Court File No.223/21

ONTARIO
SUPERIOR COURT OF JUSTICE
(Divisional Court)

BETWEEN:

DAVID DANESHVAR

Applicant

- and -

HER MAJESTY THE QUEEN IN RIGHT OF ONTARIO AS REPRESENTED BY THE MINISTER OF HEALTH, and the HONOURABLE CHRISTINE ELLIOTT, MINISTER OF HEALTH for the PROVINCE OF ONTARIO

Respondents

AFFIDAVIT OF DR. JUTTA TREVIRANUS
(Affirmed March 16, 2021)

I, Dr. Jutta Treviranus, of the City of Toronto, in the Province of Ontario, AFFIRM AND SAY:

About Me

1. I am the founder and Director of the Inclusive Design Research Centre (IDRC) operating out of the OCAD University, previously the Adaptive Technology Resource Centre ("ATRC") at the University of Toronto. I am also a full Professor at OCAD University and founder of a graduate program in inclusive design, my curriculum vitae is attached as **Exhibit "1".**
2. I founded the Centre in 1993 to proactively work to ensure that emerging technical systems and their associated practices consider the full range of human difference and are accessible to all; through research, development, education, proactive design consultation and direct service.

3. As is delineated in my CV at **Exhibit "1"**, I have been an expert advisor in drafting and implementing Web accessibility standards, specifications and guidelines since the beginning of the Web. I have been chair, project editor or contributing editor in many of the Web accessibility standards. I have also consulted with the Federal and Ontario Governments and participated in a number of education, advisory and policy initiatives addressing the accessibility of Government Web space.

4. As reflected in the Ontario Government Website, I helped draft the seed original Accessibility for Ontarians with Disabilities Information and Communication standards, served a term on the Minister's Advisory Committee and Chaired the Digital Inclusion Task Force of the Information and Communication Standards Development Committee.

5. I am deeply committed to inclusive online systems. Access to online systems has become essential during the pandemic as all services have moved online. Government services that Canadians depend upon and that affect every aspect of their lives are being increasingly offered online. These services must be designed and implemented with at risk populations in mind.

6. In addition to my experience in Ontario, I have acted as a Digital Fellow for the Canadian Digital Academy for the Canada School of Public Services (**Exhibit "2"**) consulted to United Nations Department of Economic and Social Affairs on matters of equitable access, and am on multiple advisory bodies internationally related to digital inclusion (**Exhibit "3"**). These include international bodies such as the World Leadership Alliance (**Exhibit "4"**).

7. I have previously acted as an expert in the *Attorney General (Canada) v Jodhan*, 2012 FCA 161, aff'd in part 2010 FC 1197 case.

8. Through my professional, educational and community involvement, I have significant experience in the areas of assessing equity in technology-based programs and implementing solutions to address the shortcomings of such programs.
9. I am aware of my duty to the Court when acting as an expert in a proceeding. I have attached my signed Acknowledgement of Expert Duty (Form 53) to confirm my acceptance of my duties (**Exhibit "5"**).

Ontario Vaccination Program Online Portal

10. The Government of Ontario, like other provinces in Canada, is responsible for administering vaccine according to prioritization guidelines. My team and I have assisted the Ontario Digital Service in developing processes that will result in accessible online systems such as the online vaccine booking system. Our advice included that the government design the system keeping in mind individuals that have the greatest difficulty with or cannot use existing systems, or those most vulnerable to exclusion. This aligns with the understanding that "none of us are safe until all of us are safe." This advice has not been adequately followed.
11. Ontario has created an online portal where individuals can register to book an appointment(s) to receive their vaccinations. Once eligible, individuals can access the portal, enter their postal code information and will be able to book an appointment at a mass vaccination site closest to their home.
12. The provincial system also includes a phone system. Appointments can be booked through the phone system. The design of the process for receiving information, advice, booking vaccinations and receiving vaccinations does not take into account the many barriers experienced by people who are also among the most vulnerable. These barriers include

lack of access to a computer or online device, lack of permanent address or phone number, prevalence of disinformation, lack of applicability or exclusion from advice given, inability to reach vaccination sites, lack of speed needed to complete competitive booking scheduling systems, lack of usability of online portals with alternative access systems available, lack of literacy, and lack of status or power in a social unit. Additionally, the current system for general access to booking vaccine appointments relies on adequacy of technology which requires money (e.g. properly functioning computer, phone, internet, etc.). It also requires skill. In the same way as technology savvy individuals can compete for the best concert tickets, those with stable access to the system also require a high level of speed in order to navigate the portal and make their booking.

13. Individuals who experience marginalization frequently learn that general public advice does not apply to them. Scientific data is about the average or typical person within a population. Simple guidance for the general population assumes many things that are unavailable to marginalized individuals. For advice and services to reach individuals who are excluded from the majority or average public, requires designing from their situation and specifically addressing their highly diverse needs.
14. Other jurisdictions, such as Detroit have given specific assurances and commitments to the disability community (**Exhibit "6"** and **"7"**). Several efforts in Europe have also arranged for mobile vaccination units and house calls to reach people with disabilities who are unable to leave their homes.
15. In Ontario, to my knowledge, no similar province-wide commitments have been made.

Digital and Data Divide

16. The current process for engaging the public in the vaccination effort from COVID-19 will leave many people behind, especially individuals who are currently marginalized with respect to housing, literacy, transportation, social standing, digital access, and individuals for whom advisories have not been applicable or trustworthy. A deployment process and resources are needed to reach and support individuals that are exceptions to assumptions made in designing the current system.
17. A more inclusive approach is needed to reach the highly diverse individuals who are marginalized, who live in complex and variable contexts. The broad categorization of the general population used to date will not reach them. Guidance is needed that explicitly addresses the barriers these individuals face. Commitments must specifically name the circumstances they are facing, in a language that is understood by them. Those commitments must be supported by the necessary resources and knowledge of the lived experience of the individuals. This requires designing a process with individuals who are closest to and familiar with the circumstances.
18. Appropriately and with good reason, quantified data is being used to guide decisions regarding COVID 19 response and recovery plans in the province, including vaccinations. From a data perspective, people with disabilities are at the very vulnerable edges of any data distribution. However, they are made invisible to data decision tools by their diversity. As such, the decisions being guided by the data are leaving out persons with disabilities and other vulnerable groups which do not conform to averages.
19. Quantified data systems require homogeneity and isolated conditions to draw any conclusions. People with disabilities are highly heterogeneous, their lives are variable,

complex and unpredictable. The only common characteristic of disability from a data perspective is sufficient difference from the norm that standard systems and services do not work and predictions using population data are wrong. The unfortunate result is that COVID-19 data efforts will not flag disability as a group requiring a targeted vaccination implementation plan. We see that occurring now.

20. The province could correlate vaccination data with pharmacy data or data from doctor's offices and/or hospitals, home care, disability programs and community organizations of people with disabilities. These systems could be leveraged to identify who is being missed and ensure that access is provided in a timely manner. Inclusive programs are ones which grant access to all those eligible at the same time. Such a program for COVID vaccinations does not exist in Ontario right now.
21. Identification of explicit priority groups would be a great start, especially if it is done on a timely basis, but without an implementation program supported by resources which will addresses potential barriers to access, the prioritization will be rendered meaningless.
22. Steps must be taken now to ensure equity in the vaccination process. The number of barriers presented by the current program will prevent some who have been identified for priority access from actually receiving such access. Equity must be the overriding principle in the program if it is to be truly inclusive and therefore accessible to vulnerable individuals.
23. Rightly, many people with disabilities view COVID-19 advice, promises and commitments as not applying to them. Most public advice does not consider them or their circumstances, most services are not designed with their needs in mind. People with disabilities present exceptions to every rule. This reasonable lack of trust on the part of people with disabilities

has intensified during the pandemic and has led to untenable anxiety and a frequent sense of hopelessness.

24. Knowledge of data science should make obvious that while the vulnerability of disability is invisible to standard statistical analysis, disability is at the extremes of every other vulnerability group. In addition to the health-related vulnerabilities, people with disabilities are also most vulnerable to the other negative impacts of the pandemic such as unemployment, isolation, and digital exclusion. Most of the directives do not take into account the barriers faced. For example, directives such as avoiding close contact when an attendant is required, physical distancing when you cannot see, washing hands or donning a mask when you cannot do this independently, and arranging for a test when the booking system is inaccessible to you fail to account for the particular needs of persons with disabilities. Addressing the needs of people with disabilities will help reach the most vulnerable edge of the population, including the unidentified and unexpected vulnerabilities.
25. Barriers and exclusion compound. Any one form of exclusion will render an individual more vulnerable to other forms of exclusion. Among these vulnerabilities to marginalization are race, language, poverty, gender, homelessness, and disability. One of the compounding consequences of marginalization is the erosion of trust in public services and institutions.

Its Not Too Late

26. If we are to reach the highly diverse vulnerable persons in our communities, we must develop strategies that begin with an understanding of their lived experience and the

barriers they face. We must explicitly address those barriers and address advice and guidance in a way that makes it clear to them that they are included.

27. Ontario must provide guidance and resources to PHUs and community organizations trusted by the individuals to be reached, and make it clear that priority is with individuals who are most vulnerable and not with existing status or power within large general categories. Special clinics for Indigenous individuals are a great start. Mobile clinics to reach homeless individuals will also improve reach. These exemplary practices should be extended to other barriers, and other groups who are excluded from the standard process.
28. There has been no plan for reaching people with disabilities in Ontario. Other jurisdictions, such as Detroit have given assurances to the disability community. Several efforts in Europe have arranged for mobile vaccination units and house calls to reach people with disabilities who are unable to leave their homes. Ontario could mandate, resource and implement similar plans here.
29. The province's planning and decision processes are currently devoid of methods to reach people with disabilities. Ontario needs a plan to systematically and intentionally reach the highly diverse individuals with disabilities who will otherwise be unintentionally excluded from the vaccination roll out.

Conclusions

30. Acknowledging that none of us are safe until all of us are safe, recovery efforts and programs must include bottom-up efforts that work with individuals that have difficulty with or cannot use programs designed for the general population. These efforts should recruit, support and fund the community organizations and services they trust in providing services and advice. The barriers experienced must be explicitly addressed.

31. I make this affidavit in support of David Daneshvar and for no other or improper purpose.

AFFIRMED before me by video conference by Jutta Treviranus of the City of Toronto, in the Province of Ontario, before me in the City of Vaughn, in the Province of Ontario, on March 16, 2021, in accordance with O. Reg 431/20, Administering Oath or Declaration Remotely.

Commissioner for Taking Affidavits
Anoop Kalsi, LSO # P13598

Dr. Jutta Treviranus

This is Exhibit **1** referred to in the Affidavit of **Dr. Jutta Treviranus.** Affirmed remotely by **Dr. Jutta Treviranus** of the City of Toronto in the Province of Ontario, before me at the City of Vaughan in the Province of Ontario, this 16 day of March, 2021.

Anoop Kalsi LSO# P13598

A Commissioner, etc.

Jutta Treviranus - Curriculum Vitae (Condensed)

Email: *jtreviranus@ocadu.ca*

Current appointments and positions

- Full Professor (tenured), Faculty of Design, OCAD University
- Director (and founder), Inclusive Design Research Centre, OCAD University
- Lead and PI, Inclusive Design Institute (a regional research hub with 8 postsecondary institutions as partners)
- Canadian Delegate, International Standards Organization (ISO), Joint Technical Committee on Information and Communication (JTC1), SC36
- Co-Director Raising the Floor International
- Digital Strategy Advisory Panel Member, Waterfront Toronto
- Canada Digital Academy Fellow
- Burton Blatt Institute Fellow

Education

Ph.D.	University College Dublin, Doctor of Philosophy, Engineering
M.A. Special Education	University of Toronto
B.Sc. OT	University of Toronto

Previous Professional Work Experience

University of Toronto
Director (also established) Adaptive Technology Resource Centre (1993-2010)
Senior Research Associate, Faculty of Information (2005-2010)
Status Faculty, Faculty of Medicine, Department of Occupational Therapy (1999-2008)
Adjunct Professor, Knowledge Media Design Institute (2004-2010)
Director, Resource Centre for Academic Technology and ATRC (2001-2005)
Manager, Centre for Academic Technology (from 1996- 2001)

Microcomputer Applications Programme, Hugh MacMillan Rehabilitation Centre, Toronto, Ontario, (1989-1994)
Research Project Coordinator

Augmentative Communication Service, Hugh MacMillan Rehabilitation Centre, Toronto, Ontario, (1985-1993)
Technology Consultant

National Research Council, Rehabilitation Technology Unit, Toronto, Ontario (also reporting to: Technical Aids and Systems for the Handicapped, Canadian Rehabilitation Council for the Disabled), (1983-1985)

Assistive Technology Consultant

Hamilton Wentworth Home Care Programme, Hamilton, Ontario, (1981-1983)
Community Occupational Therapist

McMaster University, School of Health Sciences, Hamilton, Ontario, (1981-1983)
Clinical Supervisor, Tutor

Recent Advisory Roles

- Canadian Privy Council's external advisory committee on communications
- Independent Design Review Panel (IDRP) of the Royal Architectural Institute of Canada (RAIC), for the Parliamentary Welcome Centre
- Waterfront Toronto Digital Strategy Advisory Panel, (2018-2020)
- Member, Accessibility for Ontarians Disability Act AODA, Standards Development Committee, Information and Communication Standard
- Chair, Digital Inclusion Task Force, AODA Standards Development Committee
- Member, Steering Council, Web Accessibility Initiative, World Wide Web Consortium
- Board Member, Global Alliance on Accessible Technologies and Environments (GAATES)
- Expert Member, UN Department of Economic and Social Affairs
- Member, Inclusive Design Advisory Board, Canadian Museum of Human Rights
- Member, Accessibility for Ontarians with Disabilities Act Advisory Council
- Amazon Accessibility Advisory Committee
- Google Accessibility Advisory Committee
- Co-director, Raising the Floor International
- Board member, Broadcast Accessibility Fund (2012-)
- Board member, Sakai Foundation (2007-2011)
- Board member Lights, Camera Access! (2008-2010)
- Board member OpenCast (2009-2010)
- Board member CollectionSpace (2008-)
- Board member Decapod (2008-)
- Board Chair Fluid Engage (2008-)
- Board Chair Fluid (2006-)
- Project Editor, ISO/IEC JTC1 SC36 on Education Learning and Training
- IMS Global Learning Consortium - Accessibility Working group
- Chair W3C ATAG (Authoring Tool Accessibility Guidelines)
- W3C WAI (Web Accessibility Initiative) Coordination group member
- Access to Academic Materials for Print-Disabled Post-Secondary Students: A Partnership of Users and Service Providers, NEADS, Steering Committee
- Eduspecs, Industry Canada, Canadian E-learning specifications panel
- Pathways and Clusters Consulting Expert, HRDC
- Spectrum Advisory Panel on Common Look and Feel, Industry Canada
- Treasury Board Secretariat, Consultant on Inclusive Information Architecture and the Federated Architecture

- Advisor on Accessibility, MIT Physics Dept., Distance Education Project
- Advisor, PEARL Project, Open University, UK
- Member, Trace Centre, Advisory Panel, University of Wisconsin
- Member, Texas Task Force on Accessible Textbooks
- Expert Witness, Australian Human Rights Commission
- CRTC expert witness and technical expert Accessibility hearings Net Neutrality hearings
- Expert Witness Canadian Human Rights Charter Challenge
- EU4All advisory panel
- OECD consultant to Industry Canada Minister - OECD meetings in Korea (preparation of briefing and resolutions)
- AODA, Minister's Advisory Committee (Information and Communication Standard)
- UNESCO workshop on Open Education Accessibility expert member

Research and Development Projects funded (since 1995 in chronological order)

- "Accessibility Toolkit" funded by CANARIE and SoftQuad Inc. , 4/1995-12/1997, (2.7M)
- "Special Needs Opportunity Window" funded by Technology Incentive Partnership Programme, 6/1996-6/1998($650K)
- "Info-ability" funded by Ministry of Citizenship and Culture, 9/1996-10/1999, ($750K)
- "Audio Look and Feel" supported by Sun Microsystems, 9/1997-3/1998, ($75K)
- "A-Prompt" funded by RERC (US) through Trace Centre, University of Wisconsin, 10/1998-6/1999, ($75K)
- "Providing Education by Bringing Learning Environments to Children" supported by CANARIE, Royal Bank of Canada, The Bay, Wayne Gretzky Foundation, 6/1994-present, (~$860K)
- "Adding Feeling Touch and Equal Access to Distance Education" funded by CANARIE, 3/1998-6/1999, ($250K)
- "Toward Inclusive Education for all Learners", funded by Telecommunication Access Partnership, 5/1999-5/2001($680K)
- "The Intelligent Guide" funded by Bell Emergis, 6/1999-6/2001, ($250K)
- "Courseware Evaluation" funded by Office of Learning Technologies, 9/1999-9/2001, ($68K)
- "Evaluation of Special Needs Opportunity Windows" funded by Office of Learning Technologies, 9/1999-9/2001, ($72K)
- "Input Optimization Tool for Complex Software" funded by CITO, 9/2000- 9/2001, (100K)
- "Promoting Early Intervention for Learning Disabilities (Programming Working Group)" LDAO as lead, funded by Children's Secretariat, (145K to ATRC)
- "Community Information Access Project" Canadian Abilities Foundation as lead, funded by Ministry of Citizenship and Culture, (80K to ATRC)
- "Learning Disabilities Resource Community" funded by Office of Learning Technologies, 9/2000- 9/2002, (250K)
- "Inclusive Access Compliance Tool" funded by Nortel Networks, (80K)
- "Application Software for Access by Users with Disabilities", funded by Nortel Networks, 3/2000-12-2000 (30K)
- "Barrierfree Access to Broadband Learning Environments" funded by CANARIE, 6/2000-3/2002, (1.3M)

- "Gnome Onscreen Keyboard" funded by Sun Microsystems, 11/2001- 07/2002, (195K)
- "Web4All" funded by Industry Canada, 11/2001-08/2002, (227K)
- "Use Case Toward an Accessible Domain Architecture" funded by Treasury Board Secretariat, 9/2001- 3/2002, (30K)
- "Model Code of Conduct for Delivery of Financial Services," funded by the Canadian Bankers Association, 6/2001-9/2002, (38K)
- "The Inclusive Learning Exchange" funded by CANARIE, 10/2002-03/2004, (1.2M)
- "Opportunities for Canadian Deaf Youth through Broadband Web Applications," funded by CANARIE, 01/2003-03/2004, (300K)
- "Canadian Network for Inclusive Cultural Exchange" funded by Canadian Heritage, CCOP programme, 01/2003-03/2004, (1.4M)
- "E-Collab: Collaborative Tools for Citizen Engagement" funded by HRDC, 01/2003-10/2003, (125K)
- "Flex-EC" funded by CANARIE, 06/2003-03/2004, (60K to ATRC, 800K overall)
- "Access Guide Canada" funded by ODI, 03, 2003-03/2004, (160 to ATRC)
- "New Technologies and People with Disabilities" funded by SSHRC, 2003-2005, (60K to ATRC)
- "Web Based Teaching Tool," LDAO lead, funded by Ministry of Education, Ontario, 2003-2007-2009, (~500K to ATRC)
- "Elearning Software Procurement Tool" funded by Industry Canada, 2005-2006 (120K)
- "Inclusive Learning Standards" funded by Industry Canada, 2004 to 2006 (312K)
- "Stretch" funded by Canadian Heritage, CCOP programme, 04/2005- 03/2006 (500K)
- "CulturAll" funded by Canadian Heritage, CCOP programme, 04/2005-03/2007, (1.5M)
- "Smart Campus in Your Pocket" funded by Bell University Labs, 01/2007- 01/2010, (400K)
- Fluid, funded by Andrew W. Mellon Foundation 03/2007 – 03/2009 (2.5 M)
- AODA Information and Communication Standard, 09/2006- 03/2008 (100K)
- "CulturAll 2.0" funded by Canadian Heritage, CCOP programme, 04/2007-03/2009, (1.5M)
- "AEGIS" European Commission FP7 programme, 2008, (travel grant as Canadian participant)
- "ATutor," funded by Andrew W. Mellon Foundation, 2008, (500K)
- "Bridging the Gap," funded by Ontario Ministry of Culture, 2008, (245K)
- "CollectionSpace," led by Museum of the Moving Image, funded by Andrew W. Mellon Foundation, 2008, (1.2 M, 375K)
- "Decapod," funded by Andres W. Mellon Foundation, 2008, (1.19 M)
- "EnAbling Change," funded by Ministry of Community and Social Services, 2008, (55K)
- "SCYP," funded by BCUL Research Funding, 2008, (188K)
- "SignLink," funded by Canadian Heritage, 2008, (51K)
- "SNOW," funded by Ministry of Education, 2008, (114K annually)
- "Fluid Engage", funded by The Andrew W. Mellon Foundation, 04/2009- 04/2010, (1.26 M)
- "OpenCast"led by U. Berkeley funded by The Andrew W. Mellon Foundation and the William and Flora Hewlett Foundation, 2009- 2010 (1.6 M, 128K to ATRC)
- "AccessForAll Training Infrastructure," funded by Ministry of Community and Social Services, 2009-2010 (145K)
- "AEGIS Ontario" ORF- Research Excellence Fund 2009-2014, (2.4 M)
- "Inclusive Design Institute" funded by Canada Foundation for Innovation 2009-2014 (8M with IOF)
- "Inclusive Design Institute" funded by ORF- Research Infrastructure 2009-2014 (5.6 M)
- "FLOE" funded by William and Flora Hewlett Foundation, 2010-2016 (2.620M US)

- "Accessible Digital Office Documents" funded by UNESCO and Enabling Change 2010 (50K)
- "Leveraging Diversity and Inclusion as Canada's Digital Advantage" – funded by SSHRC 2010 (25K)
- "Mobile Accessibility in Canada" – funded by CRTC 2010 (25K)
- "Cloud4All" – funded by EU FP7 – IDRC Architectural Lead – Canadian support through CFI (2011)
- "ICT Accessibility in Canada" – funded by Industry Canada 2012 (25K)
- "Preferences for Global Access" - with ISKME, funded by US Dept. of Ed. 2012 (400K to IDRC)
- Accessibility of Metrolinx – Funded by Metrolinx 2013 (50K)
- TIPP (SSHRC 20K)
- Automated Personalization Computing Project (US Dept. of Ed., 20M total to Trace Center, 5M to IDRC)
- FLOE Project, funded by William and Flora Hewlett Foundation, 2016-2019 (1.185M US)
- Social Justice Repair Kit, funded by the Oak Foundation, 2016-2019 (1M US)
- BIG IDeA Pilot, funded by Ontario, 2016- 2017 (500K)
- Platform Co-op Development Kit, Google Foundation, (with New School, 500K to IDRC)
- Coding to Learn and Create, 2019-2022, Innovation Science and Economic Development (1.69M)
- Project We Count, 2019-2022, Innovation Science and Economic Development (2.9M)
- Future of Work and Disability, 2020-2023, Accessibility Standards Canada, (1.2M)
- Intelligent User Interfaces and Guidelines for Vulnerable Populations, (150K)

Recent Honours and Awards (since 1995)

2020 Canadian Council of the Blind President's Award
2014 Lieutenant Governor's Community Volunteer Award
2013 International Electrotechnical Commission (IEC) 1906 Award
2013 The Queen Elizabeth II Diamond Jubilee Medal
2012 Canada's Top 45 over 45, Zoomer Magazine, Recognizing Canadians who have made a difference to Canada
2011 (to IDRC) Platinum Learning Impact Leadership Award, IMS Global Learning Consortium for A-Tutor
2009 IEEE TIC-STH 2009 Best Paper Award for paper entitled "The Value of the Unpopular"
2009 (to IDRC) Delegates Web Accessibility Challenge Award, WWW/W4A Conference, Madrid for A-Tutor & AccessForAll.
2008 (to IDRC) Gold Learning Impact Award, IMS Global Learning Consortium for A-Tutor
2008 (to IDRC) Learning Impact Leadership Award, IMS Global Learning Consortium for Fluid Project
2008 (to IDRC) Learning Impact Leadership Award, IMS Global Learning Consortium for Transformable
2008 and 2007 IBM Faculty Award
2005 Dr. Dayton M. Forman Memorial Award
Canadian Finalist in E-inclusion category for World Summit Awards (for Aprompt)
2003 Trophées du Libre, awarded to ATRC for development of GOK
CANARIE IWAY Award Honorable Mention.

1999 Global Bangemann Challenge Finalist for PEBBLES, with Deb Fels, Ryerson and Graham Smith, Telbotics.
1999 Cited in United Nations Global Vision Award, awarded to Australia, for role as expert witness in recent human rights trials involving World Wide Web access.
1998 American Foundation for the Blind, Access Award, with SoftQuad.
1997 WWW6 Award for best paper in access track
1995 RESNA Pin Dot Outstanding Paper Award, for paper entitled "Mastering Alternative Computer Access: The Role of Understanding, Trust and Automaticity."

Recent Guest Lectures at the following (very condensed list)

University of California, Berkeley
University of Colorado
Maryland University
New York University
Concordia University
Università degli Studi di Padova
Università Di Torino
Central China Normal University
La Universidad Pedagógica y Tecnológica de Colombia
Colombia y la Universidad del Azuay
University of Capetown
Open University of Catalonia
Karlsruhe University
Stanford University
University of Washington
Harvard, School of Education
Massachusetts Institute of Technology
University of Alberta, Computer Science
University of Gothenburg, Department of Linguistics
University of Dundee, Computer Science
University of Tennessee, Faculty of Engineering
Dalhousie University, School of Occupational Therapy
University of Manitoba, Department of Rehabilitation Medicine
University of Toronto, Faculty of Medicine
University of Toronto, Faculty of Medicine, Department of Speech Pathology
University of Western Ontario, Faculty of Applied Health Science
State University of New York at Buffalo, Department of Rehabilitation Medicine
McMaster University, Department of Rehabilitation Medicine
University of Guelph, Faculty of Computer Science
York University, Department of Media and Broadcasting

Selected Recent Publications in Peer Reviewed Journals, Reports and Book Chapters

Treviranus, J., Gupta, A., (in press). Inclusive Designed Artificial Intelligence. In Schaffers, H. Vartianen, M., Bus, J., *Digital Innovation and Societal Change*. River Publishers, London, UK.

Treviranus, J. (in press). In: Technologies and Difference. In: Fung, L. (ed), *Neurodiversity: From Phenomenology to Neurobiology and Enhancing Technologies*. American Psychiatric Association Publishing. Washington D.C.

Treviranus, J. (in press). Learning to Learn Differently. In: Holmes, W. (ed) *Ethics of AIED. Who Cares?"* Taylor & Francis Group, Oxon, UK.

Trewin, S., Basson, S., Muller, M., Branham, S., Treviranus, J., Gruen, D., Hebert, D., Lyckowski, N. and Manser, E., 2019. Considerations for AI fairness for people with disabilities. AI Matters, 5(3), pp.40-63.

Treviranus, J., (2019). The Value of Being Different. Web4All, May 13-14, 2019, San Francisco, USA.

Treviranus, J., Clark C., Richards, R. (2019). Inclusively Designed Authoring Tools. In Y. Yesilada and S. Harper (eds.), Web Accessibility, Human–Computer Interaction Series, https://doi.org/10.1007/978-1-4471-7440-0_20

Treviranus, J., 2018. The three dimensions of inclusive design: A design framework for a digitally transformed and complexly connected society (Doctoral dissertation, University College Dublin).

Treviranus J. (2018) Learning Differences and Digital Equity in the Classroom. In: Voogt J., Knezek G., Christensen R., Lai KW. (eds) Second Handbook of Information Technology in Primary and Secondary Education. Springer International Handbooks of Education. Springer, Cham

Treviranus, J., 2017. Are we teaching our machines our biases, presumptions and stereotypes?. Global Journal of Intellectual & Developmental Disabilities, 1(2).

Pullin, G., Treviranus, J., Patel, R., & Higginbotham, J. (2017). Designing interaction, voice, and inclusion in AAC research. Augmentative and Alternative Communication, 33(3), 139-148.

Treviranus, J., 2017. Start your machine learning engines and race to the edge!. Transportation Talk, pp.14-15.

Nicol, E; Dunlop, M. D; Treviranus, J. / Special issue on reimagining interfaces for older adults. In: International Journal of Mobile Human Computer Interaction, Vol. 8, No. 2, 16.05.2016, p. v-x.

Baldiris, S., Goodman, L., Politis, G., Treviranus, J. (2016). Evaluating CO-CREARIA: Model for the Co-Creation of Inclusive and Accessible OER. In *Education Technology Research and Development*. Springer, Hamburg (In press).

Treviranus, J. (2016). Realizing the Potential of Inclusive Education. In *Universal Inclusive Rights and Opportunities for Persons with Disabilities in Academic Context*. Anna Mura Editor. CNUDD, Torino.

Mitchell, J., Treviranus, J. (2016). Inclusive Design in Ecosystems. In *E-Health Two-Side Markets*, Vivian Vimarlund Editor, Elsevier, Amsterdam.

Treviranus, Jutta (2016) Life-long Learning on the Inclusive Web. W4A'16, April 11 - 13, 2016, Montreal, Canada ACM 978-1-4503-4138-7/16/04

Ayotte, D., Brennan, M., Frishberg, N., Jimes, C., Petrides, L., Quesenbery, W., Rothberg, M., Schwerdtfeger, R., Tobias, J., Treviranus, J. and Trewin, S., 2016, October. A Tool for Capturing Essential Preferences. In Proceedings of the 18th International ACM SIGACCESS Conference on Computers and Accessibility (pp. 267-268).

Treviranus, Jutta. "The Future Challenge of the ADA: Shaping Humanity's Transformation." Inclusion 4.1 (2016): 30-38.

Treviranus, Jutta (2014). Leveraging the Web as a Platform for Economic Inclusion. Behavioral Sciences and the Law, Wiley, *DOI: 10.1002/bsl.2105*.

Treviranus, J. (2014) The Value of the Statistically Insignificant. Educause Review, January/ February 2014: 46-47

Lewis, L., Treviranus, J. (2013): Public policy and the global public inclusive infrastructure project. Interactions 20(5): 62-66.

Vanderheiden, G., Treviranus, J., Gemou, M., Bekiaris, E., Markus, K., Clark, C., Basman, A. (2013). The Evolving Global Public Inclusive Infrastructure (GPII). HCI(6) 2013: 1-7-116.

Treviranus, J., Stolarick, K., Densted, M., Fichten, C., Ascunsion, J., (2011) "Leveraging Inclusion and Diversity as Canada's Digital Advantage." SSHRC.

Treviranus, J., Richards, J., Silva, J., Mobile, (2011) "Wireless Handset Accessibility Assessment." CRTC.

Kemper, A., Stolarick, K., Milway, J., Treviranus, J., (2010) Releasing Constraints: Projecting the Economic Impacts of Increased Accessibility in Ontario. Martin Prosperity Institute.

Treviranus, J. (2009) "You Say Tomato, I Say Tomato, Let's Not Call the Whole Thing Off "in *On the Horizon.* Emerald Group Publishing Limited.

Treviranus, J. (2008), "Authoring Tools," in *Web Accessibility: A Foundation for Research.*.Editors: Yeliz Yesilada and Simon Harper. Springer, Hamburg

Treviranus, J. & Roberts, V. (2007), "Disability, Special Education and IT "in *International Handbook of Information Technology in Primary and Secondary Education*. Editors: J.M. Voogt, G. Knezek. Springer, Hamburg.

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Select Keynote Presentations (very abbreviated)

- "From Intelligence to Wisdom – Navigating a Complex Future", Accessibility Conference 2019, Guelph University
- WWW30 Web4All Keynote, 2019, San Francisco
- The 20th International Conference on Artificial Intelligence in Education 2019, Chicago
- "Learning to Learn Differently" AccessXchange 2019, Montreal
- Inclusivity in Design, MITX Design Tech Summit, 2019
- "Inclusive Design", Universal Design and Higher Education in Transformation Conference 2018, Dublin
- "Life-long Learning on the Inclusive Web", WWW25 Web4All Keynote, 2016, Montreal
- "Learning from Ontario", Accessibility for Manitobans Act (AMA) Conference, Winnipeg, 2016"
- "Information and Communication Accessibility", University of Manitoba, 2016
- "Universal Inclusion", CNUDD, Università degli Studi di Torino, Università del Piemonte Orientale e Politecnico di Torino, 2016
- "Doing Things Differently for the Difference the World Needs" MADE, Edmonton, 2016
- "Inclusive Design", OCULA Spring Conference, 2016
- "Designing for the Present and the Future", International Day of Persons with Disabilities, Parliament Hill, Ottawa, 2015
- "Women Leaders Throw Down their Gauntlets", Global Science Collaboration, European Parliament, Brussels, 2013
- "Inclusion in a Digital Age." Keynote at Making Way: International Day of Disabled Persons, Peel, November 9, 2007.
- "Living, Learning, Communicating in a Diverse World." Keynote at Distributed Learning in the 21st Century, Shaping the Future of Learning, October 17-19, 2007. Edmonton, Alberta.
- "Inclusion in the Connected Classroom." Keynote for Association for Special Education Technology Conference, Whitby, May 4, 2007
- "Stretching the Endeavor to Make Room for Us All" Keynote at 18th Annual EdMedia World Conference on Educational Multimedia, Hypermedia and Telecommunications, Orlando, Florida, June 26-30, 2006
- "Inclusive eLearning". Keynote at ELearn.ca Institute, Supporting All Learners, Edmonton, Alberta, February 21 and 22, 2006.
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Contributions to Practical Applications of Knowledge

"Individualized Adaptability and Accessibility in ELearning, Education and Training." ISO/IEC JTC1/SC36 International Standard 24751, parts 1 2 and 3, Project Editor, (2007)

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Treviranus, J., McCathieNevile, C., Richards, J. & May, M. (Working Draft). Implementation Techniques for Authoring Tool Accessibility Guidelines 2.0.

Recent International Forums Hosted:

Designing Enabling Economies and Policies, Toronto, July 2013, 2014, 2015, 2016, 2017, 2018
Designing Enabling Economies and Policies, Toronto, May 24th and 25th 2012 (in collaboration with G3ICT and Gov't of Ontario)
International Open Forum on Supporting Human Diversity Through Inclusive Design, Toronto, Sept. 13-14, 2007.
International Open Forum on Open Source Accessibility, Vancouver, August 11, 2009 (supported by UNESCO)

Patents (Co-inventor on the following patents)

P.E.B.B.L.E.S.
Visual Dynamic Keyboard
Screen Enhancement system
Binary Coding Selection Method for Writers with Severe Disabilities
Insulin Injection Guide for Disabled Diabetics

Selected Recent Publications in Peer Reviewed Conference Proceedings (partial list)

Avila, C., Bacca, J., Politis, Y., Goodman, L. and Treviranus, J., 2019. Promoting Inclusion Using OER in Vocational Education and Training Programs. In Advances in Web-Based Learning–ICWL 2019:

18th International Conference, Magdeburg, Germany, September 23–25, 2019, Proceedings (p. 241). Springer Nature.

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Baldiris, S., Mancera, L., Saldarriaga, G.L.V. and Treviranus, J., 2017, September. Co-evaluation, to scaffold the creation of open educational resources. In International Conference on Web-Based Learning (pp. 168-176). Springer, Cham

Clark, Colin, et al. "About Us, with Us: The Fluid Project's Inclusive Design Tools." International Conference on Universal Access in Human-Computer Interaction. Springer International Publishing, 2016.

Zou, Hong, and Jutta Treviranus. "ChartMaster: A Tool for Interacting with Stock Market Charts using a Screen Reader." Proceedings of the 17th International ACM SIGACCESS Conference on Computers & Accessibility. ACM, 2015.

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Treviranus, J, "Reclaiming Your Personal and Collective Learning Space," IMS Learning Impact 2008.

Treviranus, J., "What is it to hear a picture, see music, or speak a dance?" MOBILE/IMMOBILIZED, Montreal, 2007.

Treviranus, J., "Inclusive Design and Diversity in Sakai" Sakai Conference, 2007.

Treviranus, J. "Learning in an Inclusive Information Society," *International Open Forum: Standards in E-Learning: Towards Enriching and Sharing Our Educational Heritage*, Montreal, 2004.

Treviranus, J. The Inclusive Learning Exchange, *Edusource Learning Object Summit*, Fredericton, N.B., March 2004.

Treviranus, J, Richards, J. "Canadian Network for Inclusive Cultural Exchange," *New Media Research Networks Conference*, Charlottetown, March 2004.

Treviranus, J. "Delivering Personalized Learning Content and Interfaces," *OLA Superconference*, Toronto, 2004

Treviranus, J. "Future Proofing through Emerging Interoperability Specifications," *ATIA Conference Proceedings*, Orlando, 2004.

Treviranus, J. "Learning is not an Object" Pan-*Canadian E-Learning Symposium*, Vancouver, January 2004

Nevile, L., Lissonnet,S., Roberts, V., & Treviranus, J. (2004) "Rich Experiences for All Participants" in David Bearman and Jennifer Trant (eds.). *Museums and the Web 2004: Proceedings*. Toronto: Archives & Museum Informatics, 2004. http://www.archimuse.com/mw2004/papers/nevile/nevile.html

Treviranus, J., Richards, J. Why Accessibility is Handled the Way It Is. Proceedings of the *WWW 2003 Conference*, Budapest, 2003.

Treviranus, J., Bates, S. The GNOME On-Screen Keyboard. Proceedings of the *Eighteenth Annual Conference, Technology and Persons with Disabilities*, Los Angeles, 2003

Treviranus, J. E-Learning that Adapts to the Learner. Proceedings of the *E-Learn 2002-World Conference on E-Learning in Corporate, Government, Healthcare, and Higher Education.* Montreal, 2002.

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Harrison , L., Richards, J., and Treviranus, J. "Authoring Tool Support: "The Best Place to Improve the Web" 14th Annual Meeting of the CSUN Center for Disabilities, Los Angeles, CA, 1999.

Treviranus, J. "Adding Feeling, Sound and Equal Access to Distance Education", 14th Annual Meeting of the CSUN Center for Disabilities, Los Angeles, CA, 1999.

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Treviranus, J. (1996). Access to Emerging Technology. *Medicine 2001*, June 1996. Montreal.
Williams, L., Fels,D. I., Treviranus, J., Smith, G (1996). The Supply Student. *Medicine 2001*, June 1996. Montreal.
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Serflek, C., Treviranus, J. (1995). VRML: Shouldn't Virtual Ramps be Easier to Build. *Virtual Reality and Persons with Disabilities Conference,* California State University, Northridge.
Treviranus, J. (1995). Alternative Access to the World Wide Web. Proceedings of the Tenth Annual Conference, Technology and Persons with Disabilities, Los Angeles.

Current Courses Taught

(all graduate level courses within MDes Inclusive Design)
Foundations of Inclusive Design
Unlearning and Questioning
Effecting Cultural Change
The Difference
Creating Inclusive Communities Online
Major Research Project Lab

Op-Eds (select relevant)

Treviranus, J. "We are all misfit consumers: we need inclusive design" Globe and Mail, 2016 http://www.theglobeandmail.com/report-on-business/rob-commentary/were-all-misfit-consumers-we-need-inclusive-design/article31587796/

Treviranus, J. "Inclusion Promotes Innovation" The Toronto Star, 2007, http://www.thestar.com/printArticle/255521

Select PodCasts

Quantization - Episode One: Inclusive Education
http://quantization.ca/podcast/episode-one-inclusive-education/

Innovation For All "The 80/20 rule hurts everything from education to self-driving cars featuring Dr. Jutta Treviranus" https://innovationforallcast.com/2018/09/26/inclusive-design-pareto-jutta-treviranus/

Videos About Research (select relevant)

SSHRC Imagining Canada's Future: How can emerging technologies be leveraged to benefit Canadians https://www.youtube.com/watch?v=q4BbbxdlNfU

Microsoft Design, Cinelan and Miau Wang Productions: "Inclusive", "Introduction to Inclusive Design", "Empathy", "Creating Digital Systems", "Creating Inclusive Cities"
https://www.microsoft.com/en-us/design/inclusive#inclusive-media-video
https://www.youtube.com/playlist?list=PLFPUGjQjckXHGoDYt8IkkN32fECBrl-_n

TakingItGlobal Sprout program: https://www.youtube.com/watch?v=A39znF1_9QA

Web Able.TV
http://www.webable.tv/Events/M_Enabling_Summit_2015/VideoId/1572/UseHtml5/True (32 minute mark)

MaRS Discovery District Video
https://www.youtube.com/watch?v=YFMzTSiO17s

Sample News Stories

Nora Young, CBC Spark, AI's Problem with Disability and Diversity,
http://www.cbc.ca/radio/spark/362-machine-learning-outliers-smart-device-ownership-and-more-1.4279433/ai-s-problem-with-disability-and-diversity-1.4279444

Cliff Kuang, 02/17/16, "Microsoft's Radical Bet On A New Type Of Design Thinking", *Fast Company*
https://www.fastcodesign.com/3054927/the-big-idea/microsofts-inspiring-bet-on-a-radical-new-type-of-design-thinking

Kareem Anderson, 02/16, How disability helped change Microsoft's design principles for Cortana and Bing, on MSFT, https://www.onmsft.com/news/disability-helped-change-microsofts-design-principles-cortana-bing

PC Magazine, June 17, 2016
William Fenton, "This Mapping Tool is Helping Disabled City Dwellers Get Around"
http://www.pcmag.com/commentary/345341/this-mapping-app-is-helping-disabled-new-yorkers-get-around

The Daily Beast, February 23, 2015
Elizabeth Heideman, "Now You Can Use Stephen Hawking's Tech to Speak With Facial Expressions"
http://www.thedailybeast.com/articles/2015/02/.../how-to-speak-with-facial-expressions.html

Global News, September 29, 2015
Global News' text-to-speech converter aims to help Canaidan Access the Internet
http://globalnews.ca/news/2220695/global-news-text-to-speech-converter-aims-to-help-canadians-access-the-internet/

Phantom Productions, 2016
"Evolution of technology items related to inventors working to help persons with disabilities."
http://phantomprod.com/MultiMediaDisabilityTech.html

Ryersonian, February 10, 2016
Rye grad, OCAD students help make Uber accessible
http://ryersonian.ca/rye-grad-ocad-students-help-make-uber-accessible/

Incidentally, June 15, 2016
Inclusive Design at the OCULA Spring conference
Amanda Etches
http://www.open-shelf.ca/150515-incidentally-ocula/

Spanish Television Coverage of Keynote to 300 Teachers in Barcelona
https://www.youtube.com/watch?v=TAVHn4Ehgw8

Yonge Street, March 30, 2011
Jaclyn Law, *"OCAD U sees an accessible future with new Master program in inclusive design"*
http://www.yongestreetmedia.ca/features/ocad0330.aspx

Torontoist, September 2009, "I want your job Jutta Treviranus, Director of Inclusive Design Research Centre"
http://torontoist.com/2013/09/i-want-your-job-jutta-treviranus-director-of-the-inclusive-design-research-centre/

UBER
Uber ASSIST: Greater Accessibility for Riders, February 24, 2016
https://newsroom.uber.com/canada/uberassist/

Council of Canadian with Disabilities, January 29, 2013
CMHR to feature the most inclusive design in Canadian History
http://www.ccdonline.ca/en/humanrights/promoting/CMHR-press-release-29Jan2013

Accessibility News, December 2013
McGuinty Government Launches New Accessibility Council
http://www.accessibilitynews.ca/acnews/coaac/history/new_council.php

Huffington Post
David Onley, Re-imagining Accessibility, November 14, 2013
http://www.huffingtonpost.ca/hon-david-c-onley/new-handicap-logo_b_4269671.html

AMI TV, August 2012
Accessibility Camp, Toronto
https://www.youtube.com/watch?v=XeP5Kl4GDgA

Globe and Mail, August 2012
Court Orders Ottawa to make web sites accessible to blind.
http://www.theglobeandmail.com/news/politics/court-orders-ottawa-to-make-websites-accessible-to-blind/article1316244/

Abilities, Spring 2011
Master's Program: Inclusive Design. Building the Brain Trust Needed to Support an Accessible
http://abilities.ca/masters-program-inclusive-design/

The Star, November 2010
Helen Henderson, *Inclusive design program sees a future where everyone is equal.*

https://www.thestar.com/life/2010/11/13/henderson_inclusive_design_program_sees_a_future_where_everyone_is_equal.html

Accessibility and the Law, 2002
The ADA and the Web
http://joeclark.org/book/sashay/serialization/AppendixA.html

Excellence Canada,
Accessibility for People with Disabilities Legislation
https://www.excellence.ca/en/knowledge-centre/news/accessibility-for-people-with-disabilities

Select Relevant Guest Blogs

Data-Driven Investor: "Sidewalk Toronto and Why Smarter is Not Better,"
https://medium.com/datadriveninvestor/sidewalk-toronto-and-why-smarter-is-not-better-b233058d01c8

ATIS4all Research and Development blog "Present Challenges of AT" Date: 03/05/2013
http://blogs.collaborativeportal.atis4all.eu/RDBlog/post/293.aspx

e-Literate Blog: "You Say Tomato, I Say Tomato, Let's Not Call the Whole Thing Off: The Challenge of User Experience Design in Distributed Learning Environments
http://mfeldstein.com/author/jutta-treviranus/ , July 1, 2008

Ontario Digital: "If you want the best design ask strangers to help."
https://medium.com/@jutta.trevira, Feb 13, 2018

FWD50: "The Three Dimensions of Inclusive Design" https://medium.com/@jutta.trevira, March 28, 2018

Authors Alliance: "Checking your unintentional message."
https://www.authorsalliance.org/2018/09/18/authorship-accessibility-guest-post-jutta-treviranus/, Sept. 18, 201

This is Exhibit **2** referred to in the Affidavit of **Dr. Jutta Treviranus.** Affirmed remotely by **Dr. Jutta Treviranus** of the City of Toronto in the Province of Ontario, before me at the City of Vaughan in the Province of Ontario, this 16 day of March, 2021.

Anoop Kalsi LSO# P13598

A Commissioner, etc.

Stay at home except for essential travel and follow the restrictions and public health measures.

Ontario

Information and Communications Standards Development Committee

Learn about the group that makes recommendations on how to improve existing information and communications standards under the *Accessibility for Ontarians with Disabilities Act* (AODA).

Background

In 2017, the Minister Responsible for Accessibility established the Information and Communications Standards Development Committee, a group of representatives from various sectors, including business, municipalities and people with disabilities, to make recommendations on our existing information and communications standards (https://www.ontario.ca/laws/regulation/110191#BK8).

Recommendations

The committee put forward initial recommendations (https://www.ontario.ca/page/review-information-and-communications-standards-2019-initial-recommendations-report) and asked for public feedback (https://www.ontario.ca/page/consultation-initial-recommendations-improve-accessibility-standards-information-and-communications) to help them draft their final recommendations to the Minister Responsible for Accessibility.

The committee has reviewed all comments, finalized their recommendations and submitted them to the Minister for Seniors and Accessibility for consideration. Read the final recommendations (https://www.ontario.ca/page/review-information-and-communications-standards-2020-final-recommendations-report).

List of members and representation

The following is a full list of the committee members including the organization or sector they are representing. Committee membership may be subject to change.

Voting members:

- Rich Donovan (chair), Return on Disability Group
- Pina D'Intino, Disability Community Representative
- David Best, Disability Community Representative
- Jennifer Cowan, Elgin County
- James Roots, Canadian Association of the Deaf
- Richard Watters, Enable Wellness Incorporated
- Kim Adeney, The Regional Municipality of York
- David Berman, David Berman Communications
- Louise Bray, Ontario Library Service North

- Robert Gaunt, CNIB
- Gary Malkowski, Canadian Hearing Society
- Jutta Treviranus, Inclusive Design Research Centre
- Mattieu Vachon, Conseil des écoles publiques de l'Est de l'Ontario
- Diane Wagner, Learning Disabilities Ontario
- Chantal Perreault, Regional Municipality of Niagara
- Kevin Shaw, TellMe TV Inc.
- Louie Di Palma, Ontario Chamber of Commerce

Non-voting members:

- Kathy McLachlan, Ministry for Seniors and Accessibility
- Kate Acs, Ministry of Education
- Michele Babin, Ministry Advanced Education and Skills Development
- Adam Haviaras, Ministry of Tourism, Culture and Sport

Scope and timelines

A standards development committee will review the information and communications standards, as prescribed in Section 9 of the *Accessibility for Ontarians with Disabilities Act*. It is summarized as follows:

- re-examine the long-term objectives of the standard
- if required, revise the measures, policies, practices and requirements to be implemented on or before January 1, 2025, and the timeframe for their implementation
- develop another proposed accessibility standard containing modifications or additions that the committee deems advisable for public comment
- make such changes it considers advisable to the proposed accessibility standards based on comments received and make recommendations for my consideration

The committee should also consider all possible solutions and tactics, including non-regulatory approaches.

The Ministry for Seniors and Accessibility has undertaken research and consultations with people with disabilities, obligated organizations and some industry experts.

Feedback

The majority of feedback and findings relate to accessible website requirements under the standard. The Ministry for Seniors and Accessibility heard that the need for accessible digital communications is increasingly important to people with disabilities. For obligated organizations, flexibility to adapt to advancements in technology, while balancing the need for clear compliance requirements is a challenge, and these challenges may be unique based on sector (public or private).

Common difficulties in the Canadian and international experience with technical requirements similar to this standard presents the opportunity for Ontario to lead. Additionally, during the 2016 Ontario Budget discussions, a commitment was made to the Legislative Assembly to review the use of specific file formats. The Ministry for Seniors and Accessibility will be sharing this research with the committee.

In addition to the above, the committee's review may take into account all information and communications standards, such as website requirements, formats, and educational and training institutions and public libraries. The government has, however, heard from obligated organizations that changing requirements before they have completely taken effect can create a significant implementation burden.

The minister requested the committee to focus the review on requirements for sectors that have been in effect for more than 24 months, as well as to identify any gaps that may remain in the standards.

This is Exhibit **3** referred to in the Affidavit of **Dr. Jutta Treviranus.** Affirmed remotely by **Dr. Jutta Treviranus** of the City of Toronto in the Province of Ontario, before me at the City of Vaughan in the Province of Ontario, this 16 day of March, 2021.

Anoop Kalsi LSO# P13598

A Commissioner, etc.

Jutta Treviranus: Background for ECM

Short Biography:

Jutta Treviranus is the Director of the Inclusive Design Research Centre (IDRC) and professor in the faculty of Design at OCAD University in Toronto http://idrc.ocad.ca . With it's origins in the ATRC established in 1993, the IDRC is an internationally recognized center of expertise in the inclusive design of emerging information and communication technology and practices. Jutta also heads the Inclusive Design Institute a multi-university regional centre of expertise. Jutta has led many international multi-partner research networks that have created broadly implemented technical innovations that support inclusion. Jutta and her team have pioneered personalization as an approach to accessibility in the digital domain. Her team also leads many international open source projects that attempt to infuse inclusive user experience design sensibilities into open source networks. She has played a leading role in developing accessibility legislation, standards and specifications internationally (including WAI ATAG, IMS AccessForAll, ISO 24751, and AODA Information and Communication). Jutta established and directs a graduate program in Inclusive Design at OCAD U. She is also a member of a number of key advisory panels nationally and internationally that advance approaches to equitable access to the digital domain.

Work in the field of accessibility:

As indicated in my biography I have worked in the field of accessibility for more than 30 years. Since the emergence of personal computers I have conducted research and development, policy development, educationanddirect service to ensure that computers, networks, digital content and applications are accessible to people with disabilitiesand to harness computers to address accessibility barriers faced by people with disabilities. My work has been cross-disability. Although my work has been in all domains where technology is applied, a strong focus has been on accessible education and authoring environments to support the creation of accessible content and applications.

Where we stand:

Access to digital systems and networks is now essential. Education, employment, access to culture, civic engagement, commerce and government services, all involve the use of digital systems and networks. In the "western world" we assume that mainstream technologies can be designed for the typical user and that specialized assistive technologies will bridge the gap for anyone that cannot use the mainstream technologies. This is a flawed assumption and has led to an ever-widening technology gap or a gap between the access experienced by those who can use mainstream technologies and those who require alternative access systems.

The assistive technology industry is not technically or economically viable. As standard technologies decrease in cost, increase in functionality, availability,

reliability and diversity; assistive technologies in contrast, increase in cost, and decrease in functionality, reliability and diversity. Assistive technologies are also not available in most of the world. In the majority of countries they are either not sold, not maintained or cost more than 50% of an individual's annual income. Adequate assistive technologies do not exist for some of the most prevalent disabilities, namely cognitive access.

A specialized market of assistive technologies is not technically viable because, to successfully fulfill the role, each technology must be fully compatible and remain fully compatible with all applications on a given platform. Many of these applications are proprietary and do not share interoperability specifications at the level that assistive technologies require. Updates and upgrades to the applications happen frequently and are increasing in frequency as these can be done automatically over networks. Most updates or upgrades require a responsive update in the assistive technology. Many applications are now constructed by many sources, meaning there is no one mainstream developer to appeal to or to seek information from. Consequently a user of a screen reader, onscreen keyboard, or screen enhancer cannot assume that they can access all functions of essential applications or that if they can today, that they will be able to tomorrow.

With the aging of western populations and improved survival rates globally there is an increase in the incidence of people experiencing disabilities. Special services intended to provide funding for assistive technologies, and training in their use, are experiencing greater demand, at a time of financial constraint in almost all jurisdictions. The response has been to tighten the criteria that must be met to qualify for these services. As a result, an increasing amount of the budget is spent on policing or excluding individuals (that are deemed not to qualify) from the service, leaving a smaller amount of the budgets available to provide the service. This causes groups of individuals to be excluded from the service. These individuals then advocate for service, this may result in a new category of service which requires further administrative processes to administer and police (e.g., services for individuals with autism). In addition the technologies funded through the special programs must be certified. This certification process frequently takes longer than the updates to the technologies meaning that an individual who has successfully passed the qualification requirements may be provided with an outdated assistive technology.

Legislation has been seen as a means of addressing this gap. Legislating in a domain that advances as quickly as ICT is a difficult process. Legislation requires clear, testable criteria. The life cycle of legislation is far far slower than the speed of technical advances. Consequently accessibility legislation is frequently seen to constrain technical innovation and advance. Developers who want to innovate will often respond to accessibility legislation by attempting to find ways to be exempt from legislation rather than finding creative ways to address accessibility requirements.

Clearly we need new approaches. Addressing digital inclusion of individuals with disabilities as a specialized, segregated goal is not viable. The digital inclusion agenda for people with disabilities is becoming ever more urgent as we move more inexorably into a networked, digital society globally.

Major Barriers

As discussed above in "Where we stand" the major barriers in this domain are:

- mainstream development does not take into account the needs of individuals with disabilities, relegating the responsibility to assistive technologies,
- under current technical and economic conditions, specialized assistive technologies are not technically or economically viable (with very few exceptions) and are not available in most of the world,
- specialized services for individuals requiring alternative access systems are experiencing greater and greater demand at a time of fiscal restraint, meaning that individuals with disabilities must pass ever more stringent qualification processes to receive ever more taxed services, and
- legislation intended to enforce accessibility is frequently seen to be at odds with technical innovation and advance, in an area where technical innovation is badly needed, and
- most legislation is based on litigation for enforcement meaning that individuals with disabilities who are very poorly resourced need to mount a legal case.

Successful Use Case and Learning Points

Case Study 1: FLOE Project and Open Education Resources

Background:

The growing Open Education Resource (OER) community globally produce openly licensed learning resources for all levels of education and all subjects. The community is supported by grants from a number of large foundations including the William and Flora Hewlett Foundation. Contributors of OER include prestigious Universities such as MIT, Stanford, Berkeley, Princeton and others through initiatives such as Open Courseware. Unfortunately the majority of resources are not accessible and there are few supports or mechanisms within the community to produce accessible resources despite the goal of inclusive education. OER delivery mechanisms are also not accessible. This presents an impediment to adoption by education systems that require accessible curriculum.

Objectives:

The primary objective of Floe is to support inclusive education for the full diversity of learners and to support OER producers in creating inclusively designed OER.

Process of Strategy:

The FLOE project is sponsored by the Hewlett Foundation to address the accessibility of OER and to thereby remove barriers to adoption of OER by formal education systems and serve the needs of currently marginalized learners. However the project was initiated at a time when there were over 30 million OER, the majority of which were inaccessible. The traditional approach to accessibility would have been to evaluate and retrofit all existing resources and then support the creation of accessible resources by OER producers in the future by setting up training and specific accessibility gates for new OER. This approach was deemed to be impossible and counterproductive to inclusive education which recognizes that learners learn differently.What is needed is a one-size-fits-one approach to learning not a one-size-fits-all approach. Consequently FLOE approached the problem by assuming that all learners learn best when the learning experience is tailored to their needs and takes their constraints into account. To accomplish this personalized learning approach requires a large pool of diverse learning resources that can be modified, reused and repurposed and learning delivery systems that can be reconfigured to the needs of each learner. The large pool of openly licensed resources of the OER community are a perfect environment to enable this personalized learning approach.

Rather than retrofit each resource to adhere to a fixed set of accessibility criteria, FLOE created a system whereby the large, diverse pool of freely modifiable

resources could be used to address the diverse needs of each learner.

To achieve this requires:
1. information about each learner's access needs,
2. information about the learner needs addressed by each resource,
3. resources that are amenable to transformation, and a pool of alternative equivalent resources, and
4. a method of matching learner needs with the appropriate learning experience

The FLOE project has created a set of tools and resources that:

- support learners in discovering and declaring what their needs and preferences are with respect to learning, or how they learn best,
- support OER producers in creating transformable resources,
- label existing and new resources with information about what learning needs and preferences the resource addresses and a mechanism for augmenting or refining this information with feedback once the resource is used, and
- find and deliver resources that match each learners needs.

If the default OER is inaccessible to a specific learner the FLOE delivery system will either:
- transform the resource (e.g., through styling mechanisms),
- augment the resource (e.g., by adding captioning to video), or
- replace the resource with another resource that addresses the same learning goals but matches the learner's specific access needs.

FLOE implements the ISO 24751 standard for both the learner needs and preferences and the resource description. These FLOE tools and resources are being integrated into existing OER delivery systems such as OER Commons.

Changes or Progress Achieved:
One of the main changes achieved by FLOE is a shift in the attitude of the OER community towards accessibility. Prior to FLOE, in part due to exposure to a zealous group of accessibility advocates and threats of legal action, accessibility was viewed with wariness and defensiveness. Accessibility was seen as something that would constrain innovation and freedom of expression, it was seen as a rigid set of criteria that would homogenize resources, and as a legalistic set of constraints that imposed the requirements of a few learners on all learners. Since FLOE there is an enthusiastic, cooperative attitude toward accessibility as a means of benefiting all learners and furthering the foundational goals of the OER community. This can be seen in the online discourse and in the integration of accessibility into most OER efforts.

More practically FLOE has created a means of addressing the needs of learners with disabilities – both learners that fit classic criteria of disability and learners that do

not fit the categories but are marginalized or experience disabilities nonetheless.

Monitoring and Evaluation:
FLOE outcomes are monitored and evaluated by the William and Flora Hewlett Foundation, through graduate research projects, but primarily by the community of end users through the FLOE Wiki which solicits feedback and inputto help to refine the program.

Learning points:
FLOE integrates the needs of individuals with disabilities into the needs of all learners. The same design criteria that address the needs of learners with disabilities also benefit all learners.

FLOE goals are in line with the larger values of the community and appeal to the mission of the OER effort rather than acting as a counterpoint that highlights mistakes or omissions on the part of the community.

FLOE tools support curriculum developers to integrate inclusive design right from the beginning rather than after the fact and make the full rationale of the inclusive design practices apparent.

FLOE recruits a large and diverse group of contributors through crowd sourcing thus educating and including a broad community that would not otherwise know of or be concerned with accessibility.

Potential Improvements:
If FLOE had been initiated at the beginning of the OER effort, OER delivery mechanisms would have been built from the start to integrate the FLOE functionality.

Other lessons learned:
The binaries of disabled and non-disabled, accessible and inaccessible are not useful in the education and elearning domain. They only serve to exclude learners who don't fit the definitions but experience barriers from necessary services and to dismiss resources that, although they don't fit the fixed definition of accessible are nonetheless the most accessible to certain learners. Both disability and accessibility should be seen as relative terms taking into account the learning goal, the individual learner and the context, not as a personal trait but a condition brought on by a mismatch or match of the learning environment or service with the current needs of the learner.

Relevant References:
1. http://floeproject.org

2. http://www.hewlett.org/programs/education-program/open-educational-resources

3. Treviranus, J. (2010). The Value of Imperfection: the Wabi-Sabi Principle in Aesthetics and Learning. In Open ED 2010 Proceedings. Barcelona: UOC, OU, BYU. [Accessed: 10/1/2011].<http://hdl.handle.net/10609/4869>

Contact Details for Further Information:

http://floeproject.org and http://wiki.fluidproject.org/display/fluid/Floe

Jutta Treviranus, jtreviranus@faculty.ocadu.ca, Colin Clark, cclark@ocadu.ca

Case Study 2: Fluid Support for Accessible Web Application Development

Background:

Creating accessible interactive Web Applications or Rich Internet Applications present some of the greatest Web Accessibility challenges for which it is very difficult to create prescriptive guidance. Most Web Applications are created using component toolkits such as Dojo, JQuery and GWT which provide reusable components for most common interactions or functions, few Web application developers create applications from scratch. Web application designers frequently use design pattern, persona, scenario, and unit test libraries and other shared resources when designing and developing Web applications.

Objectives:

One of the primary objectives of the Fluid Project is to ensure that mainstream Web applications are accessible from the start.

Implementation Process or Strategy:

Fluid produces highly usable, fully accessible, reusable components and design resources and contributes these to popular component toolkits and design libraries so that Web application developers using the toolkits create accessible applications by default. Fluid is a growing open source community. Implementers of the Fluid components help to extend and add to the Fluid components. The initial motivation for using Fluid components is usually because they are well designed, reliable, robust, well documented and easily updated. Accessibility is initially seen as an added benefit. In the process of using Fluid the developer is also educated about accessibility needs and the benefits of accessible design.

Changes or Progress Achieved:

Fluid components and design resources have been integrated into over 100 IBM applications, popular browsers such as FireFox and many open source applications such as Sakai, UPortal, CollectionSpace, OpenCast to name just a few. All of these are therefore screen reader compatible, keyboard accessible and provide the necessary ARIA markup (WAI Accessibility for Rich Internet Applications).

Monitoring and Evaluation:

Fluid is monitored and evaluated by a growing community of implementers and by

the toolkit or design library initiatives they are integrated into, which have stringent standards for integration.

Learning Points:
Fluid's success can be attributed to the fact that accessibility comes as an integrated part of a number of other desirable goals. Developers use Fluid components because they are well designed, reliable, upgradable and they are then pulled into the effort of maintaining and improving the components.

Because Fluid functions as a largely transparent effort there is less public and financial support than a high profile accessibility effort.

Possible Improvements:
Greater effort can be expended to publicize the Fluid project.

Other lessons learned:
One of the most successful strategies for compliance with accessibility guidelines is to build supports for accessible authoring into the authoring tools and development tools. This ensures that even individuals that are not motivated or not knowledgeable about Web accessibility will adhere to accessibility guidelines.

Relevant References:

http://fluidproject.org

Treviranus, J. (2009)"You Say Tomato, I Say Tomato, Let's Not Call the Whole Thing Off "in *On theHorizon.*Emerald Group Publishing Limited.

Treviranus, J. (2008), "Authoring Tools," in *Web Accessibility: A Foundation for Research.*.Editors: YelizYesilada and Simon Harper. Springer, Hamburg

http://www.w3.org/WAI/intro/aria

Contact Information:
http://fluidproject.org

http://wiki.fluidproject.org

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Case Study 3: Accessibility for Ontarians with Disabilities Act (AODA)

Background:
Most accessibility legislation globally requires that the wronged party, namely the person with a disability mount a legal process and litigate the offending institution or individual. This puts an undue burden on individuals who are frequently poorly resourced. It also puts the onus of proof of wrongdoing on individuals with

disabilities.

Objectives:
To shift the burden of achieving equal access onto the provincial government and all organizations in the province of Ontario.

Process or Strategy:
The AODA treats accessibility and compliance to accessibility regulations the same way that environmental regulations or public health regulations are treated. Both public and private organizations are required to report compliance and the province inspects and audits compliance and administers fines to organizations that do not comply. Individuals with disabilities help to set the standards but are not required to litigate. People with disabilities still have the option of litigation through human rights legislation.

Changes or Progress Achieved:
Responsibility for enforcing and upholding compliance is the responsibility of the government. All obligated organizations are held accountable for compliance and must report on their progress on a regular basis. This shifts accessibility compliance within an organization from a risk management issue (assessing the risk of litigation against the cost of compliance) to an organizational requirement.

Monitoring or Evaluation:
An independent consultant (Charles Beer) evaluated the success of the program. This will be repeated on a regular basis.

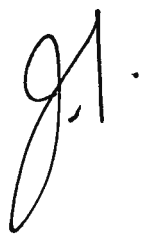
Learning Points:
Disability representatives and advocates were empowered to actively participate in the standards development process through research and training support. All political parties supported the Act.

Possible Improvements:
More transparent reporting of compliance (through online systems) and public review of compliance reports would speed up compliance and monitoring.

Other Lessons Learned:
The presence of accessibility legislation in the full range of domains is more powerful than the specific requirements of the regulations. Organizations are motivated by the fact that they are required to become accessible and frequently don't become sufficiently informed about the actual requirements of the legislation.

Relevant References:
http://www.mcss.gov.on.ca/en/mcss/programs/accessibility/

http://www.aodaalliance.org/



Kemper, A., Stolarick, K., Milway, J., Treviranus, J., (2010) Releasing Constraints: Projecting the Economic Impacts of Increased Accessibility in Ontario. Martin Prosperity Institute. http://www.martinprosperity.org/media/ReleasingConstraintsAccessible.html

Contact Details:
http://www.mcss.gov.on.ca/en/mcss/programs/accessibility/

Key Recommendations

Governments

1) Accessibility should be regarded as a regulatory responsibility of the government just as public health, environmental regulations, traffic regulations are enforced and monitored by the government.
2) Public policy regarding digital inclusion should be established in such a way that it outlives the political term of any one government and is not vulnerable to political changes.
3) Governments should set an example with respect to accessibility and institute accessible practices in all internal areas of ICT, through mechanisms such as accessible Web templates, authoring tools that support accessible content creation and the adoption of open standards and accessible file formats.

UN

1) The UN should support a global shift in policy and legislation that requires that mainstream software and hardware manufacturers are responsible for addressing the needs of individuals with disabilities rather than relegating this to assistive technologies. This will shift the rising cost of alternative access systems from people with disabilities and the public purse to the corporations, it will increase the availability of integrated access solutions and it will increase cooperation between mainstream developers and developers of assistive technologies.
2) The UN should mount an effort to support open standards. This will support greater interoperability with alternative access systems.
3) The UN should support the convergence of mobile and internet technologies. This will reduce the fragmentation and redundancy in standards, training, maintenance and accessibility strategies.

International standard organizations

1) Accessibility should be an integrated consideration in the development of all interoperability or technical standards.
2) There should be greater representation of people with disabilities in standards organizations.

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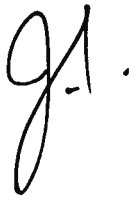

3) Standards should be developed as open standards to allow interoperability with alternative access systems.

Corporate sector

1) Corporations should design for requirements at the margins rather than or the average user, this promotes innovation and increases the customer base.
2) Corporations should create flexible, easily reconfigurable ICT products, this will help with upgrading and will increase the longevity of products and services.
3) Software producers should provide open APIs to increase interoperability and thereby also increase the uptake of their products.

Disabled persons organizations

1) Organizations should collaborate and cooperate and avoid fragmentation and publicly dissenting opinions.
2) Organization should focus on long term cultural change rather than short term gains and requirements.
3) Organizations should develop the capacity to understand advances and directions in ICT systems and practices so as to take proactive action.

This is Exhibit **4** referred to in the Affidavit of **Dr. Jutta Treviranus.** Affirmed remotely by **Dr. Jutta Treviranus** of the City of Toronto in the Province of Ontario, before me at the City of Vaughan in the Province of Ontario, this 16 day of March, 2021.

Anoop Kalsi LSO# P13598

A Commissioner, etc.

BertelsmannStiftung

BOSTON GLOBAL FORUM IDEAS THAT MATTER.

WORLD LEADERSHIP ALLIANCE CLUB DE MADRID

"Multilateralism That Delivers"
Working Group (WG) on Digitalization

World Leadership Alliance – World Economic Forum

Discussion summary by Prof. Alex Pentland, MIT, pentland@mit.edu

October 11, 2020

Background: The potential and the danger of digitalization

World leaders face an unprecedented set of challenges and opportunities, and the ongoing digitalization of institutions provides a means for addressing these challenges in ways which are more fair, innovative and sustainable. The issues digitalization present for multilateralism are complex, emergent and demand new approaches which deliver impact at both the global and local level. Additionally, along with the complexity and uncertainty of digitalization, is the speed at which change occurs. Shared understandings and collective decisions need to be made in shorter time periods

The complexity involved in digital transformation demands that the various "layers" of the challenge be understood and acted upon in a coordinated and holistic manner. "Multilateralism that delivers" requires actors across the ecosystem to collaborate in new and innovative ways to ensure innovative technology, regulation, a renewed social contract and sustainable business models that together can collectively drive positive socio-economic change.

From a technology perspective, data (particularly private sector data) needs to be made more accessible and standardized in a more coherent and consistent manner. The data infrastructure needs to be made more ubiquitous, affordable and most importantly more secure to address the 10X increase in cyberattacks. Additionally, for the promise of multilateralism to be realized, data governance needs to be reinvented so that the current data cold war, threats to privacy and increasing security challenges can be addressed in a manner where human-centered innovation and value creation can be maximized.

In addition to the complexity of the transition to digitalization, another dimension which global leaders need to attend to is the overall velocity of change. Driven by the exponential increase in networked technologies, the velocity of change within the geopolitical and social context is unprecedented (particularly given the societal and racial injustices revealed during the pandemic crisis). Likewise, the rate of change within the private sector has accelerated as new transformative and highly collaborative business models are emerging. All of this demands that leaders have a more holistic and globally systemic view of how digitalization is impacting entire ecosystems. Many of the challenges leaders face because of the COVID-19 pandemic are not new. Rather they are gaining scale and relevance given the global interdependencies of the pandemic.

The world faces several interlinked digitalization challenges where multilateral coordination, particularly coordination supported by industry, could make a fundamental and positive contribution. To date, the rapid adoption and scaling of digitalization has been one of the drivers for resilience and response. With the accelerated adoption of technology, key actors throughout the digital ecosystem (including OECD, World Bank, UN, TCFD, GRI and countless businesses, academic institutions and NGOS) have strengthened their collaborative efforts

to drive material change for some of the most difficult challenges. Identity, privacy, cross-border data flows, supply chain optimization, education, skills and job creation have all made huge strides in the past six months.

From a data perspective, one of the most notable points of progress during the pandemic is the increasing support from fortune 500 enterprises, standards bodies, investors, NGOs and international organizations in the adoption Environmental, Social and Governance (ESG) metrics and disclosures. Mapping to the UN SDGs, the growing array of ESG indicators which businesses are aligning on (and agreeing to implement and disclose) serves as a significant factor shaping the investment and achievement of shared goals.

From an application and value creation perspective, another game-changing and accelerating development has been that of national digital currencies in central bank digital currency (CBDC). A community of over 40 central banks, international organizations, academic researchers and financial institutions have begun to create frameworks to help central banks evaluate, design and potentially deploy CBDCs. Their deployment in China, Southeast Asia and Switzerland provides leaders with the chance to advance multilateralism with greater efficiency, effectiveness and inclusion at global scale.

Systemic challenges: Acute challenges include resolution of the explosion of public debt in countries around the world, coordination of health systems to deal with this and future pandemics, and disruption of social contract norms by AI and automation.

Chronic and existential challenges include ecosystem stabilization, including climate change as an important element, and adaptation to human demographics trends including aging population and population growth.

New digital platforms: New all-inclusive digital platforms for smart cities, commerce, government, and finance are being deployed by governments and national champions within countries such as China, US, Singapore, Switzerland, and others. Aiding in this digital transformation is a rush to issue national digital currencies, which may allow unprecedented auditability and control of financial transactions.

These new digital platforms offer greatly enhanced ability to address the world's challenges, but they create their own dangers, including:

Coordination challenges: Transition to more digital infrastructure risks disenfranchisement of all but technologists and elites, accentuating country and community inequality, exclusion of minorities, unhealthy concentration of power, and threats to community and national values and norms.

Power imbalances: Deployment of new data and transaction/AI platforms risks creating a "cold war" between technology blocks, leaving less developed nations at the mercy of a few powerful governments and generally degrading the ability of the world to deal with global challenges.

Key Points for Discussion

There are three main areas where international agreement and transnational initiatives could make important difference. These are data for forecasting and accountability, AI and digital transaction auditing and standards enforcement, and governance for digital platforms. It is not intended that the current discussion establish standards and norms within these three areas, but rather that there is agreement about a framework to guide the evolution of these three subjects.

In discussing these topics, certain practical realities should be kept in mind:

- Any framework will inevitably include both international treaty, national and local law and regulation, as well as technical standards. There are many initiatives currently underway, but they lack overall coordination.

- Complete uniformity is impossible due to differing norms and local conditions. Instead, discussions should focus on establishing norms of interaction, auditing, accountability, and governance between communities. Payments and some other types of financial transactions are examples of such systems.
- The basis of good governance is good and comparable data, which means that data metrics must be reliable uniform, frequent and sufficiently fine-grain to allow visibility of minority communities. An example of inclusive design to create such a data framework is the UN Sustainable Development Tier 3 metrics.
- Private companies must contribute to and participate in these systems. This implies that they must make their data and systems visible and auditable at the granularity of communities, rather like banks in some countries make their consumer activities regularly visible and auditable for each community in which they operate.

Data for Forecasting and Accountability

Both the financial crash of 2008 and the current pandemic have laid bare the inadequacy of current systems, both in terms of their inability to forecast and manage crises, as well as in terms of their systemic exclusion or bias against of many parts of society. To build an inclusive, innovative and equitable global economy there needs to be access to robust, timely and comprehensive "rich census data".

As emphasized in the recent G20 meeting, open access to this sort of data will allow stakeholders to more quickly, and with greater certainty, forecast sources of local and global risks, ranging from financial crashes, to climate change, to pandemics, to systemic racial and gender discrimination to other precursors of social unrest. The data resources outlined by the UN Sustainable Development Goals (and in particular the tier 3 measurement goals) envision having trustworthy, open and accountable access to real-time, comprehensive and granular data that allows understanding of the situation of individual communities but not individual people.

Such data can enable governments and policy makers to ensure that discussions at the WEF about stakeholder capitalism turn into reality. Tax systems, for instance, could assess tax not only on income, but on environmental impact, inequality impact, public health measures, etc. For example, the OECD dialogue on Digital Taxes could be framed in this manner.

It is for this reason that both the OECD and World Economic Forum (WEF) are developing comprehensive data standards that will apply not only to economics but also to sustainability and governance. However, the opportunity for a secure, inclusive and trustworthy data will be impossible unless there are multilateral standards for measurement of shared outcomes. Industry, through the WEF, has committed to starting this process by compiling and sharing such data, now national governments need to work with them to establish uniform data measurement and availability standards.

Security and Privacy: AI and digital transaction auditing and enforcement

Foundational to the digital transformation of nations will be the need for strengthened multilateral cooperation to ensure the privacy of citizens and the security of both public and private data systems (e.g., government systems but also financial systems, heath systems, etc). A strengthened commitment to multilateral cybersecurity is a natural topic for the World Leadership Alliance – Club de Madrid members, and is increasingly urgent for many nations.

As 5G and Internet of Things technology are more widely deployed in the coming years, many nations will face increasingly disruptive cyberattacks. Current estimates is that the frequency of such attacks could be an order of magnitude greater that today, and would threaten basic government, health, food, power, financial systems. Similarly, the impending deployment of national digital currencies may pose

an even greater danger. Not only could "hacks" of a national digital currency cause immense real-world damage, but such systems can potentially allow tracking every purchase of every person. Such individual-level financial tracking poses privacy risks that dwarf current concerns.

Coordinated multinational and national systems that allow unified and agile response is required. The need for technologies such as secure, privacy-preserving digital ID, accurate records of cross-border trade, and real-time sharing of health data are becoming urgent. There are of course many relevant initiatives underway, but there is no overarching vision and so gaps and contradictions are everywhere. The technology to build effective systems exists, and industry is willing to lead the way in deployment, and now governments need to enable effective, coordinated detection of attacks, fraud, and rules for proportional response.

Governance for digital platforms

Modernizing and digitizing governances of national, international, and commercial interactions to become more efficient, transparent, and inclusive is a key global priority, and dozens of efforts to already underway. However, current efforts are mostly piecemeal and incremental. This is therefore a natural topic for members of the World Leaders Alliance – Club de Madrid.

Governance of digital platforms has become unexpectedly urgent with the pilot deployment of nationally-backed digital platforms that provide a uniform framework for not only finance but trade and logistics, authentication, fraud detection and analytics (e.g., AI). China, for instance, is moving existing Silk Road investments onto Chinese digital systems that are dramatically more agile and cheaper than Western systems. Singapore has developed a similar digital trade and logistics infrastructure for investments within its Temasek Sovereign Wealth fund, and Switzerland has recently deployed the Swiss Trust Chain. Finally, most major economies have either deployed or are seriously considering deployment of national digital currencies.

These systems are poised to integrate the majority of the world's trade into efficient, unified frameworks that seamlessly interoperate across sovereign and institutional borders. However, their accountability, inclusiveness and governance may not satisfy many nations, perhaps particularly Western nations. It is imperative that nations engage in the standards specification and deployment of these digital governance systems, making this topic a natural one for members of the World Leaders Alliance – Club de Madrid.

Perhaps the first challenge to be addressed by any new system for digital governance is repairing the world's tattered finances. Current levels of public debt are at levels not seen since World War II, and simultaneously national economies are in disarray. If nations do not cooperate, we risk a "race to the bottom" as countries competitively devalue their currencies, and smaller nations will suffer the most. Moreover, unlike at the end of World War II, the deployment of these new digital trade platforms will provide nations with possibilities for beggaring their neighbors in ways that are far less visible than an official devaluation.

This suggests that a new "Bretton Woods" multilateral effort is required, with the goal of renovating multilateral institutions using the more efficient, secure, and inclusive digital platforms that are analogous to those developed by China, Singapore, and Switzerland. Unlike the World War II effort, such coordination must not only be centered around banking and finance, but must be intimately dependent on digital technical standards such as created by the IEEE and the computational social science needed to measure and forecast interactions between finance, sustainability, and social factors.

Additional background (contribution by Carlos Santiso)
Advisory Group on Digitalization, 2020 Annual Policy Forum on Multilateralism that Delivers
A multilateral system that is fit-for-purpose for the digital era

Critical agendas forward for the digital recovery

Building back better requires addressing the wicked challenges of the digital era. These call for global solutions and multilateral responses. However, there are important gaps and failures in the current multilateral systems that need to be acknowledged and addressed, including the insufficiency or inadequacy of existing multilateral arrangements.

Global business and big techs need to be part of this multilateral solution as responsible stakeholders. Considering the speed of technological change and innovations, big techs have a global corporate social responsibility to be part of efforts at addressing the "negative externalities" of the digital revolution and the need for smart regulation of the digital world. In that context, the WEF provides a unique platform to bring the private sector into this global debate in a more structured and collective manner.

Data has become a critical asset, for businesses and governments alike but smart regulation is lagging technological developments. The governance of data, its privacy and security, is a major global issue that requires global standards and monitoring mechanisms that are currently lacking. Different data governance regimes are emerging and competing, some geared towards personal privacy and other towards the digital economy. Time is ride to consider a World Data Organization to agree on common set of global standards, oversight mechanisms and regulatory development to go apace with technological development. Big techs (GAFA) and global forums (G7, G20) must be part of this endeavour.

Multilateralism that delivers on the promises of the digital acceleration. To deliver in the "digital decade" that started with a pandemic (2020s), multilateralism must address 5 critical agendas of the post-pandemic digital revolution. This policy paper therefore focuses on critical opportunities and challenges that the digital revolution presents the multilateral system with, where there are gaps or failures in the multilateral system to make the digital revolution work for all.

Four global agendas of the digital revolution are particularly critical:

(i) **Global data standards and global data governance**, including public-private data sharing arrangements, to better regulate global data issues, linking concerns over data privacy and the unlocking the promises of the digital economy in an inclusive and equitable manner.

(ii) **Global digital inclusion, in particular inclusive and secure digital identity regimes** that can protect privacy, enable digital services and support the digital economy (e-commerce). For example, social safety nets and social transfers were more effective in countries with inclusive identity systems and effective digital transfers schemes.

(iii) **Fairer global taxation of the digital economy** to contribute to the reconstruction effort. Discussions have been ongoing for several years in various forums (OECD, G20) and should be concluded with earnest. This includes more vigorous efforts to fight tax optimization and evasion, as well as greater transparency in beneficial ownership and greater responsibilities of "gatekeepers" (accountancy firms, global banks). Big tech companies (GAFA) should be part of this solution, reflecting their global role and global responsibilities.

(iv) Leveraging **digital and data solutions against corruption** through greater international cooperation in fraud analytics and the prevention of new forms of digital corruption, transitional crime, and cybersecurity threats. Digital crime is on the rise and dedicated multilateral mechanisms must be beefed up to prevent it. (Interpol; UN call for an international corruption court).

In **Europe,** these critical agendas are at the centre of the policy debate on the green and digital recovery. The EU is pursuing an ambitious agendas o digital transformation and articulating a data governance frameworks. The digital agenda was a core part on the EC President's State of the Union vision, outlining Europe's commitment for multilateralism going forward.

Several global efforts are being pursued global forum and could coalesced around a **WEF-back global alliance for our digital future**, involving critical actors from the private sector ("stakeholder capitalism" agenda), including big tech companies, startups (govtech and civic tech), as well as institutional investors and venture capital.

Relevant global initiatives ought to be actively supported by global business and big tech, such as the UN-backed Digital Public Goods Alliance, the World Bank-back Development Data Partnership, New America's Digital Decade (promoting open source solutions), and Rockefeller Foundation's data science for social impact, to name a few.

Additional background (contribution by Jutta Treviranus)
Advisory Group on Digitalization, 2020 Annual Policy Forum on Multilateralism that Delivers
A multilateral system that is fit-for-purpose for the digital era

The Problem

Data systems are generally designed to understand and make determinations regarding the majority or largest homogeneous number within a population. Minorities and outliers are ignored or overshadowed by majority results or dominant patterns. Data analytics is designed to reduce diversity and complexity. Minorities tend to be more diverse and variable than the average, and their context is more complex and unstable. Standardization, ranking and rating systems exacerbate this bias toward a homogeneous majority. Artificial intelligence systems, including machine learning systems automate and amplify this bias toward the majority (as well as bias caused by lack of representation, and bias in the algorithms, as identified in many AI Ethics efforts). AI is predominantly used to optimize existing patterns. This leads to greater disparity.

At the same time, minorities and outliers are most vulnerable to problems and abuses, but also the primary source of alternative approaches to problems. They are the unrecognized stress testers of any system, the canaries in the coal mine, but also the greatest innovators.

In terms of emerging data rights, small minorities and outliers are not adequately protected by current data protections as they are highly unique and can be easily reidentified. They are also most vulnerable to data abuses and misuses. People at the margins often need to request special services and thereby barter their privacy for essential services.

Unfortunately forecasting and accountability structures meant to guide development goals have the same flaws with respect to minorities and people or communities at the margins. This is especially true for individuals that don't fit into bounded, protected identity groups. Minority groups are often sacrificed to reach consensus, mistreated in attempts to game reward systems, and generally unrepresented at decision tables.

The Impact

This lack of understanding and ability to address the needs of minorities and outliers hurts not just the marginalized, but society as a whole. It helps to fuel disparity. It prevents people at the margins from benefiting from measures to advance development goals. It also reduces our ability to detect and respond to unintended consequences of policy, the weak signals of coming threats, and black swan events. Minorities at the margins are the first to feel the effects of flaws in a system. It is these unexpected events that have the most disruptive impact on our global systems.

This bias in our sociotechnical systems is counter to our understanding of adaptability, evolutionary advance and survival. Our current systems favour monocultures. We need diversity, not homogeneity, for the range of evolutionary choices needed to survive unexpected threats.

We have unnecessarily transferred this bias to our digital systems. Popularity metrics, the only value we have mechanized, reduces diversity and mimics competitive hierarchies. Artificial intelligence need not reduce diversity and complexity or optimize for only the majority. It can be designed to analyze and interpret a plurality or broad spectrum of scenarios for human understanding.

Recommendations

Addressing the margins for the most vulnerable first will benefit the majority and reduce the unintended consequences of policies. Monitoring systems should attend to the full spectrum and margins, rather than, or in addition to, ranking by the average result or monitoring a statistical mean.

Any automated decision system should be accompanied by a system to detect and alert when the predictive validity of the intelligence system is below a certain threshold for a given group or individual who will experience the impact of the decision. Machine intelligence should assist and augment human judgement, not replace it. Any

automated decision should be preceded by a social impact assessment that assesses the impact on marginalized individuals.

In addition to quantitative indicators, monitoring should support contributions of bottom-up narratives by individuals that are not represented. This diverse non-parametric, anecdotal evidence can be analyzed to highlight emerging trends and potential threats.

Assume that there will be privacy data breaches and institute measures to prevent data abuse and misuse and assist persons whose data has been compromised. Institute policies to prevent data over-reach and to support individuals in determining what data is entrusted to whom.

Finally, governments should make sure that marginalized individuals and groups are not forgotten when forming policy. This can be accomplished by, for instance, appointing a top-level Minister of the Forgotten whose duty is to speak for and advocate for these individuals and groups. Another approach is trying to anticipate unintended consequences by institutionalizing a "red team – blue team" adversarial scenario evaluation for proposed policies. In these sorts of scenario simulations one team "plays out" the anticipated behaviors of the majority under the new policy and the other team "plays out" counter strategies of the minorities.

This is Exhibit **5** referred to in the Affidavit of **Dr. Jutta Treviranus.** Affirmed remotely by **Dr. Jutta Treviranus** of the City of Toronto in the Province of Ontario, before me at the City of Vaughan in the Province of Ontario, this 16 day of March, 2021.

Anoop Kalsi LSO# P13598

A Commissioner, etc.

Court File No.223/21

FORM 53
Courts of Justice Act
ACKNOWLEDGMENT OF EXPERT'S DUTY

ONTARIO
SUPERIOR COURT OF JUSTICE
(Divisional Court)

BETWEEN:

DAVID DANESHVAR

Applicant

- and -

HER MAJESTY THE QUEEN IN RIGHT OF ONTARIO AS REPRESENTED BY THE MINISTER OF HEALTH, and the HONOURABLE CHRISTINE ELLIOTT, MINISTER OF HEALTH for the PROVINCE OF ONTARIO

Respondents

ACKNOWLEDGMENT OF EXPERT'S DUTY

1. My name is Dr. Jutta Treviranus. I live in the City of Toronto, in the Province of Ontario.

2. I have been engaged by or on behalf of David Daneshvar to provide evidence in relation to the above-noted court proceeding.

3. I acknowledge that it is my duty to provide evidence in relation to this proceeding as follows:

    a. To provide opinion evidence that is fair, objective and non-partisan;

    b. To provide opinion evidence that is related only to matters that are within my area of expertise; and

    c. To provide such additional assistance as the court may reasonably require, to determine a matter in issue.

4. I acknowledge that the duty referred to above prevails over any obligation which I may owe to any party by whom or on whose behalf I am engaged.

Date: March 16, 2021

Signature

This is Exhibit **6** referred to in the Affidavit of **Dr. Jutta Treviranus.** Affirmed remotely by **Dr. Jutta Treviranus** of the City of Toronto in the Province of Ontario, before me at the City of Vaughan in the Province of Ontario, this 16 day of March, 2021.

Anoop Kalsi LSO# P13598

A Commissioner, etc.

CORONAVIRUS

Detroit's Covid vaccination queue is one of first to include people with ADHD, other disabilities

"It means people in the disability community were listened to," one expert said. "It has the potential to spark a really important change."

— Detroit is now one of the only places in the country offering Covid-19 vaccinations to all residents with developmental and intellectual disabilities. Cornelia Li / for NBC News

Feb. 20, 2021, 4:30 AM EST

By Erin Einhorn

DETROIT – While most Covid-19 vaccination clinics around the country are focused primarily on first responders, essential workers and seniors, the city of Detroit is now offering shots to residents who haven't made vaccination priority lists almost anywhere else in the country.

Among them: Adults with attention deficit hyperactivity disorder, vision or hearing impairments, and other intellectual and developmental disabilities.

"I was surprised to see that and very happy," said Bonnielin Swenor, an epidemiologist and the director of the Disability Health Research Center at Johns Hopkins University. "It means people in the disability community were listened to, were considered, and prioritization was revised in a way that is really remarkable."

The city's move will lead to more equity and access for people with disabilities that Swenor hopes other communities will emulate. "It has the potential to spark a really important change," she said.

The pandemic's impact on Americans with disabilities and their families (Part 1)

At the same time, the decision to prioritize people with conditions that aren't necessarily known to increase the risk of dying from Covid-19 points to the difficult and delicate choices facing local and state policymakers in a country where vaccination criteria differ considerably from one community to the next.

In much of the country, two people with the same job, who are the same age and are in similar health, could face radically different odds of accessing the shots depending on where they live, where they get medical treatment and the political landscape in their state.

And within communities like Detroit, where people in their 20s with ADHD can now get vaccinated ahead of people in their 50s with chronic heart or lung conditions, it can lead to

difficult questions about whose health should come first.

"These are the judgments that we are making every step of the way," Detroit Mayor Mike Duggan said during a news conference Wednesday as he announced that Detroiters 60 and older with serious physical health conditions could get vaccinated.

Full coverage of the coronavirus outbreak

Some of the disabilities the city added earlier have been linked to higher risks of dying from Covid-19. Others, such as autism and ADHD, make it difficult to socially distance and wear a mask.

"When everybody in a particular category has had a chance to get a vaccine, we go to the next category," Duggan said of a city effort to vaccinate 15,000 people a week using an eligibility list that now includes teachers, waiters, grocery clerks, clergy members, postal workers and the homeless. "We went to what we believe to be the next highest risk category."

— Detroit is vaccinating 15,000 people a week in a massive drive-thru clinic in a convention center parking garage. Emily Elconin / Reuters file

'Overwhelming' need

The push to prioritize people with intellectual and developmental disabilities in Detroit came from advocates who flooded the mayor's office with letters and blitzed local media to call attention to the extra challenges people with disabilities face as they try to avoid infection or get treated for Covid-19.

"People with disabilities are being left out of Covid vaccine rollouts and being left out of data collection when somebody contracts Covid, and that leads to disparities," said Dessa Cosma, the executive director of Detroit Disability Power, a social justice organization that led the letter-writing campaign.

When Cosma heard that Duggan planned to announce, on Feb. 11, that adults with intellectual or developmental disabilities, along with their caregivers, would be added to the city's vaccination list, she thought perhaps the mayor would narrow eligibility to people with conditions such as

Down syndrome and cerebral palsy. Those disorders have been more conclusively linked to higher Covid-19 rates or deaths.

Instead, she was thrilled – and proud – to see that Duggan went broad, including all intellectual and developmental disabilities and specifically naming six conditions, in addition to Down syndrome and cerebral palsy. Among them were autism, Tourette syndrome, hearing and vision impairment, and ADHD, a neurological condition that affects nearly 5 percent of U.S. adults, causing impulsivity, hyperactivity and difficulty focusing.

— Detroit Mayor Mike Duggan announced on Feb. 11 that his city would become one of the nation's first to give vaccine priority to all residents with intellectual and developmental disabilities. Evan Vucci / AP file

Since everyone's condition is unique, Cosma said, a broad definition is crucial to prevent "some very marginalized people from falling through the cracks."

That broad definition sets Detroit apart.

Many states have adopted the Centers for Disease Control and Prevention's guidelines recommending that people with Down syndrome be prioritized, and others have prioritized people with developmental and intellectual disabilities who live in group homes. But just a handful of states, including New York, Delaware, Missouri and New Mexico, list people with disabilities among those eligible for a vaccination before the general public.

Among those states, none explicitly include ADHD or visual and hearing impairments among qualifying conditions, though people can make a case with a doctor's note if they believe they should be eligible.

Even Michigan doesn't include intellectual or developmental disabilities other than Down syndrome among its vaccination priorities. Detroit was able to include disabled residents because local communities "have the option to prioritize the groups within the guidance they feel are most at risk and at highest need of vaccination," Lynn Sutfin, a spokeswoman for the state health department, said in an email.

When Duggan made the disability announcement last week, he touted the "overwhelming" need to reach people with conditions that make them more vulnerable to the virus. A spokesman said

the city drew its list of diagnoses from the CDC's definitions of developmental and intellectual disabilities.

'Trying to get in the line'

Advocates for people with disabilities who have been pushing for vaccine priority across the country applauded Detroit's decision, especially given the many ways that residents here are struggling.

In a city where nearly 90 percent of residents are Black or Latino and where 35 percent live in poverty, people with disabilities face multiple layers of discrimination and barriers to health care that put them at higher risk for Covid-19, said Justice Shorter, the disaster protection adviser for the National Disability Rights Network.

Detroit has been hit hard by the pandemic, tallying more than 1,800 deaths, including Wayne County Sheriff Benny Napoleon, state Rep. Isaac Robinson and a long list of community leaders.

Some of the disabilities on the city's list might seem surprising to people not living with those conditions, Shorter, who is blind, said.

"In medical terms, blindness itself might not be considered something that would put you at a heightened risk for Covid," she said, unless you consider that people with visual impairments rely on others to drive them around or point out hazards, and can't see whether someone offering to help is wearing a mask.

"You have to consider the ways in which you maneuver through society," she said.

The pandemic's impact on Americans with disabilities and their families (Part 2)

may not be adequately trained to address patients' needs," said Emily Hotez, an assistant professor in developmental psychology at the David Geffen School of Medicine at UCLA, who wrote a commentary calling for people with ADHD, autism and other disabilities to get vaccination priority.

While there has been some research on disabilities and Covid-19, advocates say more is needed. They note that disabilities are often left out of statistics that tally virus or death rates by age, race and location.

Not much is known about how ADHD in particular affects Covid-19 outcomes beyond a study last year that found that people with the disorder are more likely to contract the virus, Hotez said. Another study found that people with ADHD who contract the virus are less likely to die from it than others.

Download the NBC News app for full coverage and alerts about the coronavirus outbreak

Some people with ADHD say they do not consider themselves developmentally disabled and questioned whether their condition should get priority.

"I would make sure that other people who could benefit from it more would get it first," said David Penalver, 20, an aerospace engineering student at North Carolina State University who was diagnosed with ADHD last year.

But when told that a reason advocates believe people with ADHD should get priority is because of behaviors associated with higher coronavirus infections, Penalver reconsidered.

"That's a good point," he said. "I happen to have my hands on my face right now. I didn't even think about that but, certainly, I'm touching handrails and surfaces going up and down stairs. I have a tendency to fidget. I touch my face. I bite my nails."

Penalver isn't alone in not immediately considering the ways that neurological and physical differences put people at risk, both during a pandemic and at other times, said Swenor, the epidemiologist from Johns Hopkins University.

"I hope more of that starts to happen even beyond Covid," she said.

Cosma, from Detroit Disability Power, said her organization has turned its attention to getting intellectual and developmental disabilities added to vaccination priority lists in the rest of Michigan. She is also in contact with advocates who are making similar demands in other states.

"We're trying to get in the line," said Cosma, who has a developmental disability and uses a wheelchair, and who was vaccinated this week. "We're not trying to cut the line."

Erin Einhorn

Erin Einhorn is a national reporter for NBC News, based in Detroit.

Olivia Solon and Jiachuan Wu contributed.

This is Exhibit **7** referred to in the Affidavit of **Dr. Jutta Treviranus.** Affirmed remotely by **Dr. Jutta Treviranus** of the City of Toronto in the Province of Ontario, before me at the City of Vaughan in the Province of Ontario, this 16 day of March, 2021.

Anoop Kalsi LSO# P13598

A Commissioner, etc.

Centers for Disease Control and Prevention

Vaccinating Homebound Persons With COVID-19 Vaccine

Introduction

COVID-19 vaccination of homebound persons presents unique challenges to ensure the appropriate vaccine storage temperatures, handling, and administration to ensure safe and effective vaccination. Homebound persons include those that need the help of another person or medical equipment such as crutches, a walker, or a wheelchair to leave their home, or their medical provider believes that their health or illness could get worse if they leave their home, and they typically do not leave their home.

The information below provides guidance on management of vaccines and vaccination for persons vaccinated at home or in small group settings (e.g., residential facilities, group homes).

CDC Training and Clinical Resources

General Vaccine Storage and Handling Information	Pfizer -BioNTech Vaccine Information
General Vaccine Administration Information	Pfizer EUA
COVID-19 Vaccine Specific Information	Janssen Vaccine Information
Moderna Vaccine Information	Janssen EUA
Moderna EUA	

Training

It is essential that healthcare professionals receive training to effectively meet the demands of their roles. Training must be ongoing because new COVID-19 vaccine products are likely to become available, and vaccine recommendations can change as we learn more about the vaccines and work to improve the vaccination process. Training may be required for medical and administrative support staff, in addition to healthcare professionals, depending on their involvement in vaccination activities.

Guidance for storage, handling, preparation, and administration is different for each COVID-19 vaccine product, and healthcare professionals administering COVID-19 vaccines should be knowledgeable about requirements and best practices. **It is *critical* that healthcare professionals and other staff are familiar with the COVID-19 vaccine product in their facility's inventory.** Non-clinical staff members who receive vaccine deliveries as well as those who handle vaccines should be trained in vaccine storage and handling requirements and best practices. Training requirements and recommendations are outlined on CDC's COVID-19 Training and Education web page.

It is also important to include training on accessibility-specific issues, such as working with people who are blind or have limited vision; those who are deaf or hard of hearing; those who work with service animals; and those with various language, physical, social, or sensory needs.

Accessibility Specific Resources

Communicating With and About People with Disabilities

Pre-vaccination planning for vaccination of homebound persons

Centers for Disease Control and Prevention

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Accessibility Specific Resources

Communicating With and About People with Disabilities

Pre-vaccination planning for vaccination of homebound persons

Providers vaccinating homebound persons should carefully pre-plan to understand how they can most efficiently prevent vaccine wastage and ensure safe and effective vaccination by:

Other COVID-19 Accessible Resources

1. Estimating the number of doses needed as accurately as possible. Contact recipients or their caregivers in advance to determine those who wish to be vaccinated to best estimate how many doses will be needed. Plan to use all doses in a vial transported for home vaccination to minimize wasting vaccine doses, such as having contingency plans for vaccination of caregivers, or other persons in the home to avoid vaccine wastage
2. Providing information in a variety of accessible formats (e.g., American Sign Language, multiple languages, braille, large font, low literacy, materials with pictures or visual cues).
3. Mapping out travel plans to ensure vaccine is utilized within the approved time frames for use of vaccine at different temperatures, including factoring in pre-vaccination preparation time, and post-vaccination observation time.
4. Ensuring readiness to maintain, monitor, and report temperature of vaccine from the time the vaccine is taken out of a clinic facility, during transportation, and up to the time that vaccine is administered.

Storage and Handling

At the facility +

Follow proper vaccine storage and handling best practices. CDC requires COVID-19 vaccination providers to:

1. Have clearly written, detailed, and up-to-date storage and handling standard operating procedures.
2. Designate a primary vaccine coordinator and an alternate vaccine coordinator.
3. Store vaccines using a purpose-built or pharmaceutical-grade unit designed to either refrigerate or freeze.
   - Do not store any vaccine in a dormitory-style or bar-style combined refrigerator/freezer unit under any circumstances.
4. Use a digital data logger to monitor vaccine storage unit temperatures.
5. Read and document temperatures daily on the appropriate temperature log.
6. Immediately unpack, document, and store vaccines and diluents at recommended temperatures when they arrive.

Detailed guidance can be found in CDC's *Vaccine Storage and Handling Toolkit*.

During transport +

When transporting vaccines, follow guidelines and practices for proper storage and handling.

1. Follow transport guidance for the specific vaccine product.
2. Transport vaccine using a portable vaccine refrigerator or qualified packout. Soft-sided containers specifically engineered for vaccine transport are also acceptable.
   - A qualified packout includes a container and supplies specifically designed for use when packing vaccines for transport. A qualified packout does not require a power source and is "qualified" through laboratory testing under controlled conditions to ensure it can achieve and maintain desired temperatures for a set amount of time.
   - Do not use commercially available soft-sided food or beverage coolers because most are poorly insulated and likely to be affected by room or outdoor temperatures.
3. A digital data logger should be used to monitor the temperature of the vaccine. Place the probe near the vaccine.
   - A digital data logger with an external readout that can read minimum and maximum (min/max) temperatures is preferred. This type of temperature monitoring device allows the temperature of the vaccine to be checked without frequently opening the transport container.
4. Document the min/max temperatures when transport begins, every time the container is opened, and upon return to the facility.
   - Each temperature reading should be documented on a temperature log.
5. A punctured vial may be transported from one home to another by the same health care professional if the cold chain

is properly maintained. However, a partially used vial cannot be transferred from one provider to another or across state lines.

6. Additional transport guidance:
   - If using a company or personal vehicle, only transport vaccines inside the passenger compartment (not in the trunk or bed of a truck, which may be too hot or too cold).
   - Move transport containers directly to a vehicle that is already at a comfortable temperature–neither too hot nor too cold.
   - Keep containers out of direct sunlight.
   - Pack loose vials carefully to prevent them from breaking.
   - Never leave the container unattended in the vehicle.
7. Bring the appropriate supplies needed to mix and administer the vaccine, including diluent and mixing supplies (if needed), administration needles/syringes, sterile alcohol prep pads, proper sharps disposal equipment, a prevaccination checklist for contraindications and precautions, and EUA fact sheets for recipients and caregivers.
8. CDC recommends transporting vaccine in vials. However, there may be instances when the only option is to transport vaccine in a predrawn syringe. U.S. Pharmacopeia includes guidance for transporting predrawn vaccine in syringes in the COVID-19 Vaccine Toolkit: Operational Considerations for Healthcare Practitioners .

Guidance for transporting vaccines can be found in CDC's *Vaccine Storage and Handling Toolkit*, COVID-19 Vaccine addendum .

Vaccine Administration

Vaccine administration involves a series of actions: assessing patient vaccination status and determining needed vaccines, screening for contraindications and precautions, educating patients, preparing and administering vaccines properly, and documenting the vaccines administered.

1. Vaccines should be prepared and administered following aseptic technique. Prepare the injection in a designated, clean medication preparation area that is not adjacent to potential sources of contamination, including sinks or other water sources. Keep in mind that water can splash or spread as droplets more than a meter from a sink. In addition, any item that could have come in contact with blood or body fluids, such as soiled equipment used in a procedure, should not be in the medication preparation area.
2. Give each recipient a copy of the EUA fact sheet (Pfizer, Moderna , or Janssen) for recipients and/or caregivers.
   - V-safe is a smartphone-based tool that uses text messaging and web surveys to provide personalized health check-ins for recipients after COVID-19 vaccination. Through v-safe, recipients can quickly tell CDC if you have any side effects after getting the COVID-19 vaccine. Depending on the answers, someone from CDC may call to check on recipients that have signed up for the program.
3. Ask the person if he or she has any questions or concerns prior to vaccination, and address them, as appropriate.
4. Although there are no federal requirements for documenting informed consent (or assent for people who work with a medical proxy), best practices are to document consent/assent in the medical records.
5. Before administering vaccine, screen recipients for contraindications and precautions (use the prevaccination checklist for COVID-19 vaccination in English or Español), even if you are administering the second dose. The recipient's health condition or recommendations regarding contraindications and precautions for vaccination may change from one visit to the next.

   See Interim Clinical Considerations for Use of COVID-19 Vaccines Currently Authorized in the United States at Interim Clinical Considerations for Use of COVID-19 Vaccine for more information.
6. For homebound persons who might be at increased risk for anaphylaxis following vaccination (i.e., persons with a for vaccination or a history of anaphylaxis due to any cause), consider whether they can be vaccinated in a setting where medical care is immediately available if they experience anaphylaxis following vaccination. If home vaccination is the only option for these persons and, through risk assessment, it is determined that the benefits of vaccination outweigh the potential risk for anaphylaxis, home vaccination providers should be able to manage anaphylaxis. This includes

appropriate screening; post-vaccination observation; medications and supplies; staff qualifications for recognition and treatment of anaphylaxis; and ability to contact and availability of emergency medical services in the area.

COVID-19 vaccination provider should have at least 3 doses of epinephrine on hand when administering vaccine. CDC currently recommends that persons without contraindications to vaccination who receive a COVID-19 vaccine be observed after vaccination for the following time periods:

- **30 minutes**: Persons with a history of an immediate allergic reaction (within 4 hours) of any severity to a vaccine or injectable therapy, and persons with a history of anaphylaxis due to any cause.)
- **15 minutes:** All other persons

Additional information about potentially managing an anaphylactic reaction is available.

7. COVID-19 vaccination providers must document vaccine administration in their medical record systems within 24 hours of administration and use their best efforts to report administration data to the relevant system for the jurisdiction (i.e., immunization information system) as soon as practicable and no later than 72 hours after administration.
8. Adverse events that occur in a recipient after COVID-19 vaccination must be reported to the Vaccine Adverse Event Reporting System (VAERS). FDA requires vaccination providers to report vaccine administration errors, serious adverse events, cases of multisystem inflammatory syndrome, and cases of COVID-19 that result in hospitalization or death after administration of COVID-19 vaccine under an EUA. Reporting is encouraged for other clinically significant adverse events, even if it is not clear that a vaccine caused the adverse event. Complete and submit reports to VAERS online.
9. To prevent wasting vaccine doses, as appropriate and approved by jurisdictions, healthcare personnel may administer vaccine to caretakers and family members, given their high risk of exposure.

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DANESHVAR Applicant	and	HER MAJESTY THE QUEEN IN RIGHT OF ONTARIO AS REPRESENTED BY THE MINISTER OF HEALTH et al. Respondents	Court File No: 223/21

ONTARIO
SUPERIOR COURT OF JUSTICE
(DIVISIONAL COURT)

AFFIDAVIT OF DR. JUTTA TREVIRANUS
(Affirmed March 16, 2021)

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