The ITOC Workshop will be held as part of the ICSTI 2017 General Assembly and Workshops event on Thursday 26th October 2017 in Washington D.C. The event is hosted by the Library of Congress.

ITOC Workshop

The Information Trends and Opportunities Committee (ITOC) is the catalyst for strategic thinking of ICSTI. It conducts foresight/horizon scanning to identify trends and opportunities of interest and relevance to ICSTI members. The **Chair of ITOC is Margret Plank**, Head of Competence Center for non-textual Materials at the German National Library of Science and Technology (TIB).

Workshop Description

Next generation metrics for open science

As science shifts towards collaborative endeavour, transparency of process and increasing significance of data driven research, new modes of work and expertise are emerging in academia. However, common metrics which aim to benchmark the impact and value of research mostly emphasize traditional scientific outputs (publications in high impact journals). Novel bases and methods of research and forms of scholarly communication are not included, e.g. data curation, data publication, new modes of scientific output including video abstracts, blogs, micropublications and the sharing of scientific tools and software. To develop new modes of scholarly communication and activity that ensure transparency, reproducibility and reusability, additional systems are necessary to recognize and value new scientific roles (e.g. data experts) and new incentive/accreditation processes for science researchers. This workshop presents thoughts on how to address these imperatives for change.

Workshop Program

Paul Wouters – Director Centre for Science and Technology Studies, Leiden University

Presentation Title: *Next generation indicators for open science*

Abstract: *In this talk I will report on the results of a EU expert group on next generation metrics for open science. For some, the ideal result might seem to be the development of a single metric through which to measure open science. We view this as impossible and undesirable. The best outcome – unrealised as yet –*

would be the development of a suite of metrics that offer a dynamic picture of the progress made toward the goals of open science. Even this task represents a significant challenge, not least because the attempt to create such a suite of metrics must acknowledge the two-sided nature of the goals of open science. It not only depends on 'supply side' efforts by scientific communities to provide better information to society. Just as important is the 'demand side' – the receptivity of society to scientific information and perspectives.

Bio: **Paul Wouters** is professor of scientometrics and director of the Centre for Science and Technology Studies at Leiden University. He has published on the history of the Science Citation Index, on and in scientometrics, and on the way the criteria of scientific quality and relevance have been changed by the use of performance indicators. He has also studied the role of information and information technologies in the creation of new scientific and scholarly knowledge (Virtual Knowledge, MIT Press 2013). He is a member of the editorial board of *Social Studies of Science, Journal of the Association of Information Science and Technology*, and *Cybermetrics*, and sits on various advisory boards of international programs and projects. He was co-author of the "Leiden Manifesto for Research Metrics" (Nature 2015), the Independent Review of the Role of Metrics in Research Assessment and Management ("The Metric Tide", HEFCE, 2015) and the EU report "Next Generation Metrics: responsible metrics and evaluation for open science" (2017).

Julia Lane – NYU Wagner School, Center for Urban Science and Progress

Presentation Title: ***Measurement matters***

Abstract: *A group of US universities is developing new ways of assessing science that will more accurately depict strengths and weaknesses, and that will lay the foundation for a healthy research ecosystem. The key difference is that these metrics will be grounded in a scientific framework that traces the scientific and economic successes of researchers – rather than an ad-hoc chasing after the paper trail of publications. The latter has led to overproduction of spurious analyses, proliferation of meaningless university league tables and seriously flawed policy recommendations. The results of a better framework for science: better scientists, rather than more documents.*

Bio: **Julia Lane** is a Professor at the NYU Wagner Graduate School of Public Service, at the NYU Center for Urban Science and Progress, and a NYU Provostial Fellow for Innovation Analytics. Previous to this, Julia was a Senior Managing Economist and Institute Fellow at American Institutes for Research. In this role Julia established the Center for Science of Science and Innovation Policy Program, and co-founded the Institute for Research on Innovation and Science (IRIS) at the University of Michigan. In these positions, Julia has led many initiatives, including co-founding the UMETRICS and STAR METRICS programs at the National Science Foundation. She conceptualized and established a data enclave at NORC/University of Chicago. She initiated and led the creation and permanent establishment of the Longitudinal Employer-Household Dynamics Program at the U.S. Census Bureau. This program began as a small two year ASA Census Bureau fellowship and evolved into the first large-scale linked employer-employee dataset in the United States. It is now a permanent Census Bureau program with appropriated funds of $11 million per year. Julia has published over 70 articles in leading economics journals, and authored or edited ten books. She is an elected fellow of the American Association for the Advancement of Science and a fellow of the American Statistical Assocation. She is the recipient of the 2014 Julius Shiskin award and the 2014 Roger Herriot award.

Daniella Lowenberg – California Digital Library

Presentation Title: ***Make Data Count***

Abstract: *Usage and citation metrics are essential to gauging reach and measuring the impact of data. Currently, groups are focused on determining best practices in data citation and linking data with publications. However, in order for data to be considered a first class research output, we must also build a common standard to measure how often data is being used. The Make Data Count (MDC) project is funded by the Alfred P. Sloan Foundation to develop and deploy the social and technical infrastructure necessary to elevate data to a first-class research output alongside more traditional products, such as publications. We plan to do so by finding alternative ways of gauging reach, measuring impact for data, and building data level metrics (DLMs). The MDC project plans to not just focus on citations and usage but also building out a technical hub so that information does not get left behind as it can with article. As the field gets more mature we expect metrics and usage stats to be fed into the DLM hub. To accomplish this we have drafted the first iteration of a COUNTER Code of Practice for Data Usage surrounding data usage statistics for community input. Once this first iteration of standards for data usage has been formalized we will be building out a DLM hub using Lagotto, and enlist the cooperation of the research, library, funder, and publishing stakeholder communities to implement DLMs across DataCite repositories and drive adoption of DLMs.*

Bio: **Daniella Lowenberg** has a background in Microbiology and has researched and published on antibiotic resistance at San Francisco Public Health as well as pharmacogenomics pathways for chemotherapy agents at Stanford. Daniella spent over three years as a Publications Manager at *PLOS ONE* where she implemented and oversaw the PLOS Data Policy as well as ran journal operations. Daniella is currently at the University of California Curation Center (UC3) within the California Digital Library at the Office of the UC President as a Research Data Specialist / Dash Product Manager. She focuses on building adoption and awareness of data publication tools (Dash) as well as leading cross-organizational and global efforts in promoting data metrics for the Making Data Count project with DataCite and DataONE.

Vincent Larivière – École de bibliothéconomie et des sciences de l'information, Université de Montréal

Presentation Title: ***What do open science indicators measure?***

Abstract: *Research indicators have become ubiquitous. While the creation of the Science Citation Index in the early 1960s paved the way for paper-centric indicators of research, the advent of the digital age and, more*

recently, of social media platforms, transformed researchers' dissemination practices and multiplied the amount of data collected on their activities. As academics are increasingly required to provide evidence of their impact on science and society, these data have been quickly aggregated into indicators, often without having a clear idea of what they measure. This presentation will provide an overview of current changes in scholars' research and dissemination, and will discuss the strengths and limitations of open science indicators. It will conclude with a reflection on the expected effects of these indicators, as well as on the ownership of open science and its measurement.

Bio: **Vincent Larivière** holds the Canada Research Chair on the transformations of scholarly communication at the École de bibliothéconomie et des sciences de l'information of the Université de Montréal, where he teaches research methods and bibliometrics. He is also the scientific director of the Érudit journal platform, associate scientific director of the Observatoire des sciences et des technologies and a regular member of the Centre interuniversitaire de recherche sur la science et la technologie. He holds a B.A. in Science, Technology and Society (UQAM), an M.A. in history of science (UQAM) and a Ph.D. in information science (McGill).

Julia Klebanov – Moore Foundation

Presentation Title: ***Funding basic science: balancing elusive impacts and rigorous measurement***

Abstract: *Assessing the impact of our basic science investments can be more complex than measuring the impact of applied science research. Basic science funders often find that there are several limitations of the methodological approaches that we routinely use to assess our portfolios, such as grantee self-reporting or bibliometric measures. In addition to describing how the Moore Foundation currently measures progress for our basic science grant-making, I will also discuss an effort led by the Moore Foundation to work with other basic science funders to develop better practices for measuring the progress and impact of our investments.*

Bio: **Julia Klebanov** is a measurement, evaluation and learning officer for the Science Program at the Gordon and Betty Moore Foundation. In her role, Julia focuses on the Science Program's practices in measurement and evaluation, which includes working with program staff on ongoing measurement efforts, as well as managing internal reviews and external evaluations of the program's strategies. More recently, Julia has worked to bring funders of basic research together to collaborate on how to develop more robust practices for evaluating the impact of basic science investments. Julia originally joined the Moore Foundation working in the Marine Microbiology Initiative, and later went on to become the program manager for the broader Science Program. She began her current role after completing American University's graduate program in Project Monitoring and Evaluation. Julia also holds a B.A. in biology and a minor in Chemistry from Oberlin College and a certificate in project management from Stanford University.