Digital Health Surveillance and COVID-19
Special track in the 15th International Conference on Digital Society
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Chaired by: Professor Theo Lynn
About Theo Lynn

Professor Theo Lynn is (Full) Professor of Digital Business at DCU Business School. Professor Lynn specializes in the role of digital technologies in transforming business processes. His main teaching areas are strategy and digital marketing.

Prof. Lynn was Centre Director at the Irish Institute of Digital Business (2018-2019), Principal Investigator of the Irish Centre for Cloud Computing and Commerce, an EI/IDA funded Cloud Computing Technology Centre (2011-2018), Associate Dean (Industry Engagement and Innovation) at DCU Business School (2015-2017), Business Innovation Platform Director for DCU (2015-2016) and Director of the Leadership, Innovation and Knowledge Research Centre at DCU (2009-2011). He has won over 200 grants representing over €20m in total project funding. He was a PI on the Horizon 2020 CloudLightning Project (2015-2017) and Horizon 2020 RECAP Project (2017-2019); he is currently a PI on the Horizon 2020 RINNO project (2020-2023).
COVID-19 initially was characterised by unknown pathogenicity, transmission, and treatment thus requiring a variety of non-pharmaceutical interventions.

Credit: Whitelaw et al. 2020
These non-pharmaceutical interventions required adopting a wide range of digital technologies and integrating them into policy and health care (Whitelaw et al. 2020)

<table>
<thead>
<tr>
<th>Functions</th>
<th>Digital technology</th>
<th>Countries</th>
<th>Advantages</th>
<th>Disadvantages</th>
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<tbody>
<tr>
<td>Tracking</td>
<td>Tracks disease activity in real time</td>
<td>Data dashboards; migration maps; machine learning; real-time data from smartphones and wearable technology</td>
<td>China; Singapore; Sweden; Taiwan; USA</td>
<td>Allows visual depiction of spread; directs border restrictions; guides resource allocation; informs forecasts</td>
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<td>Screening for infection</td>
<td>Screens individuals and populations for disease</td>
<td>Artificial intelligence; digital thermometers; mobile phone applications; thermal cameras; web-based tools</td>
<td>China; Iceland; Singapore; Taiwan</td>
<td>Provides information on disease prevalence and pathology; identifies individuals for testing contact tracing, and isolation</td>
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<tr>
<td>Contact tracing</td>
<td>Identifies and tracks individuals who might have come into contact with an infected person</td>
<td>Global positioning systems; mobile phone applications; real-time monitoring of mobile devices; wearable technology</td>
<td>Germany; Singapore; South Korea</td>
<td>Identifies exposed individuals for testing and quarantine; tracks viral spread</td>
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<tr>
<td>Quarantine and self-isolation</td>
<td>Identifies and tracks infected individuals, and implements quarantine</td>
<td>Artificial intelligence; cameras and digital recorders; global positioning systems; mobile phone applications; quick response codes</td>
<td>Australia; China; Iceland; South Korea; Taiwan</td>
<td>Isolates infections; restricts travel</td>
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<td>Clinical management</td>
<td>Diagnoses infected individuals; monitors clinical status; predicts clinical outcomes; provides capacity for teledicine services and virtual care</td>
<td>Artificial intelligence for diagnostics; machine learning; virtual care or teledicine platforms</td>
<td>Australia; Canada; China; Ireland; USA</td>
<td>Assists with clinical decision-making, diagnostics, and risk prediction; enables efficient service delivery; facilitates patient-centred, remote care; facilitates infection control</td>
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Table: Digital technology initiatives used in pandemic preparedness and response
DELIVERING HEALTHCARE AGAINST THE BACKDROP OF SOCIAL DISTANCING INTRODUCES SIGNIFICANT LOGISTICAL CHALLENGES
Contact tracing and vaccination only work where there is high uptakes by the population.

Contact tracing works by notifying everyone in close contact. It may also be possible to send notifications to indirect contacts.

Notifications sent to direct contacts

Notifications may be relayed to more distant contacts

Infected with coronavirus
Clinical management in social distancing requires adoption and use of telemedicine by health professionals and end users.

Going into COVID-19, more than 60% of GPs did not use electronic networks to exchange medical data with other healthcare providers and professionals, and 50% of GPs did not use e-prescriptions to transfer prescriptions to pharmacists.
At a time of uncertainty, the Internet is rife with misinformation and disinformation. Rather than helping, the power of the Internet is being used to fuel vaccine hesitancy.
E-health and health surveillance requires understanding barriers to technology adoption and use and removing these barriers where possible.
Global problems need global perspectives, knowledge sharing, and collaboration.
Agenda

01. A Longitudinal Analysis of the Determinants of Citizen Acceptance of Contact Tracing Mobile Apps
   Grace Fox, Pierangelo Rosati, Lisa van der Werff, and Theo Lynn

02. A Preliminary Analysis of the Determinants of Acceptance of Contact Tracing Apps in Brazil
   Patricia Endo, Grace Fox, Pierangelo Rosati, Lisa van der Werff, and Theo Lynn

03. Bad Robot: A preliminary exploration of the prevalence of automated software programmes and social bots in the COVID-19 #antivaxx discourse on Twitter
   Antonia Egli, Theo Lynn, Pierangelo Rosati, and Gary Sinclair

04. Use of Medical Teleconsultations During the COVID-19 Pandemic in Poland - Preliminary Results
   Urszula Grata-Borkowska, Mateus Sobieski, Jaraoslaw Drobnik, Ewa Fabich, and Maria Magdalena Bujnowska-Fedak
thank you