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GIO eHealth (Pandemic) Workshop Summary

May 26th 2020

eHealth (Pandemic) Digital Transformation – Detailed Meeting Notes

Workshop Moderators: Joann O’Brien (TM Forum) and Luigi Licciardi (5GSA)

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1. Introduction – Joann O’Brien (TM Forum)

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Joann set out the context for the workshop, the eHealth pandemic that has gripped the world creates a need for greater co-operation and sharing of knowledge & insights, we GIO (Global Industry Organisations) as an open environment to enhance the communication about vertical industries and ICT digital transformation, and this workshop try to explore new value from ICT & Telecommunications industry for future digital health, aim to leverage this platform to support our partners in healthcare.

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ICT can play an important role in the consistency and accuracy of information, safe interoperability, remote diagnosis and improve decision making.

The workshop will explore the important topic of the role of ICT and Global Industry Organisations in the ongoing support towards the management of pandemics around the globe with the view to creating an ongoing collaborative activity to help gain a positive impact on societies around the world.

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Eight Expert Speakers, representing relevant SDO/Alliances and excellence Centers in Health and ICT, have kindly offered to share their experiences during their time in helping manage major Pandemics. The Speakers were then introduced as follows:

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2. Digital Health Technology in combating COVID-19 – Dr Shan Xu (ITU-T SG16))

35 Dr Shen Xu gave an overview of the recent fight against COVID-19 in China from the initial identification through the rapid spread and on to the subsequent containment of the Virus. She added her thanks to many others for all the people who have risked their own health during this time

40 She then went on to review how Digital Technology can help during the current and future Pandemic situations.

She presented a match of Requirements to Technology which she described as “Magic Combinations”. These are described in slide 8 of her presentation embedded below.

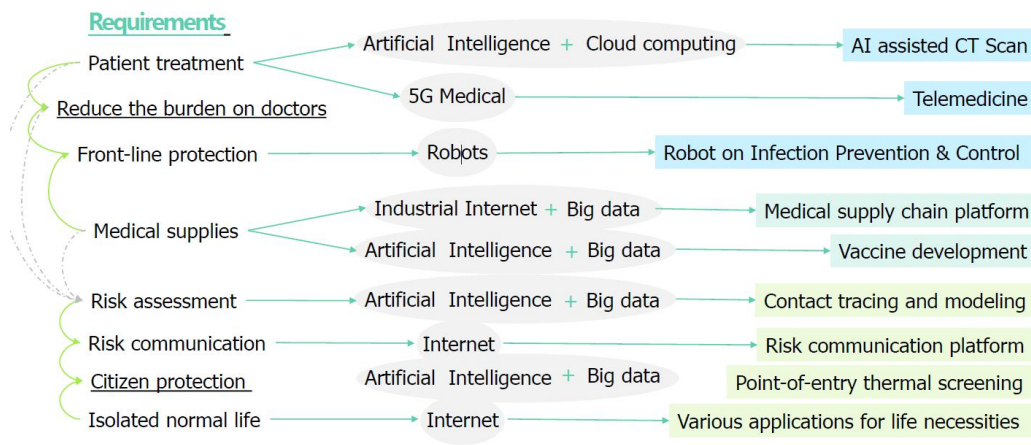
45 She highlighted eight Digital Health Cases which are already being worked on in the areas of:

- 45 • AI assisted CT Scan
- Telemedicine
- Robot use in Infection Prevention and Control
- Medical Supply chain platforms
- Vaccine development
- 50 • Contact tracing and modeling
- Risk Communication Platform
- Point-of-entry Thermal Screening

She concluded by reviewing some of the Organisations that are working in this area including CAICT, ITU and WHO.

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Magic combinations...



3. Health and Well-Being in Socio-Technological Ecosystems – Lessons learned from COVID-19 Emergency – Dr Alberto Sanna (San Raffaele Hospital))

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Dr Alberto Sanna's presentation reviewed how, in a world of an ageing society with many people living unhealthy lifestyles, the majority of people living in urban areas, how can we maintain:

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- Smarter and Healthier Cities
- Smarter and Healthier Life and
- Smarter and Safer Hospitals?

He reviewed a number of Projects that taking place around the Internet of Medical Things, a Market predicted to be worth nearly 160 billion US Dollars by 2022.

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He proposed that we need an Integrated vision and solution delivering "Personalized e-Services in Everyday Life". This would cover many areas including

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- Home life
- Work life
- School
- Healthcare
- Shopping
- Diet and food

He concluded by saying that work in this exciting and challenging area has only just started and will take many years to complete. He focused on the value of combining Health and Well-Being and on the launch of personalized First Class services. But to succeed:

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"World Processes will need to be changed to make for a better world"



4. eHealth for All – Rham Tafazolli (University of Surrey 5GIC)

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Rham Tafazolli's presentation focused on how Tele-Care, supported by ubiquitous Mobile Communications, can support the healthcare problems the world is facing today:

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- Ageing Population
- Unhealthy Lifestyles
- Community Care
- Infectious Viral Diseases
- Healthcare Staff Shortages
- Unavailability of expensive Operating Rooms and Surgeons
- Hospital Capacity Shortage

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He described how an Integrated Tele-Care System could be used to relieve pressure on scarce resources including home based care and Remote Surgery and Diagnostics.

The real benefits of this are realized in three areas:

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- Empowerment of Professional Healthcare workers
- Patient-centred Care
- Patient Empowerment

He concluded by describing a Contact Tracing App he is involved in developing which will improve the accuracy of tracing viral spreading patterns.

WHAT mHEALTH BRINGS TO TELE-CARE



HEALTHCARE PROFESSIONAL EMPOWERMENT



PATIENT-CENTRED CARE



PATIENT EMPOWERMENT



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5. The Role of Digital Transformation (DT) in Emergency Management System for Public Health Events – Dr Chen Bin (ITEI)

110 Dr Chen Bin began by comparing the Public Health events that have happened in China over the last 20 years, SRS in 2003, H1N1 in 2009, H7N9 in 2013 and COVID-19 in 2020 which has had by far the biggest impact with over 5 million cases and 300 thousand deaths worldwide.

He reviewed the steps that have been taken over that time to improve the Emergency Management System. This covered four areas and addressed the following questions:

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- Do we have a ready planned Organisation to handle any future emergencies and what does it look like?
 - What advance warning mechanisms do we have in place?
 - Do we have Emergency decision making Process ready to roll out?
 - What infrastructure have we built in preparation?
 - 120 • What tools can we provide to individuals to manage their Personal Risk?

In addition, it is vital to have an effective Information System to provide clear and accurate information to any ongoing public health care event.

Dr Chen Bin concluded by highlighting four areas for future work:

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- Technical guidelines for DT in medical practice
 - Specification of new ICT applications in emergency management systems for public health events
 - Smart hospital applications
 - Risk Management and safety



6. ICT to Support Intelligent Medical Requirements – Qingjun Lu (5GDNA)

Qingjun Lu started by focusing on the role new Infrastructure will play in supporting new Intelligent Medical Requirements. These will be underpinned by 5G but include:

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- Networks
- Cloud Computing
- Big Data

5G brings with it a number of features and advantages that match the needs of the Healthcare Industry. These include:

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- High capacity and throughput
- Low Latency
- Multi-Connectivity
- Security

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Advantage needs to be taken of all of these when developing new Applications. Although the use of 5G was already being developed, COVID-19, with the resulting lockdown policies, drove the need and developments forward.

He foresaw work in **five** initiatives:

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- 5G for all as a basic Healthcare requirement
- Medical equipment to be 5G capable
- Strengthening of Policy Guidelines
- Updated Business Models
- Deterministic Health Network Slicing



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7. Fight against COVID-19 with 5G Applications in China – Li Shan (5GAIA)

Li Shan began by giving an update on the rollout of 5G in China. At the end of April 2020 there were over 200 thousand base stations. By the end of 2020 this will have grown to over 680 thousand.

Subscriber grow has been very rapid. At the end of March 2020 an estimated 50 million people had subscribed to 5G plans with over 120 devices being available.

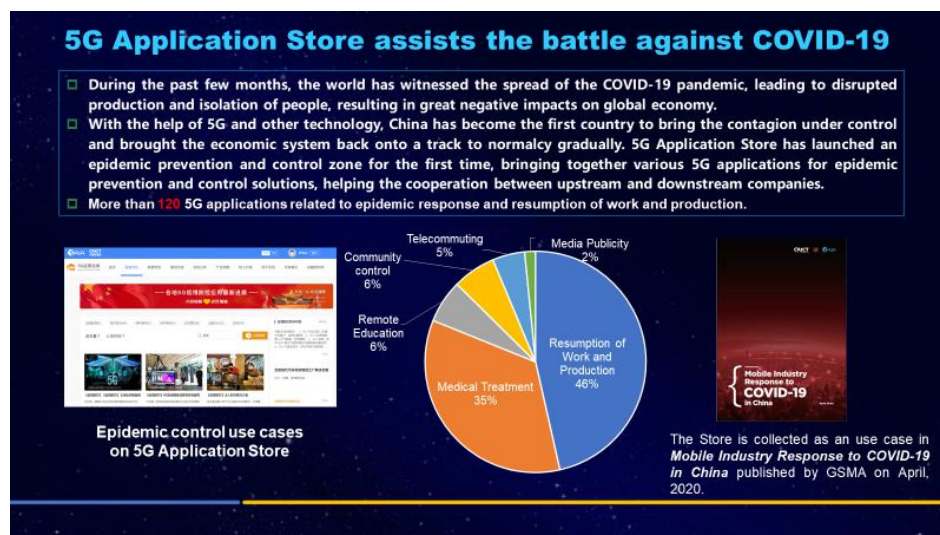
This rapid growth has fueled an enormous amount of Product development including wearable devices, IoT devices, Virtual Reality, V2X cars and Robots.

These can be categorized in a “3+4+X” Model:

- 3 DIRECTIONS
 - Digitalized industry
 - Intelligent life
 - Digital governance
- 4 GENERAL APPLICATIONS
 - 4K/8K UHD Video
 - VR/AR
 - Robot
 - Unmanned vehicle/aerial vehicle/ship
- X VERTICAL MARKET APPLICATIONS
 - 5G is being used in industry, education, healthcare and others vertical markets

A 5G Appstore has been setup to assist in the battle against COVID-19 providing access to many applications from Remote Ultrasound Diagnosis to the use of Drones.

In conclusion, 5G applications have moved from the imagination to reality.



185 **8. The role of 5G in the Management of Health Emergencies and Pandemics – Frederic Desnoes (Orange)**

Frederic Desnoes began by introducing a TM Forum Catalyst Project called Skynet looking at “Borderless Remote Health Care: A Reality with 5G”.

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In 2019, Skynet started from the observation that epidemic outbreaks were happening frequently, even in well developed countries and swift, coordinated handling was crucial.

The Skynet Project had five main aims:

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- Address how telecoms can help the eHealth sector.
- Address how the Skynet model can enable an unprecedented medical collaboration around the globe.
- Demonstrate interoperability between service providers thanks to the creation of an open eco-system based on TMF assets.
- Show how software standardization is key to enable interoperability, on demand service activation as well as dynamic allocation of resources.
- Improve communication through the health sector and enabling collaboration between international agencies and local health administrations in countries.

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The next round of developments called “Ghost in the shell” will:

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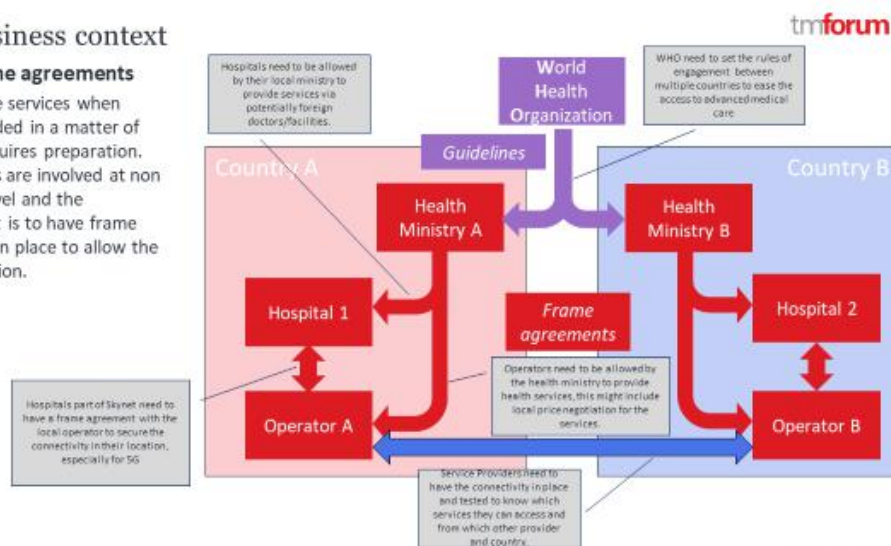
- Enable live demos on the existing Skynet Architecture, working with experts from the Health sector (medical universities and medical equipment manufacturers).
- Demonstrate remote medical training using real medical devices
- Deliver Enhanced Live service assurance adding external data sources and AI, and catastrophic scenarios
- All for Multi-Country, Multi-Operator hybrid network slices

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The business context

The frame agreements

Enabling the services when they're needed in a matter of minutes requires preparation. Many actors are involved at non technical level and the requirement is to have frame agreement in place to allow the service fruition.



9. Managing Risk to get People Safely Back to Work – Rob Leslie (Covidra)

215 Rob Leslie started his presentation with the following stark fact”

“Today the public has NOTHING to help them assess and quantify personal risk”

220 Current Contact Tracing Applications usually make use of Bluetooth which, although it can accurately measure close proximity and duration of interactions, has several disadvantages:

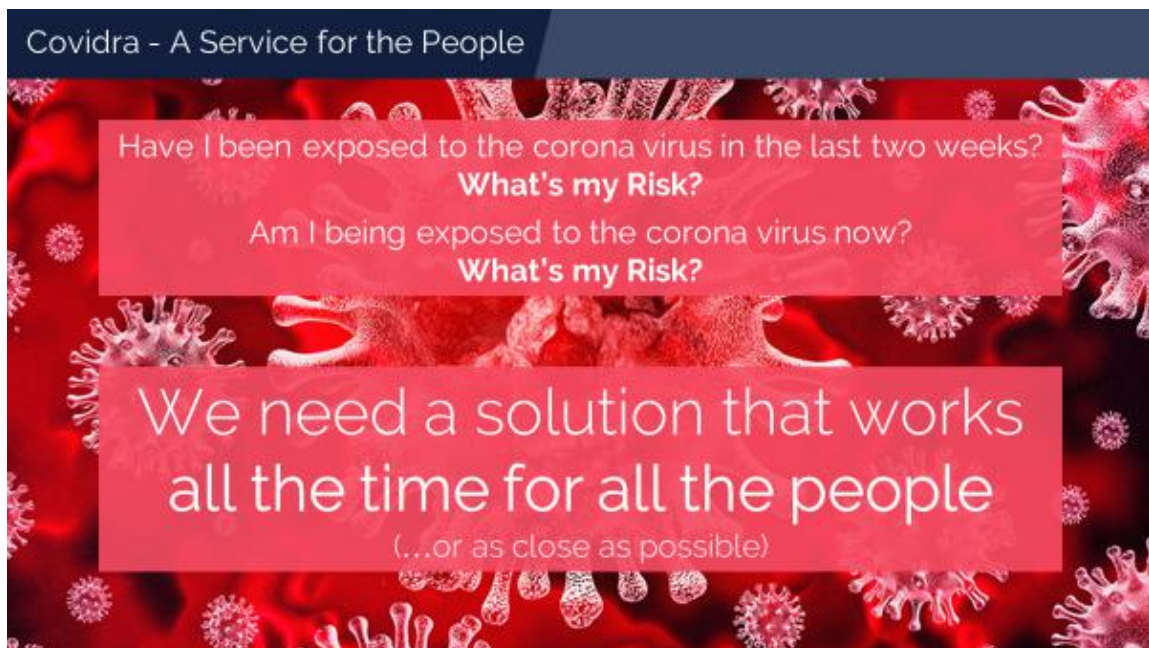
- Requires a Bluetooth enabled smartphone
- Requires affirmative action to download an app
- Requires Bluetooth function to be switched on (power consumption)
- Requires mass adoption to be effective, > 60%
- 225 • Potential for false positives, false negatives
- Privacy & Security challenges
- Perception of “Big Brother is watching”

“What is needed is a solution that works all the time for all the people”

230 The presentation went on to describe a concept that he had developed that would build a corona virus risk map that would be linked an individual’s movements and is currently looking for Telecommunications collaborators to build a Proof of Concept.

His final message for any solution was:

“PRIVACY by design”



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10. Conclusions following Discussions with Speakers, Luigi Licciardi (5GSA)

240 During discussion, concluding remarks covered the following which will form part of the Framework for continuing work:

- 245 • Data has a key role to support in supporting Government and Scientists in crucial decisions during Pandemic
 - How can we guarantee Data consistency, fast availability and statistical value?
 - 250 How can Data forecast Pandemic evolution and suggest actions considering the history?
- How will our Life and Work change after COVID 19?
 - Public vs Private/family
 - Sport, Entertainment, Events
 - Smart working, Smart School
 - 255 Smart cities vs Smart Country (decentralized, distributed inhabitants and connected small villages)
- Contagious/Contact tracking is important, use of drones might be useful, but what about Privacy rules and concerns?
- Are there opportunities for start-ups or industry conversions? What are the most promising areas?
- 260 • ICT (including AI) and Health were never so close as in the COVID-19 Pandemic. Is this a Temporary or Long Term Transformation?
 - How can scientists (in Medicine, Pharmaceutical, Mathematics, Engineering) work together?
 - 265 What is the role SDO and Vertical alliances, what about Standards on E-health and well-being?
- Telecommunications and IT played a key role, nevertheless many Enterprises collapsed and investment could be delayed
 - What will the impact be on 5G deployment?
 - 270 What about 5G Slicing maturity and introduction in Health and well-being?
 - What are the key technologies to focus on?

270 These remarks and questions might require time for a deeper analysis and could be good suggestions for a medium term initiative on E-health Digital Transformation in GIO. Speakers are encouraged to answer to 1 or 2 questions in the next days by email and their answers are going to be resumed and distributed to GIO representatives and people that attended the Virtual Workshop.

11. Attendees

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12. Speaker Bios

See document “eHealth Digital Transformation Speaker BIODs”