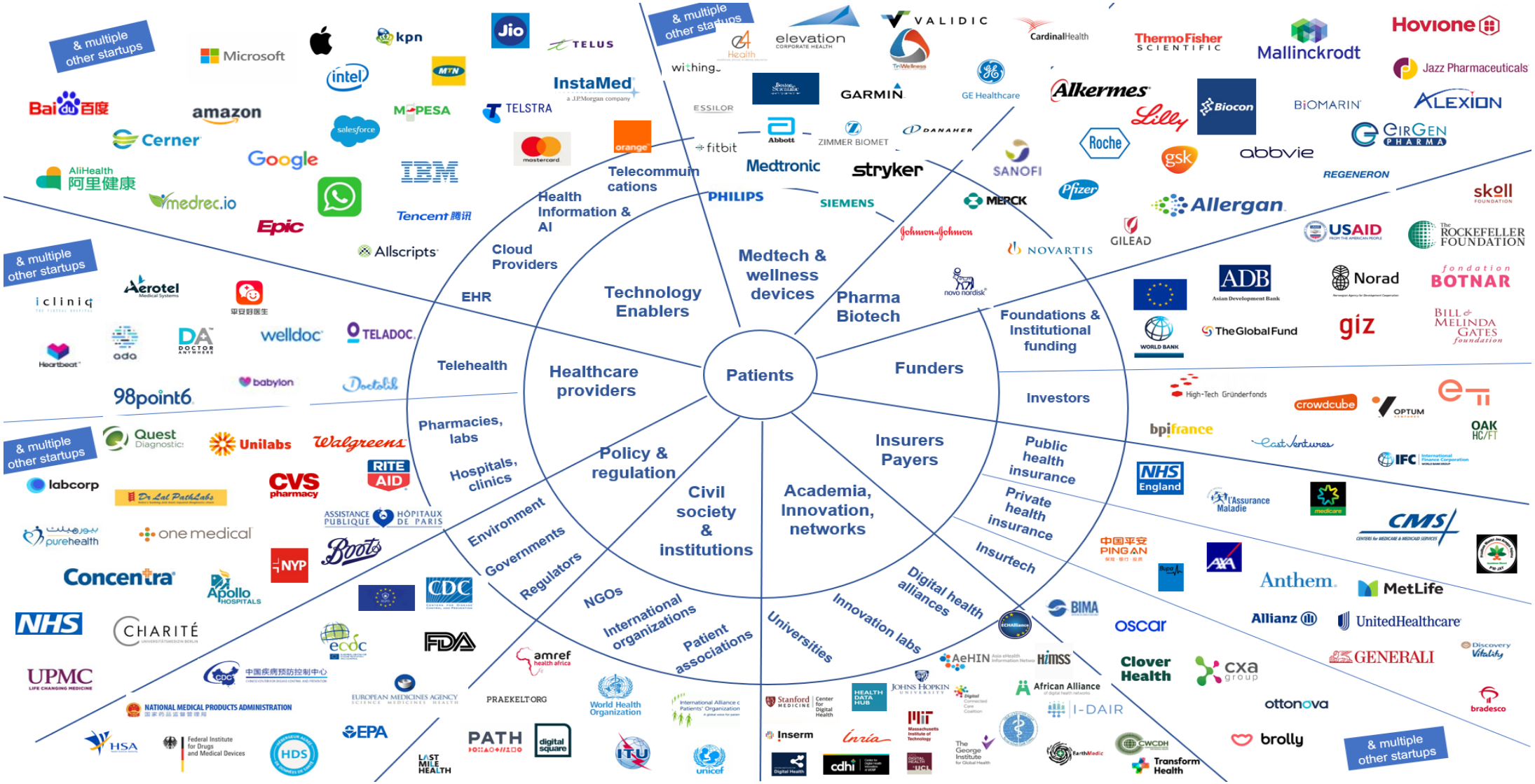
The Healthcare Ecosystem



Conclusions

- **Digital Health is still in its infancy however is growing fast**
- **WHO and ITU-T have significant initiatives getting underway – health equality / leaving no one behind**
- **GIO / TM Forum are invited to the network of networks of WHO to be held in March**
- **Breaking down barriers and creating a platform for co-innoavation between ICT & Health will be important going forward**
- **Need the right partners to develop a project on trusted data for health, climate and pandemic detection**
- **Given the complexity of the health ecosystem the expectation is that smaller ecosystems will evolve**
- **There will be a need for ecosystem modelling in health, understanding the relationship, information and revenue flows across the health ecosystems.**

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Thank you

For questions and information
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