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Designing a Complete Streets Dashboard for Team iCity

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Key words: Dashboard design, Data visualization, Complete streets, urban systems, transportation.

Abstract

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Researchers at the Visual Analytics Lab were given the task of assessing and visualizing the features and benefits of an existing complete streets tool designed by the iCity team at University of Toronto. The "Complete Streets" model has been introduced to ensure that streets are designed for all ages, abilities and modes of travel (McCann, 2013; Lynott et al., 2009). This research presents a design study for an interactive web-based dashboard visualization tool that uses a "Complete Streets" model to support urban planners and engineers to design streets, and optimize complete street factors in urban areas more effectively. While we created the prototype modelling tool in custom software coding applications, this presentation discusses our next steps to explore the functionality and use of the ESRI suite of tools, including the ArcGIS Operations Dashboard to visualize geospatial data.

Biographies:

Dr. Greice C. Mariano is a Post-Doctoral Research Fellow in Data Visualization at the Visual Analytics Lab. She earned her PhD and Master of Science degrees in Computer Science, respectively in 2018 and 2013 at Institute of Computing (IC) from University of Campinas (UNICAMP) in Campinas, São Paulo State, Brazil. She also concluded a specialization in health informatics at the Federal University of São Paulo (UNIFESP), Brazil in 2010 and graduated in Information Technology also at University of Campinas (UNICAMP) in 2009. As a Post-Doctoral Research Fellow with the Visual Analytics Lab, she has been working on the iCity project. Her main research interest is to investigate the use of visualization techniques to explore multidimensional and multivariate temporal data. Additionally, she also has an interest in research related to data science, visual analytics tools, scientific visualization, software engineering and database development.

Iman Kewalramani is a research assistant in the Visual Analytics Lab at OCAD U, and is currently completing his bachelors degree in Computer Science and Geographic Information Systems at the University of Toronto. He has experience in building full stack applications from the ground up for multiple firms across industries. He is currently working on the Complete Streets application, which is a part of the iCity project.

Veda Adnani, has spent the last six years as a User Experience Designer with a focus on branded interface design and a passion for healthcare design experiences. Her practice is centred around creating seamless experiences, with a strategic approach towards the bigger picture and attention to the minute details. She is currently pursuing her Masters of Design in Digital Futures at OCAD University, and working towards developing expertise within the streams of data visualization, biological data, physical computation and more specifically wearable technology through the use of soft circuits. She is a recipient of the OCADU Graduate Scholarship and also teaches the

Introduction to UX and UI design course at the OCAD U Continuing Studies School. She works as a Research Assistant at the Visual Analytics Lab at OCAD U, under the guidance of Dr. Sara Diamond. Her research at the lab focusses on human-centred design and human-centred data visualization.

Dr. Sara Diamond is the President and Vice-Chancellor of OCAD University, the Director of the Visual Analytics Laboratory at OCAD University and Visualization theme Leader of iCity. She holds a PhD in Computing, Information Technology and Engineering. She is an appointee of the Order of Ontario and the Royal Canadian Academy of Artists and a recipient of the Queen's Diamond Jubilee Medal for service to Canada. She is the winner of the 2013 GRAND NCE Digital Media Pioneer Award, recognized as one of Toronto Life's TopFifty. She was honored as one of Canada's 150 leading women and received the Inspiring 50 Canada 2018 Women in Technology and Innovation award. Diamond is a researcher in visual analytics, media arts history and public policy. Diamond was co-principal investigator of the Centre for Information Visualization/Data Driven Design; and is an executive member of the BRAIN Alliance. A well published researcher she holds funding from the Social Science and Humanities Research Council, Canada Foundation for Innovation, MITACS, the National Sciences and Engineering Research Council, Ontario Centres for Excellence, Framework EU, and the Canada Council for the Arts.

Jeremy Bowes is a Professor in Design at OCAD University, and teaches in the Environmental Design program, and the Strategic Foresight and Innovation graduate program. Key areas of research are city housing and transportation systems, within the context of architectural, and urban ecology systems. He works with the Visual Analytics Lab at OCADU with data analysis and visualization for urban, transportation, and ecology research, contributing research on the iCity, Canadian Urban Transit Research & Innovation Consortium, StudentDwell, and StudentMove projects.

Bo Wang, is a student completing his Master of Science, in Civil Engineering at University of Toronto, Ontario. His research at the University of Toronto focuses on transportation planning, and parking services. He prepared a summary research prototype project around the complete streets factors that served to provide a foundation for the iCity team dashboard work.

Dena Kasraian is Assistant Professor of Urbanism and Urban Architecture at the Department of the Built Environment, Eindhoven University of Technology. She has experience in the fields of architecture, urbanism and transportation and is interested in conducting multidisciplinary research between these fields. Her research interests include investigating (long-term) transport-land use interactions and active mobility determinants using geographic information systems and quantitative spatial analysis.

Matthew J. Roorda, is a Professor of Civil Engineering and has been faculty at the University of Toronto since 2005. Dr. Roorda obtained his P.Eng. in 1999. He completed his BEng at McMaster University, and his MSc and PhD degrees at the University of Toronto. Dr. Roorda is a Canada Research Chair in Freight Transportation and Logistics, and Chair of the **Smart Freight Centre**, established 2019. He is Chair of the TRB committee AT015 Freight Transportation Planning and Logistics.