Healthcare Innovations and Ecosystems:

COVID-19 and Beyond

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Key aspects covered in the lecture

➢Health and Healthcare

➢Healthcare innovations

➢Innovation lifecycle

➢Innovation ecosystems

➢Pre-COVID-19 situation

➢During COVID-19

➢Future Directions

What is health and healthcare?

➢State of physical, mental and social well-being (dimensions) and not merely the absence of disease (WHO)

➢Healthcare is aimed at maintaining, improving or correcting the above dimensions through prevention, diagnosis, treatment or rehabilitation

➢Primary, secondary, tertiary levels of healthcare

➢Healthcare innovation can thus happen at any of the above levels/ dimensions or multilevel and/or multidimensional.
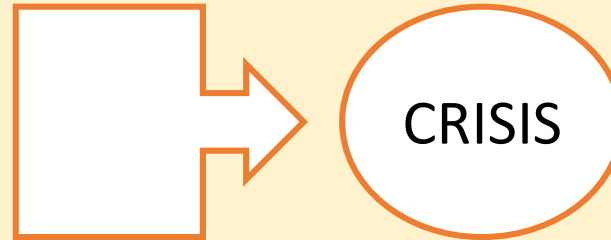
What is healthcare innovation?

➤ According to the WHO, healthcare innovation is to develop and deliver new or improved health policies, systems, products and technologies, and services and delivery methods that improve people's health.

➤ The WHO also states that the objectives of health innovations are to improve efficiency, effectiveness, quality, sustainability, safety, and affordability of healthcare. These objectives are reflected in the concept of Universal Health Coverage (UHC), which is part of goal 3 of Sustainable Development Goals (SDGs).

➤ Hence, optimizing or improving performance of the healthcare systems becomes the overarching goal of healthcare innovation.

How are healthcare innovations different from other innovations?

➢ Matters of life and death

➢ Recession-resistant

➢ Contributing to one of the fastest growing industries, the healthcare industry

➢ Innovation adoption and diffusion in some sub-sectors takes more time. For e.g. biotechnology, medical devices, pharmaceuticals

➢ Innovation adoption, implementation and scalability in healthcare system are dependent on the social, political, economic, institutional and cultural contexts of a particular system.

Why is healthcare innovation needed?

➢Voids/Gaps - Systemic, Institutional

➢Although roadblocks to efficiency, equity, quality, they provide opportunities for innovation

➢What did COVID-19 do to the voids?

1. Exposed or widened them

2. Created new voids

CRISIS

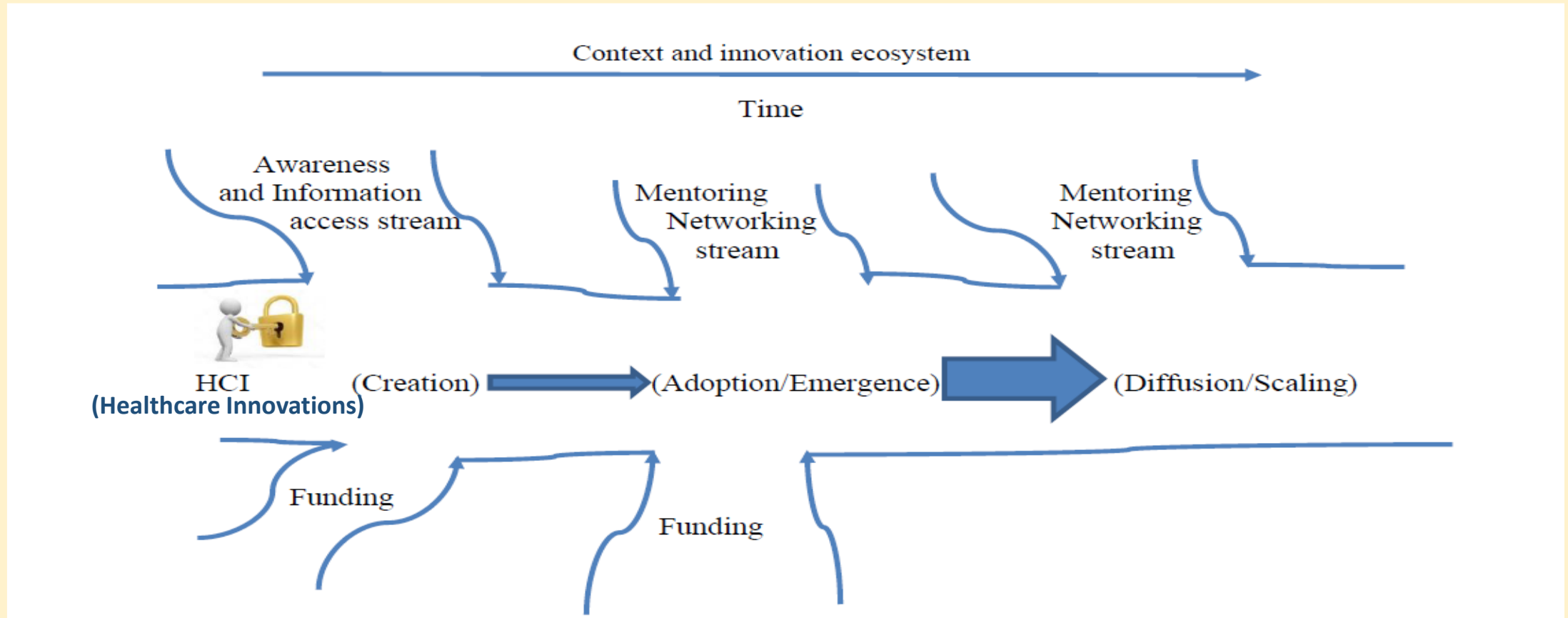➢Crisis and opportunity are two sides of the same coin.

COVID-19 innovations

Entrepreneur using innovation as a key to unlock opportunity

What happens next?

Healthcare innovation lifecycle (Convergent Stream Framework Model)

Source: Mukherjee K (2021). Healthcare startups and ecosystems: Insights from an emerging market economy. https://doi.org/10.33774/coe-2021-08ql0

What is innovation ecosystem?

Dynamic collaborative network of individuals and organizations with an innovative objective.

Forms of innovation ecosystems

➢Collaborative innovation networks

➢Innovation clusters

➢Global value chain

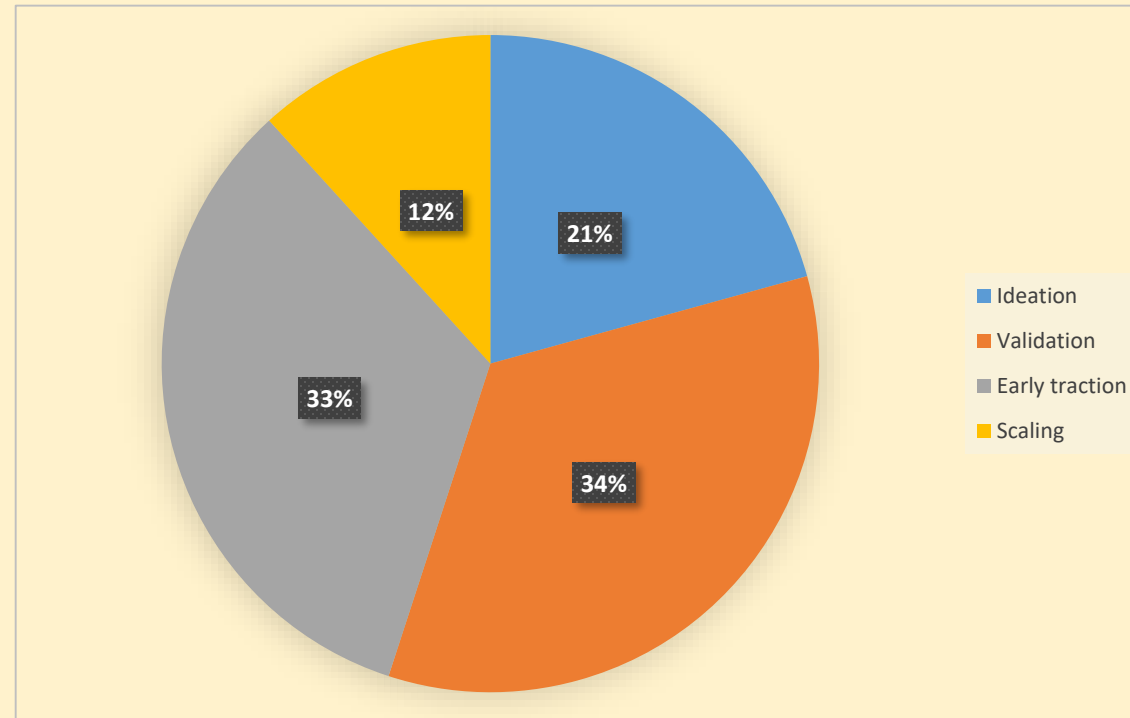➢Platforms - Digital platforms. For e.g. Startup India portal

Health innovation ecosystem

The health innovation system includes regulatory agencies, science and technology agencies and production agencies, in dynamic interaction with healthcare professionals, hospitals and the national healthcare system.
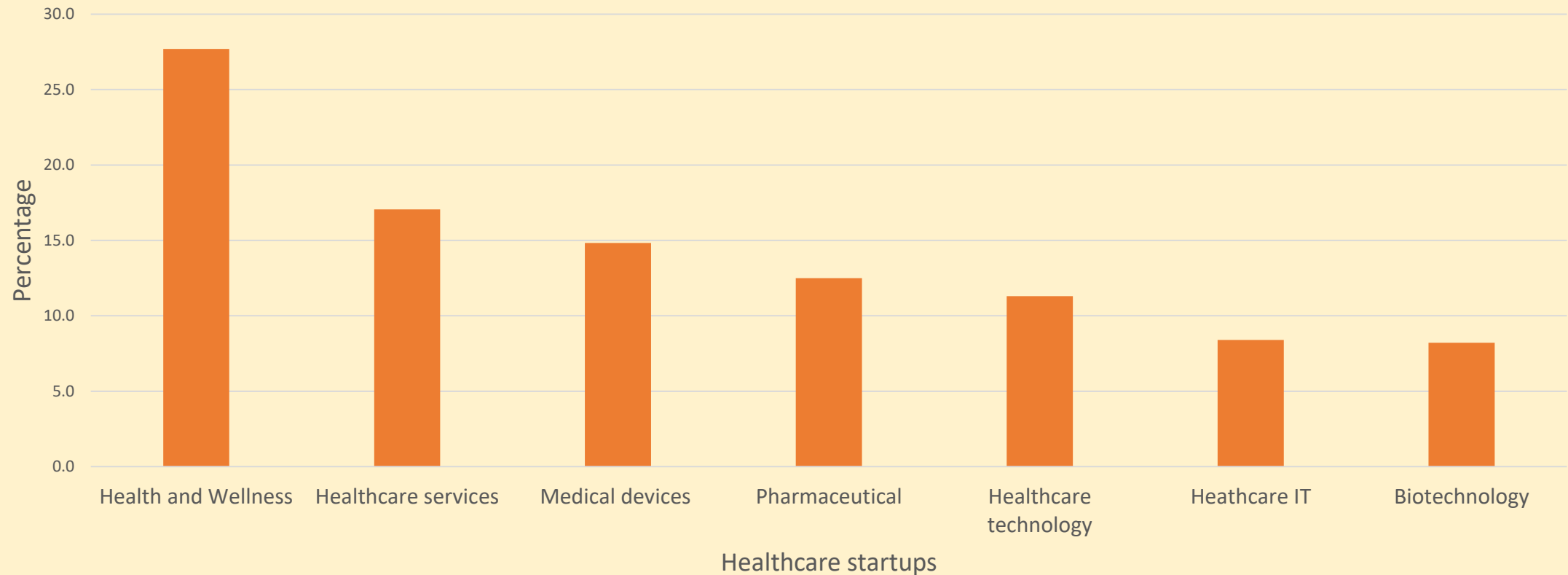
Pre-COVID-19 situation

➢ India was leapfrogging the use of healthcare technology innovations, such as mobile health devices, technology integration with healthcare data and telemedicine strategies (Driven by policy, epidemiology and demography).

➢ This has leveraged India's position in the ranking of startup ecosystems, development of information, and increase in knowledge and technology-based enterprises.

➢ India has the world's third largest startup ecosystem, and is ranked fourth in the world in the National Entrepreneurship Context Index.

Healthcare innovations stage distribution

Source: Mukherjee K (2021). Healthcare startups and ecosystems: Insights from an emerging market economy. https://doi.org/10.33774/coe-2021-08ql0

Distribution of sub-sectors among healthcare innovations

What did COVID-19 do to the innovation lifecycle?

Contraction of time in the innovation lifecycle

Pre-COVID-19:

Creation ⟶ Adoption ⟶ Scaling

During COVID-19:

Creation ⟶ Adoption ⟶ Scaling

What caused this contraction of innovation lifecycle?

➢ Cross functional collaboration

➢ Open-source data sharing

➢ Decrease administrative barriers

Positive example: COVID-19 vaccines

Negative example: Plasma therapy

COVID-19 specific ecosystem

➤CAWACH (Centre for Augmenting War Against COVID-19 Health Crisis): 54 startups for funding.

➤CIDA (COVID-19 Innovation Deployment Accelerator) anchored by C-CAMP in partnership with multiple partners: 30 startups selected

➤Venture Centre (CSIR): 25 startups selected in the 'War against COVID-19' initiative.

➤Co-WIN (Covid-19 Vaccine Intelligence Network)

Future directions

➢COVID-19 is converting the innovation sprint into a marathon

➢Short and long-term uptake of healthcare innovation become critical questions

➢How do we ensure healthcare innovations are not only effective but also contributing to equitable and sustainable healthcare systems?
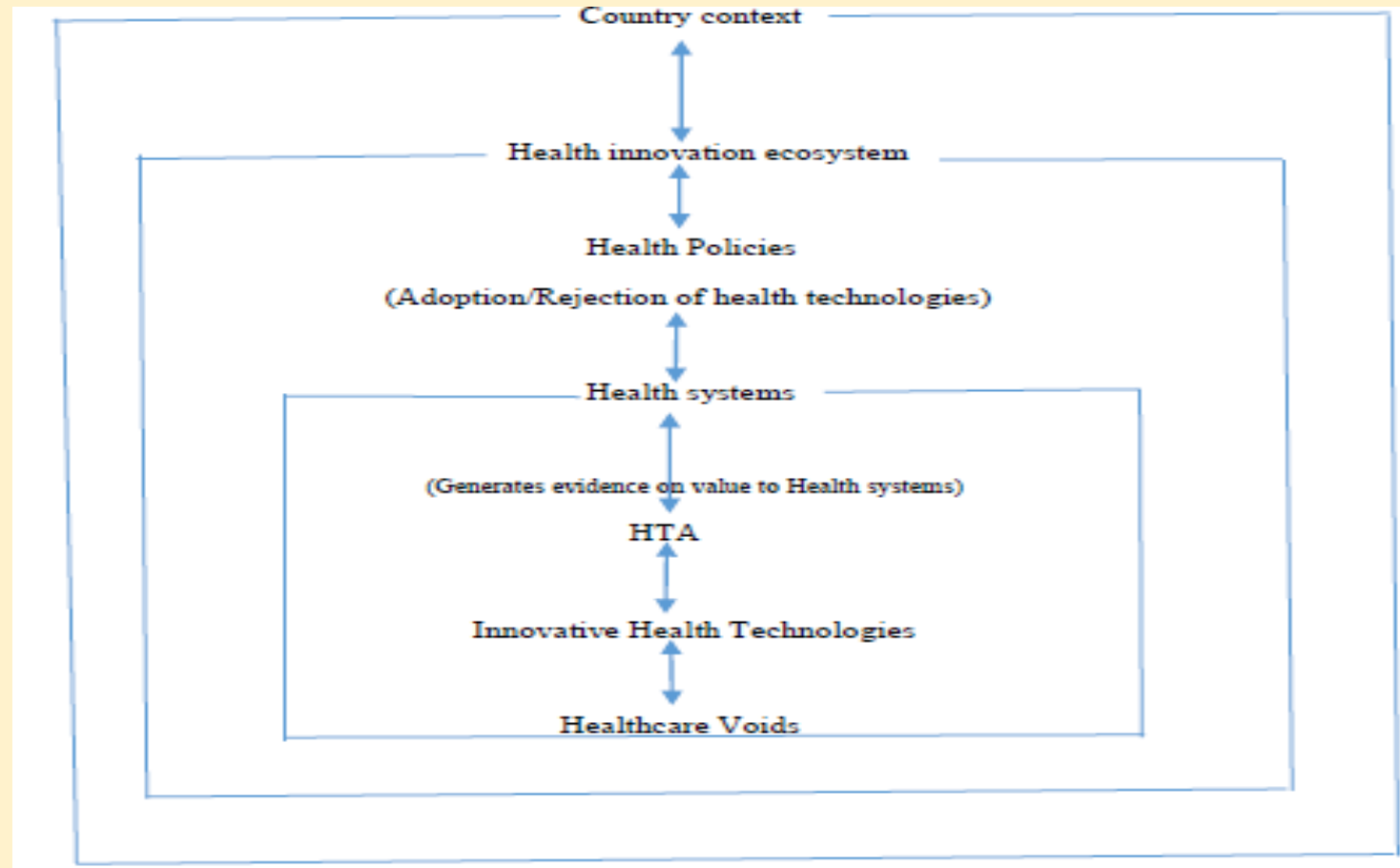
➢HTA in Health Innovation Ecosystems

Health Technology Assessment (HTA)

➢Multidisciplinary process that uses explicit methods to determine the value of a health intervention and technology at different points in its lifecycle with the purpose to inform decision-making in order to promote an equitable, efficient, and high-quality health system.

➢TISS is the only university in South Asia, which provides holistic capacity building on HTA through its two-year MPH (Health Policy, Economics and Finance) programme started in collaboration with the LSE in 2010.

➢This programme is an example of frugal innovation for providing evidence to policy makers at zero cost to the healthcare system, and led to the development of SMART framework for HTA capability development (http://dx.doi.org/10.1016/j.hlpt.2019.12.001)

Use of HTA for healthcare innovations

➢**F**NCAS9 **E**ditor-**L**imited **U**niform **D**etection **A**ssay (FELUDA) COVID-19 diagnostic test (CSIR initiative)

➢First Health Technology Assessment (HTA) for COVID-19 specific diagnostic in India

➢The HTA shows FELUDA to be highly cost-effective, affordable, and sustainable for healthcare systems (https://doi.org/10.1016/j.hlpt.2021.01.003)

➢FELUDA test has been approved for use by the Drug Controller General of India (DCGI)

HTA in health innovation ecosystems

Conclusions

➢ Healthcare innovations involve multidimensional and multilevel interactions, which make it complex.

➢ A systems approach to healthcare innovation is useful.

➢ Crisis can be a driver of innovation.

➢ COVID-19 provides both technical and adaptive challenges to innovations.

➢ Healthcare innovations need not be expensive or complicated. The simplest solutions are many times the most effective ones.

➢ HTA has an important role to play in health innovation ecosystems in the journey from destructive creation to creative destruction!

Thank You

Take care & stay safe