Dr Chris Paton

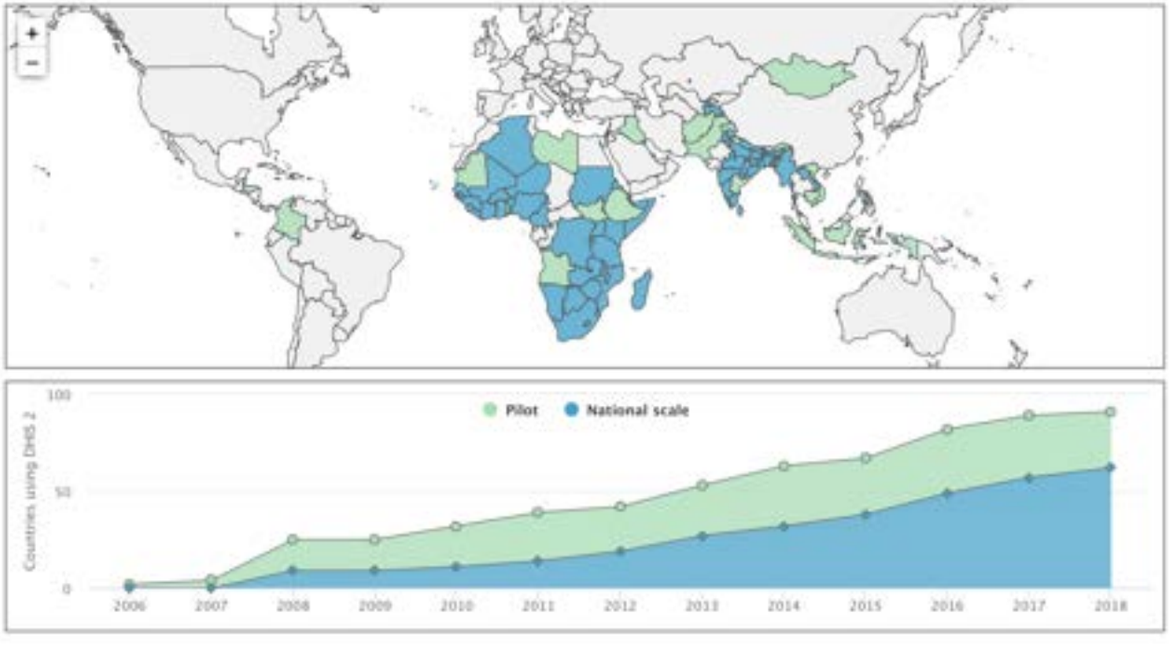
BMBS BMedSci MBA FFCI

- **Group Head, Global Health Informatics, CTMGH, University of Oxford**
- **Director, Postgraduate Digital Health Programme, University of Otago**

Email: chris.paton@ndm.ox.ac.uk

Advances in Global Digital Health

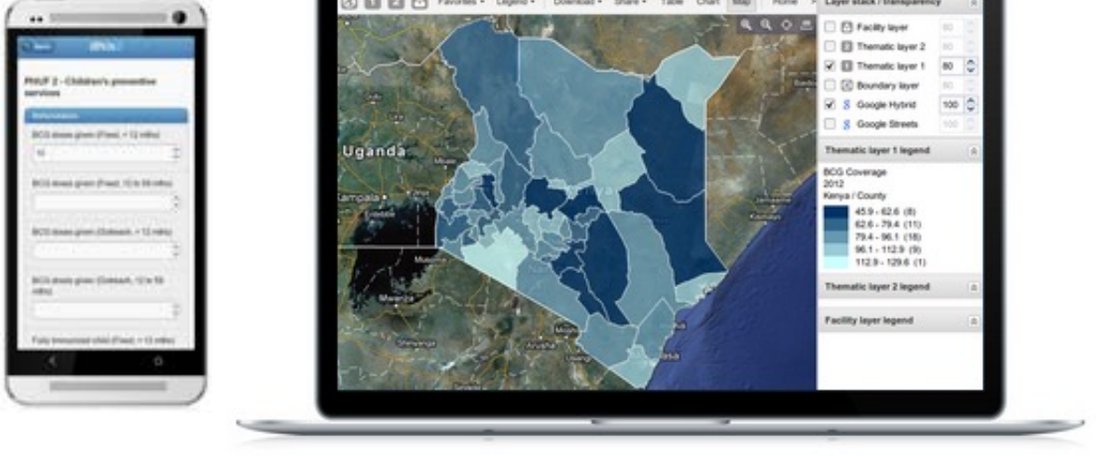
1. Rapidly expanding (big) health data



dhis2

OpenMRS

Bahmni™



Muinga et al. BMC Medical Informatics and Decision Making (2020) 20:2
https://doi.org/10.1186/s12911-019-1005-7

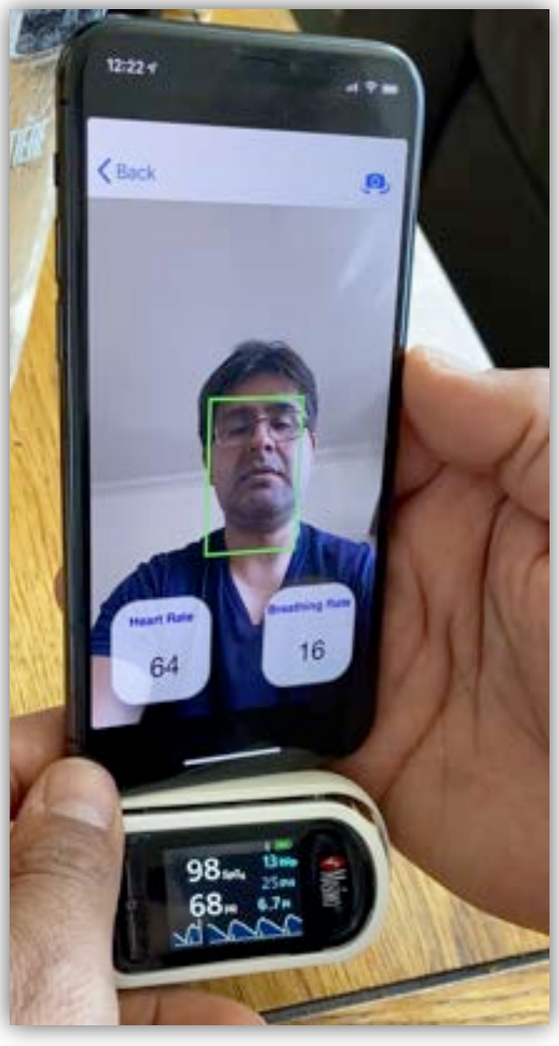
BMC Medical Informatics and Decision Making

RESEARCH ARTICLE Open Access

Digital health Systems in Kenyan Public Hospitals: a mixed-methods survey

Naomi Muinga[1*], Steve Magare[3], Jonathan Monda[1], Mike English[1,2], Hamish Fraser[3], John Powell[4] and Chris Paton[2]

2. Machine Learning for Rapid Diagnosis



LIFE: Decision Support

Prof A Agweyu

Prof M Villarroel

KEMRI
Wellcome Trust

DEPARTMENT OF ENGINEERING SCIENCE
UNIVERSITY OF OXFORD

GCRF
Global Challenges Research Fund

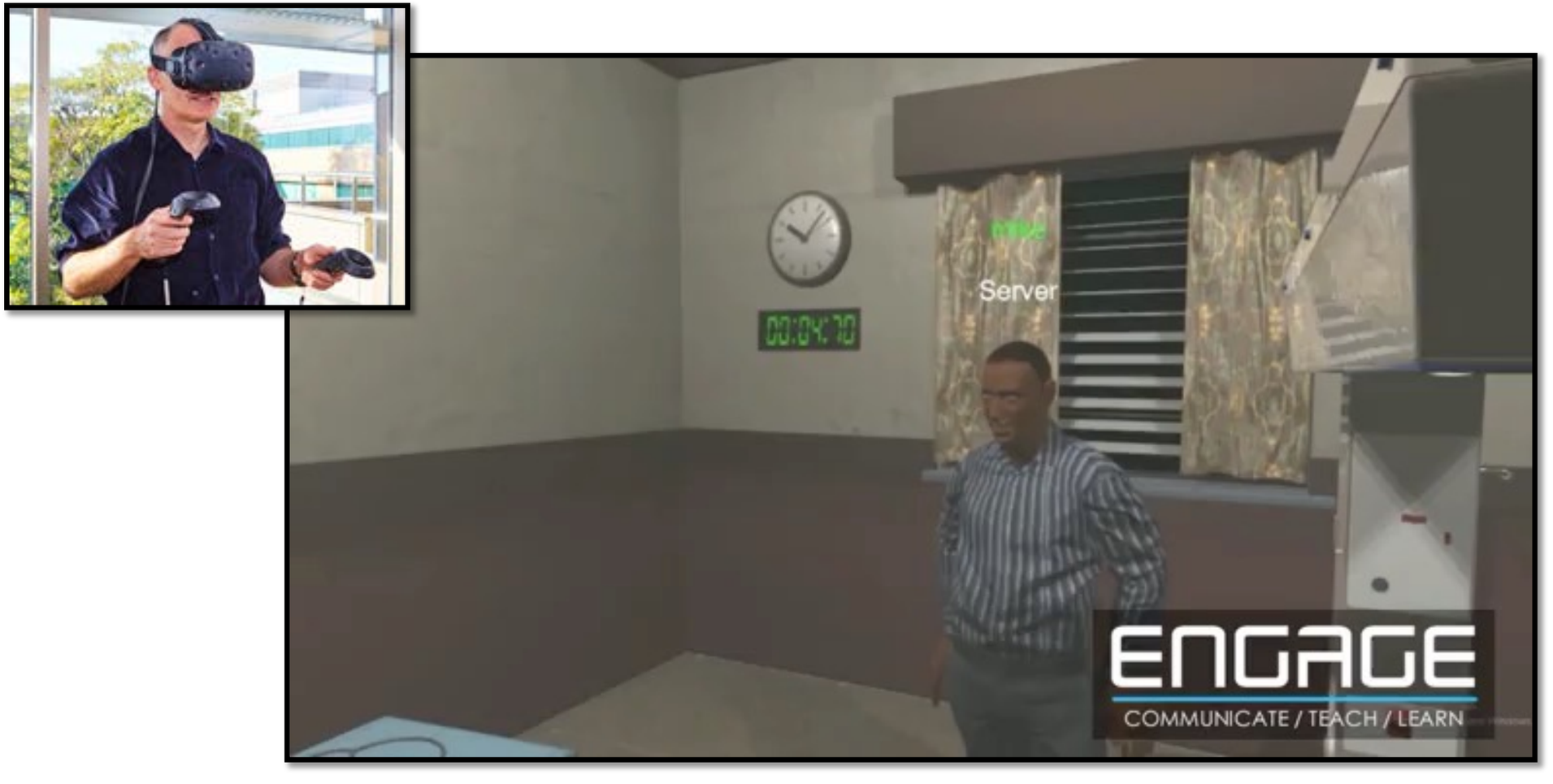
3. Machine Learning for Monitoring Patients

oucru

VITAL

wellcome trust

4. Training healthcare workers in the metaverse (LIFE)



SAVING LIVES AT BIRTH: A GRAND CHALLENGE FOR DEVELOPMENT
DEVELOPMENT CHANGE

BILL & MELINDA GATES foundation

wellcome

GCRF
Global Challenges Research Fund

Challenges for Global Digital Health

Three Interlinked Challenges for Global Digital Health

Addressing the Challenges

1. Conducting **design research** with clinical users

2. Making data collection **useful for clinicians**

Naomi Muinga, KWTRP

[HOSPITAL NAME]

COMPREHENSIVE NEWBORN MONITORING CHART

Version 2.8

Name	IP NO	Sex M ☐ F ☐ Indeterminate ☐	D.O.A	D.O.B	
Date today	Diagnosis				
Birth Wt gm	Interventions: CPAP ☐ Oxygen ☐	Phototherapy ☐	Blood tranfusion ☐	Exchange transfusion ☐	KMC ☐

Daily Clinician Feed and Fluid prescription

Day of Life | Current Wt = gm

Total feed + fluid = _____ mls/kg/day = _____mls

Feed: BF ☐ EBM ☐ Term Formula ☐ Pre-Term Formula ☐

Route: Cup☐ NGT☐ OGT☐

Volume & Frequency = _____mls 3hrly ☐ 2hrly ☐

24hr Feed Volume = _____mls

IV Fluid & Additives	Vol (ml)	Duration

Other prescribing instructions

	Monitoring Freq___hrs | Time												
Vitals	Temp (°C)												
	Pulse (b/min)												
	Resp Rate (b/min)												
	Oxy Sat (%) or Cy° Cy°												
Assessment	Resp Distress 0,+,+++												
	CPAP Pressure (cm H_2O)												
	FIO_2 (%)												
	Jaundice 0,+,+++												
	Apnoea Y/N												
	Blood Sugar (mmol/l)												
	Completed by (name)												
Feed	Breastfeeding sufficient Y/N												
	EBM vol given (ml)												
	Formula vol given (ml)												
Fluid	IV volume given (ml)												
	IV Line working Y/N												
Output	Vomit Y/N												
	Urine Y/N												
	Stool Y/N												
	Completed by (name)												

Total feed+fluid in this shift_____ mls Completed by (name)

Shift deficit_____ mls

Total feed+fluid in this shift_____ mls Completed by (name)

Shift deficit_____ mls

Total feed+fluid in this shift_____ mls Completed by(name)

Shift deficit_____ mls

Total feed+fluid input in 24hrs_____ mls 24hr deficit_____ mls

Tick the category of baby after assessment

Alerts : circle readings outside normal range with red pen and action

Muinga et al. BMC Health Services Research (2021) 21:1010
https://doi.org/10.1186/s12913-021-07030-x

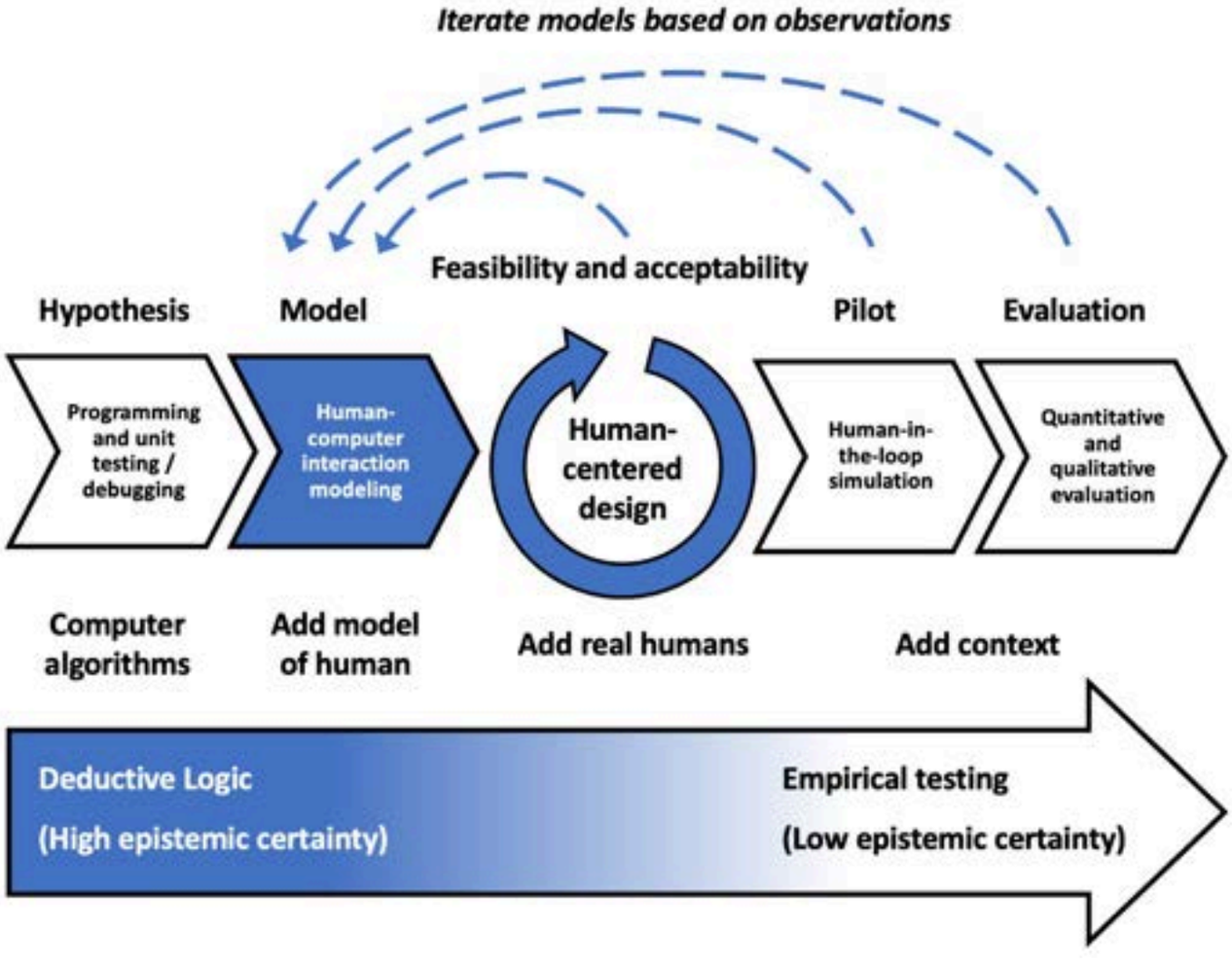
BMC Health Services Research

RESEARCH Open Access

Using a human-centred design approach to develop a comprehensive newborn monitoring chart for inpatient care in Kenya

Naomi Muinga[1,2,3*], Chris Paton[4,5], Edith Gicheha[6], Sylvia Omoke[2], Ibukun-Oluwa Omolade Abejirinde[7], Lenka Benova[3], Mike English[2,4] and Marjolein Zweekhorst[1]

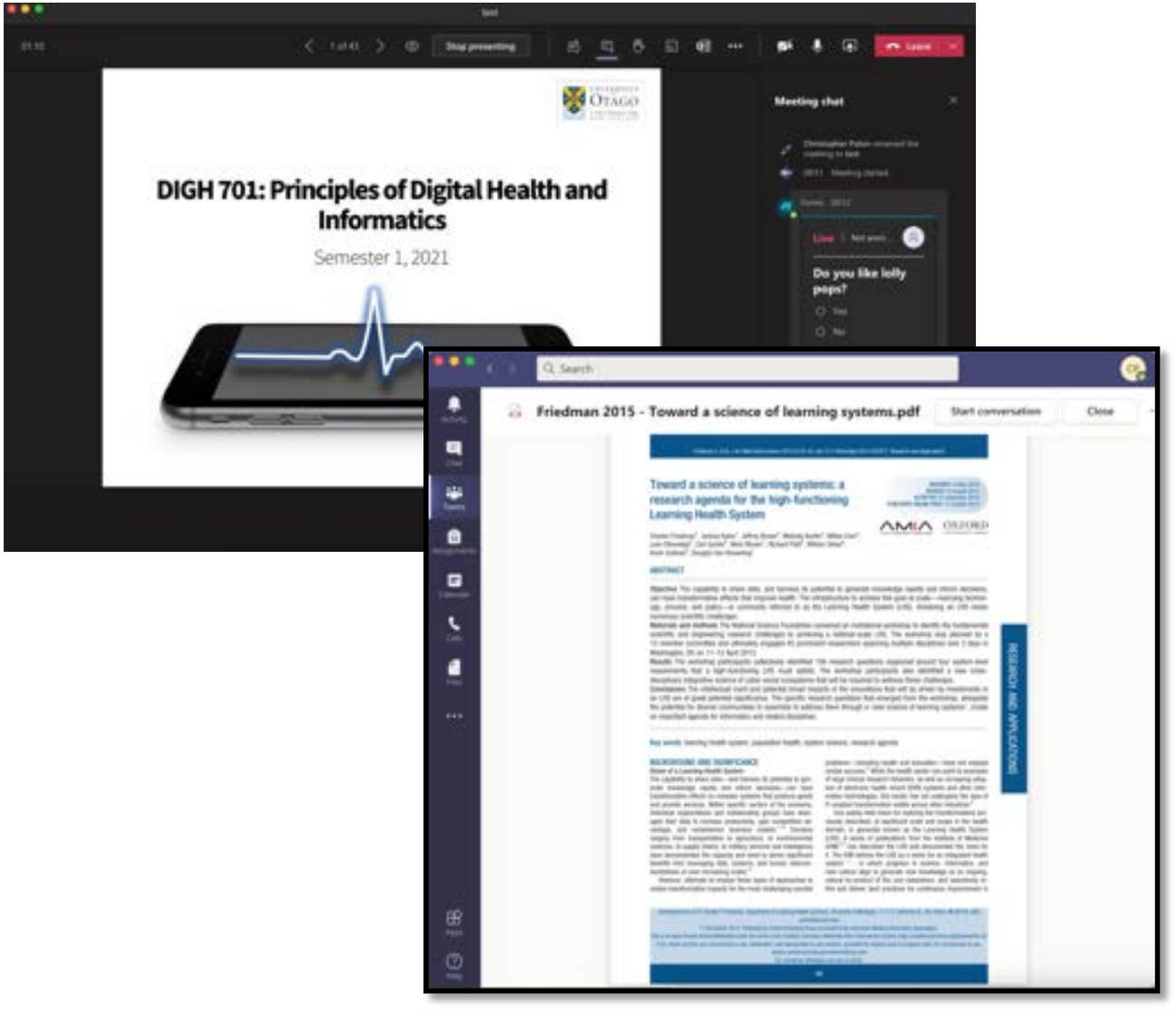
3. **Integrating** design/development/evaluation



Paton C, Kushniruk AW, Borycki EM, English M, Warren J **Improving the Usability and Safety of Digital Health Systems: The Role of Predictive Human-Computer Interaction Modelling** J Med Internet Res 2021;23(5):e25281

4. Building the **Global Digital Health workforce**

UNIVERSITY of OTAGO
Te Whare Wānanga o Otāgo
NEW ZEALAND
SAPERE AUDE



Fully Online Course:

- Microsoft Teams
- Live lectures (also recorded)
- Designed for working professionals

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- Jim Warren
- Mike English

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- Grand Challenges Canada
- NORAD
- Skoll Foundation
- Médecins Sans Frontiers

Thanks!

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