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POLOVINA, Simon <http://orcid.org/0000-0003-2961-6207>, POLOVINA, R., KEMP, N. and PU, K.

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MOVE: Measuring Ontologies in Value-seeking Environments: CSCW for Human Adaptation

Simon Polovina
Sheffield Hallam University
Howard Street, Sheffield, S1 1WB
S.Polovina@shu.ac.uk

Rubina Polovina
Systems Affairs
Toronto, Ontario, Canada
Rubina@SystemsAffairs.com

Neil Kemp
NKA
Ottawa, Canada
neil@nka-ltd.com

Ken Pu
Ontario Technical University
2000 Simcoe St N, Oshawa, L1G 0C5, ON Canada
Ken.Pu@uoit.ca

ABSTRACT

The interest in sharing the Data-Information-Knowledge-Wisdom (DIKW) continuum has been amplified by the latest multi-scale social changes including but not limited to pandemics, economic crises, climate change, and racial issues. This workshop aims to inspire research and discussion on measuring sharing of the DIKW continuum, including through computer-mediated methods, represented by its ontologies. The implied suggestion is that there are ways to improve human adaptation by social technologies that enable rapidly finding solutions for complex global situations. We therefore invite research on (1) ontologies as a medium that enables comparing and measuring the DIKW continuum, (2) ontologies and their convergence or divergence with the values that motivate and determine DIKW sharing, (3) properties and dynamics of ontologies shared via social technologies in their relation to human adaptation.

KEYWORDS

Ontology; knowledge; human adaptation; social technologies

INTRODUCTION

There is a plethora of research on Data-Information-Knowledge-Wisdom (DIKW) sharing, seeking to quantify the content, impact, and value of these activities. For example, knowledge being measured as capital [29]. International knowledge flows and the impact of scientific research may similarly be measured [13], [28], or diversity and coherence of knowledge may be measured [21]. Besides research on DIKW sharing and transfer among public and private sector organizations or mass media and public, there is also significant research on DIKW sharing via social media, such as them the impact of scientific research via social media [20], [25], and, also on exposure to political ideology via social media [5], [10].

There are pluralisms of these values. Koulikov [15], for example, noted that the activities of DIKW sharing also involve "individuals who commit time, effort and resources and take clear risks to, essentially, share without any clear benefit to them." Technical and legal questions aside, Koulikov pointed out the broader phenomenon of how individuals interact with DIKW, raising questions of motivation and ethics that influence or affect the decision to share DIKW and the actual activity of sharing. From this, then, raises the likelihood that the kind of DIKW sharing that goes on daily in informal, unauthorized (or sometimes outright illegal) communities can be used to research the nature of the DIKW sharing activities, its motivation and impact beyond traditional value-seeking causes — DIKW sharing is a property of "being human" [Ives] and "enjoyment of helping others" and "self-efficacy" are important motivational determinants [1].

The latest global social changes: pandemics, economy crises [7], [8], racial issues [24], [27] impact all segments of societies; public and private sector, the political sphere, public sphere, communities, and individuals. Societies around the world look for solutions to avoid devastating socioeconomic costs and apocalyptic scenarios [8]. From this rises the intriguing question of how DIKW sharing via social technologies contribute to human adaptability to find solutions for global crises.

This workshop raises not just the technical questions of DIKW sharing (formal or informal) and articulated or, perhaps, the subconscious motivation that underlies these changes — we research and discuss the context, nature and impact of computer-aided DIKW sharing via social technologies in relation to human adaptability.

As a medium for measuring DIKW sharing via social media, we propose ontologies as a formal method of encapsulating, re-use, and rapid inferencing in the DIKW continuum. Besides technical challenges, it has been recognized that building ontologies has social challenges and requires expertise sharing [22], [23]. Ontologies with their naming and definitions of categories, properties, and relations among the concepts, data, and entities that substantiate the concepts, many or all domains of discourse serve as a vehicle for DIKW sharing. Finally, we research the content of these ontologies and their impact on human adaptability.

WORKSHOP THEMES

The goal of this workshop is to examine the sharing of the DIKW continuum in periods of rapid social changes and its impact on human adaptations. We are looking at the DIKW continuum ontologies and their properties. How they may be used to support DIKW sharing and how these ontologies may determine the use and design of social technologies? We aim to broaden enquiry into the social values that drive and determine DIKW sharing during periods of rapid social changes. We invite research that includes (but it is not limited) to matters, such as:

- User-centric ontologies and balancing user-centric concepts (e.g., patient's description of symptoms) with a target ontology (e.g., clinical descriptions). How user-centric ontologies facilitate DIKW sharing via social technologies contributing to human adaptivity during rapid societal changes (e.g., pandemics)? How can we compare the impact of these ontologies?
- Social ontologies that contribute to global problem solving and human adaptation. For example, what are properties of a social ontology relevant to social interaction during global recession? How social ontologies conceptualize social groups that interact during multi-scale crises and how social technologies support that interaction? Can we measure their relevance?
- How to extract relevant DIKW from social computing and use it to resolve multi-scale crises? Can we measure the extracted DIKW?
- Open data and open platforms. How open data contributes to finding solutions for global crises? Could open data design and content may be more relevant for the facilitation of rapid changes in a society? Could open platforms speed up research and sharing of the DIKW spectrum relevant for finding solutions for global crises and contribute to human adaptation?
- What are the properties of domain-specific ontologies of DIKW that have been rapidly shared across all segments of a society (or globally)? Are there any universal properties of these ontologies?
- Values that drive and determine DIKW sharing via social technologies during periods of rapid societal changes. What are these values? What makes individuals reach out for social technologies and share their expertise during these challenging times?

WORKSHOP STRUCTURE

The workshop will be structured to facilitate conversations around the challenges related to the measurement of ontologies in the DIKW spectrum under conditions of rapid changes, such as those experienced during the COVID-19 pandemic. We encourage workshop participants to make proposals for discussion. The selected proposals will be used as a launching point to generate the development of new insight in the context of the proposed program and to explore where opinions and experiences both diverge and converge.

We anticipate applying a purpose-driven program reflective of and adjusted to the interests and emergent interests of the participants in the workshop. Proposed activities include:

- Brief introductions from all participants about their experience with the context of the workshop.
- 5-10-minute presentations from a selected set of workshop participants, on specific topics of interest (such as the themes noted above) or presenting case studies of their methodological challenges (ideally, with a focus on contrasting choices or experiences).
- Group brainstorming to identify the most pressing challenges and opportunities facing the community.
- Small "task force" style breakout groups to "deep dive" into specific issues or topics

identified during the brainstorming session.

- Group work around the development of best practices and next steps for further engaging the broader community and disseminating the results of the workshop.
- Participants will be given the opportunity for a post-conference publication whereby each can submit a paper that is then peer-reviewed in the community.

We will select participants based on the quality and depth of reflections presented in submissions. We will choose presenters based on the potential to generate discussion, particularly concerning highlighting shared concerns and contrasting opinions and experiences.

Our goal is to propose ways and means to engage the broader CSCW community during and after the conference—for example, by presenting provocative questions to attendees or by getting feedback on ideas we propose at the workshop. Within CSCW, issues related to the measurement of DIKW are not only relevant to those who practice them, but also in a wide range of other contexts.

An essential outcome of the workshop not just workshop participation, but to engage the broader community. For example, we plan to write a workshop report for the CSCW Medium publication that invites the community to share their ongoing reflections. Other ideas and specifics will be discussed and agreed upon together with participants.

The specific goals and planned outcomes for this workshop include:

- Documentation of the important challenges and open questions concerning related to the measurement of knowledge conditions of rapid change at CSCW;
- Documentation of brainstorming towards norm-setting and best practices; and
- Planning for engaging the CSCW community with these issues during and after the conference.

This workshop will be one day, with a maximum of 30 participants, including organizers (with no special equipment required).

SUBMISSIONS

To be considered for participation in the workshop, potential participants should submit a short (2- 4 page) statement of interest, which will be reviewed by the workshop organizers. Submissions should also include a brief biographical sketch that provides for current affiliation, research area, and (if not included elsewhere) experience related to DIKW, DIKW description, the measurement of DIKW or domains that can be linked to these issues.

Submissions can be structured in multiple ways:

- A discussion of a specific topic in the area related to the DIKW continuum, DIKW description, the measurement of DIKW, e.g., one of the provocative issues we proposed; or
- A case study discussion of a particular experience regarding DIKW, DIKW continuum description, the measurement of DIKW spectrum. Submissions should be related to at least one of the topic areas discussed here: collection, analysis, reporting, or sharing.

Note that participants need not have prior experience with particular elements of the DIKW continuum, for example, knowledge, knowledge description, the measurement of knowledge, but instead may have complementary perspectives to offer (e.g., on transparency or mixed methods) and are interested in learning more about knowledge, knowledge description, or the measurement of knowledge.

We invite and encourage submissions from researchers from academia, industry, non-profits, and governments (national, regional, local, tribal), and welcome a wide range of disciplinary perspectives.

ORGANIZERS

All the workshop organizers are currently involved in research around ontologies and collaborative work ranging from understanding current practices and norms to helping to build new tools and methods.

Simon Polovina, PhD is a Reader in Business Computing within the Department of Computing at Sheffield Hallam University, UK. He is an expert and author in Enterprise Architecture, User Experience, Data, and Systems. Engaged in roles that draw upon his leadership and expertise in User Experience (UX), Enterprise Architecture and Conceptual

Structures, which harmonizes computer productivity with the human creativity that makes up the contemporary enterprise.

Rubina Polovina, PhD is a principal consultant in Toronto, Ontario, Canada. Expertise in Enterprise Architecture and Modeling, ICT Management and Business Intelligence. She is engaged in the creation and development of organizations whose mission is enhancing societal and organizational capacity to use scientific research.

Neil Kemp is an Enterprise Architect and consultant in Ottawa, Canada. He has worked in the area of Ontology Design, Conceptual Graphs, Data Representation and Exploitation of Data in a business setting.

Ken Pu, PhD is an associate professor at Ontario Tech University, Canada. Ken is investigating ways to sift through vast information and develop technology to enable users to explore and better understand the Open Data world.

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