open-corTeX: A framework for open-accessible continuous integration for scientific communication

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Nearly a decade ago, December 2011, Roger Peng published an spectrum of reproducibility which depicts a roadmap of a scientific outcome that went from publication only to full replication that includes code, data and software. Such spectrum was a cornerstone for the publication of the first open-accessible and 100% reproducible engineering-based PhD thesis in August 2019 at the University of Birmingham established in 1900. Even thought of such achievement, there are still many challenges in the existing system of formal scientific communication. Such challenges were recently described by Heise and Pearce 2020 for aspects of evaluation of scientific work, speed in the communication process, respect for the freedom of science and research, dissemination and accessibility, digitization, verifiability of scientific knowledge, quality, and prevention of misuse and scientific misconduct. Alongside with the state-of-the-art of research software engineering in the context of open access science that is starting to make use of continuous integration tools (Luger and Foreman-Mackey 2019) and containers (Xu 2020).

That being said, in this talk I will introduce a proof-of-concept of "open-corTeX: A framework for Continuously-integrated Open-source Reproducible TeX" as an updated version of the spectrum of reproducibility for formal scientific communication. Using open-corTeX, I will present an example of the usage of framework for the case of an open-access thesis as well as other academic documents such as cv, slides, and reports. Similarly, I will show how the state-of-the-art of open-access in scientific communication is adopting continuous integration (CI/CD) tools as well as the use of containers. To then conclude the talk by emphasising the adoption of open-corTeX might led to scientific outcomes that are aligned the principles of reproducibility, inclusiveness, transparency, reusability and open accessibility.