

Engaging Critical Stakeholders: Academic & Publisher Partnerships

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MCBK
Mobilizing Computable Biomedical Knowledge

Disclosures

- Managing Assistant Editor, *Learning Health Systems*
- Collections Coordinator, Health Sciences & STEM Collections, University of Michigan
- Member, MCBK Sustainability and Inclusion Work Group

Focus of presentation

- Academic & Publisher Partnership: University of Michigan-Wiley publishing partnership for the open access journal, *Learning Health Systems (LHS)*
- Some of the current scholarly communication trends driving changes in publishing
- Implications of these trends relevant to *LHS* and Computable Knowledge
- An introduction to the journal's new format for accepting Computable Knowledge Publication submissions

Academic & Publisher Partnership: *Learning Health Systems (LHS)*

- University of Michigan (journal owner) & Wiley (journal publisher)
 - Contract agreement, May 2015
 - Volume 1, Issue 1 published, January 2017
 - Current: Volume 3, Issue 3, July 2019
- Aligned interests
 - Needing/providing access to *LHS* research, aka a journal “home”
 - Building community around *LHS* interdisciplinary, boundary-spanning research
 - Fostering/supporting “open” initiatives: Open Access/Open Data/Open Research
 - Being at the forefront of new publishing formats – Computable Knowledge

Changes in the scholarly communication/scholarly publishing landscape

- Open Access, Open Data, Open Research
 - Plan S & cOAlition S – statement of intent from group of national research funding organizations with support of the European Commission and the European Research Council for research funded by public grants to be published in Open Access journals or Open Access Platforms
 - University of California (UC) & Elsevier – proposal for new journal subscription model with open access as the default publication option for UC authors; cost-neutral option combining subscription and APC costs; backed by Academic Senate
 - Wiley & “Projekt DEAL” – countrywide partnership agreement with 700+ institutions in Germany for researchers to publish Open Access articles (PAR – publish and read model) and have read access to Wiley’s full portfolio of journals; backed by academic, funder, and publishing partners

Changes in the scholarly communication/scholarly publishing landscape

- Open Access, Open Data, Open Research
 - More groups enabling research data to be shared, used, re-used, cited (e.g., [Research Data Alliance](#), [World Data System](#), [CHORUS](#), etc.)
 - Increases transparency and reproducibility, improves access to research, guides government policies
 - More journals publishing software and models
 - Artificial Intelligence in Medicine, Computer Methods and Programs, PloS Computational Biology Software, BiomedCentral
 - Learning Health Systems & Computable Knowledge Publications
 - Focusing on data to knowledge and practice
 - Improving health and healthcare
 - Improving access to research, reducing barriers
 - Introducing publication of and access to research relevant to MCBK working groups on standards, technical infrastructure, policies/quality/trust, sustainability & inclusion – seeking your input, advice, guidance

Introducing New Journal Manuscript Type: Computable Knowledge Publications

- Pilot initiative, beginning July 2019
 - During the pilot, submission procedures and review processes will be worked out interactively between the journal and submitting authors
 - Post-pilot, *LHS* will adopt more permanent policies and procedures
- Computable Knowledge publications
 - Will make biomedical models and algorithms available as peer-reviewed software
 - Will be comprised of two components
 - One or more software artifacts, aka digital Knowledge Objects, and
 - An accompanying written (human-readable) manuscript that describes the Knowledge Objects

Computable Knowledge Publications: Two Types

- 1) Full-length Computable Knowledge Enhanced Publication (CK-EP)
 - describes a previously unpublished scientific effort resulting in a computable artifact, and provides one or more knowledge objects
- 2) Shorter Computable Knowledge Implementation Publication (CK-IP)
 - serves as a “bridge to implementation,” describing technical deployment and implementation details, and shares a computable artifact
 - can complement other previously published (or soon to be published) articles
 - enables sharing of peer-reviewed computable artifacts, not previously available in any systematic way, and their implementation in practice
- 3) For both publication types, the written paper will be available as a pdf from *LHS's* website and an embedded link in the article pdf will enable download and local execution of the computable Knowledge Objects

Structure & Scope

- Knowledge Objects defined
 - Computable representations of models that result from an analytical, machine learning, and/or deliberative process
 - Models must relate to individual and/or population health, including clinical, educational, research, or public health domains
 - Three primary components:
 - 1) “payload”: the executable code that implements the model,
 - 2) service specifications: a representation of the data required by the model and the result the model generates,
 - 3) “metadata”: a specified set of fields describing the model
 - Examples include regression models; computable guidelines, workflows, and policies; decision trees; calculators; Bayesian networks; and models derived from machine learning such as neural networks

Submission Requirements

- Computable Knowledge publication submissions should include:
 - executable file(s) containing the Knowledge Object source code along with information required to run the model
 - a coded file containing test data that can be used to test the source code along with details describing the input data required by the model and outputs the model generates
 - metadata required to characterize the Knowledge Objects, which will inform development of a standard metadata set for *Learning Health Systems*
 - the software license that allows testers and readers to access and run the source code using the test data submitted

Quality Assurance/Trust

- Manuscript submissions should include
 - A technical implementation and test plan to be able to instantiate the model in a computing environment and determine that it is functioning in accordance with specifications
- Prior to publication, authors must affirm
 - Any errors, inaccuracies, misrepresentations, and malfunctions in the coded Knowledge Objects are their sole responsibility
 - The software does not contain any embedded intellectual property, the use of which, without permission, would violate the specific software license
 - The Knowledge Objects and submitted test data do not contain any protected health information

Review Process

- Written papers will be evaluated by at least two external reviewers, following criteria closely paralleling that for research papers
- Knowledge Objects will be separately evaluated by the Editorial Office for technical conformance to specifications
 - Payload(s) will be tested as part of the review process, using the input data provided by the author, and compared with the corresponding output results also provided
 - A “test report” will be provided to submitting authors
 - If results cannot be reproduced, the submission will not be acceptable until the Knowledge Objects are revised and successfully retested

Open Access, Copyright & Intellectual Property

- As an open access journal, *Learning Health Systems* authors retain copyright of their work and full intellectual property rights – this includes Computable Knowledge publications and their related Knowledge Objects
- Gold open access
 - articles freely available to read, download, share immediately upon publication; articles appear first in Early View, then assigned to volume and issue
- *LHS* indexed in PubMed Central, Scopus, Emerging Sources Citation Index & ACM (Association for Computing Machinery) Digital Library

Some Initial Discussion Questions . . .

- Bridging sustainability & inclusion and scope of journal, *Learning Health Systems*, is there an opportunity for an equity-focused use case with an equity-framed type of Computable Knowledge publication?
- What long-term solutions are needed for preservation of Computable Knowledge files and data archives?
- Are there opportunities to expand engagement with the library community through organizations such as ARL (Association of Research Libraries) and AAHSL (Association of Academic Health Sciences Libraries) to partner on metadata standards development for Computable Knowledge Objects and to leverage library digital repositories and data archives?

Thank You!

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