Empowering students through Open Access Publishing

S. Colafranceschi (EMU, INFN, CERN)

Outline

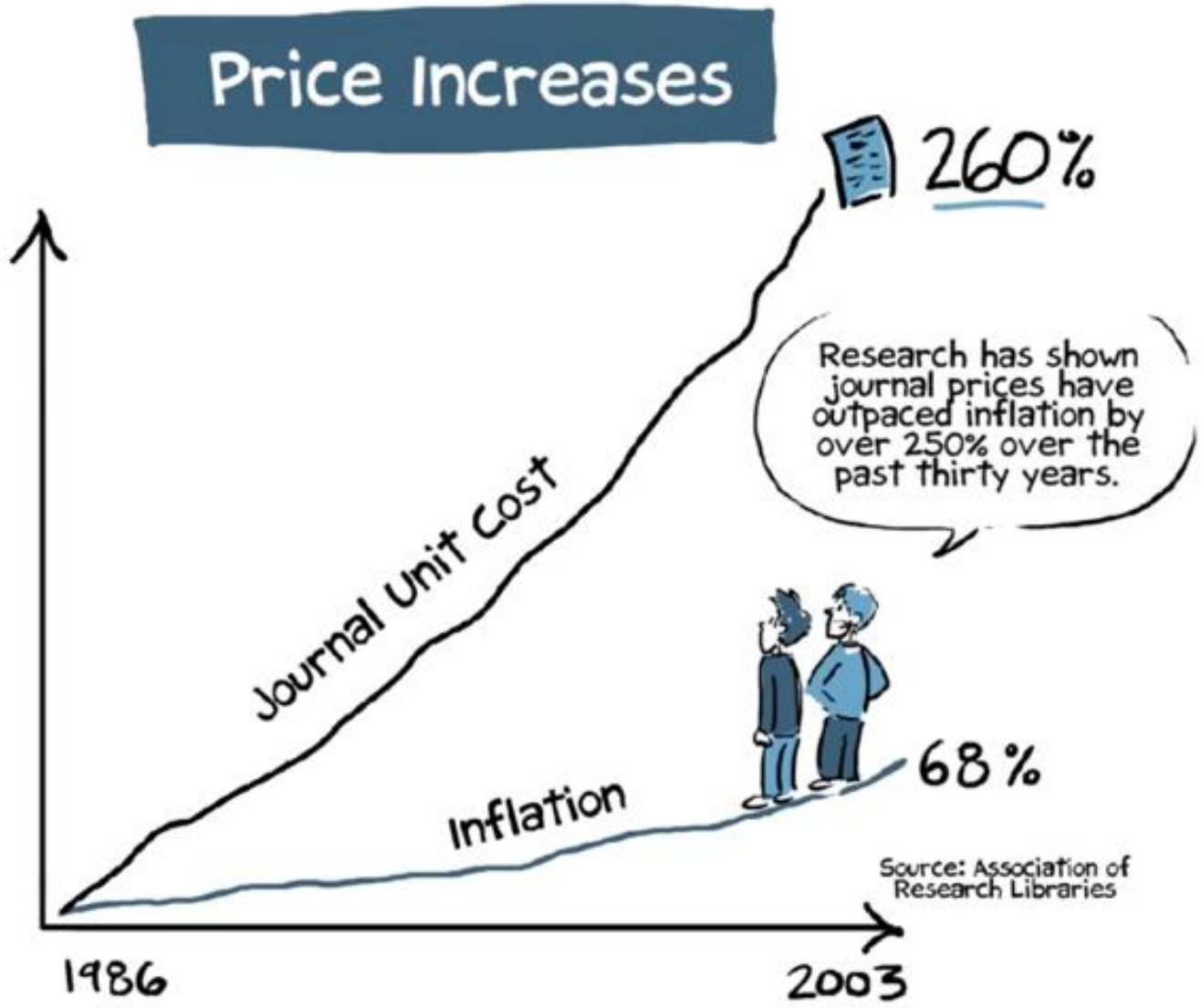
- Intro
- Open Science and Open access
- Starting a “student” journal
- Operational experience after a few published issues
- Conclusions/Outlook

Thanks to S. Bianco, M. Maggi S. Mele and H. Kohls for discussions and materials!

Open Science evolution 101

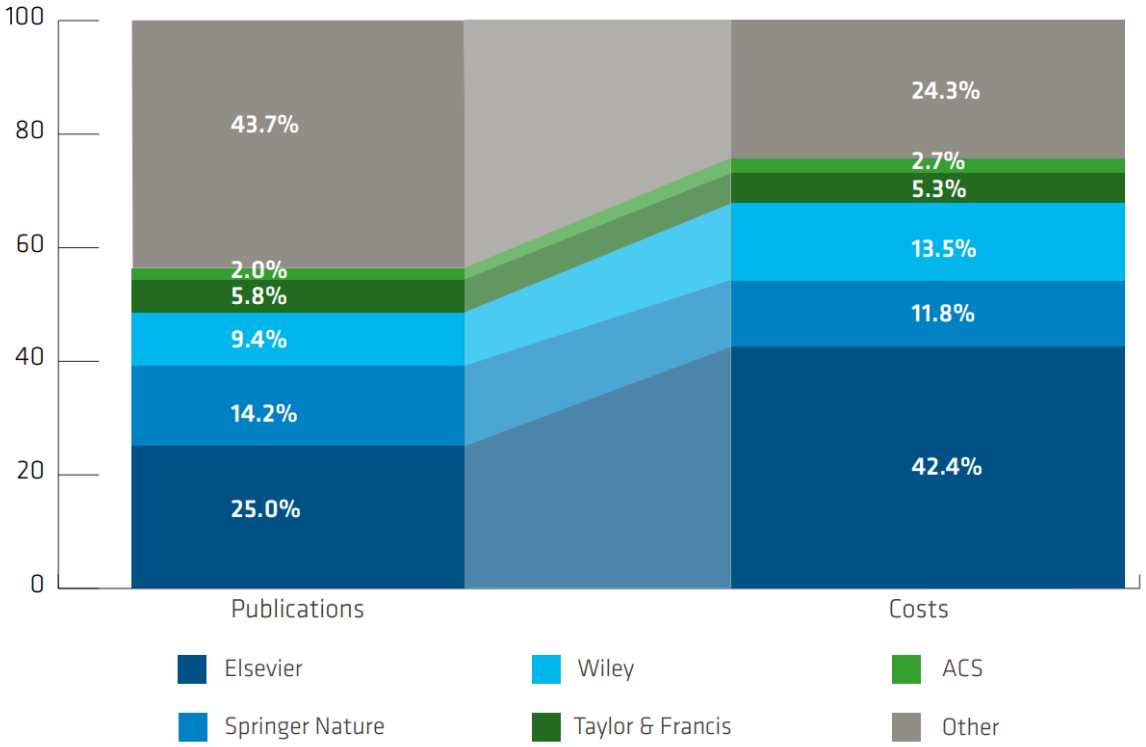
- Open Access (OA) ~2001
  - making scholarly research outputs, such as articles, papers, and data, freely accessible online to anyone without financial, legal, or technical barriers.
  - research funded by taxpayers or public institutions is accessible to everyone who might benefit from it, including researchers, students, policymakers, and the general public.
  - promotes the distribution of knowledge for the betterment of society
- Open Science (OS) ~2010
  - Broader movement towards openness and transparency in all aspects of the scientific process.
    - Open Data, Open Source, Citizen's Science, etc.

Meanwhile…


Price Increases
260%
Research has shown journal prices have outpaced inflation by over 250% over the past thirty years.
Journal Unit Cost
Inflation
68%
Source: Association of Research Libraries
1986
2003

Subscription Market: an oligopoly

- Studying the dynamics of the scholarly publishing market
  - Decrypting the Big Deal landscape Follow-up of the 2019 EUA Big Deals Survey Report https://eua.eu/resources/publications/889:decrypting-the-big-deal-landscape.html



Subscription Market: an oligopoly

- In addition:

  1) monopolistic control of publishers over research outputs,
  2) reliance on metrics like Impact Factor and
  3) the resulting tendencies among researchers to prioritize publishing in high-IF journals.

  These dynamics can have far-reaching implications for the dissemination and evaluation of scientific knowledge.

Subscription Market: an oligopoly

- **Each article is a micro-monopoly**
  - Publishers often have exclusive rights to distribute and sell access to articles, effectively creating a monopoly on that particular piece of research
    - each academic article, once published, holds a certain degree of monopoly power. This power stems from the fact that the article is typically OWNED by a publisher and is subject to copyright restrictions, meaning that access to the article is controlled by the publisher.
- **Rigid market**
  - Total lack of competition within the academic publishing industry (to drive innovation or lower costs)
  - Resulting high subscription fees for academic journals, restricted access to research for those without institutional affiliations

Subscription Market: an oligopoly

- **Top 5 commercial publishers**
  - No royalties paid to authors
  - No compensation to peer reviews
  - Low cost of editing/formatting

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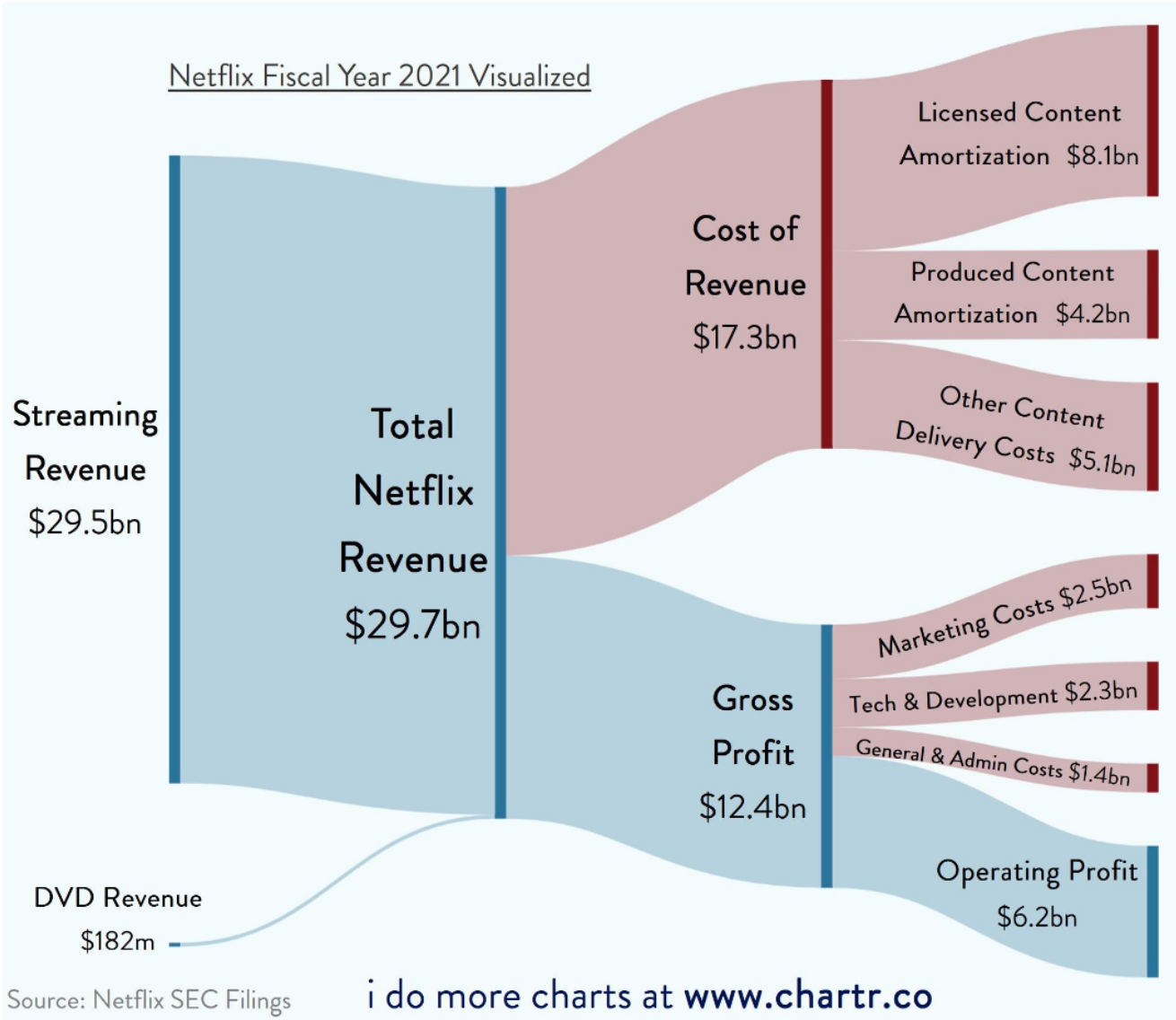
Large revenues

The economics of Netflix



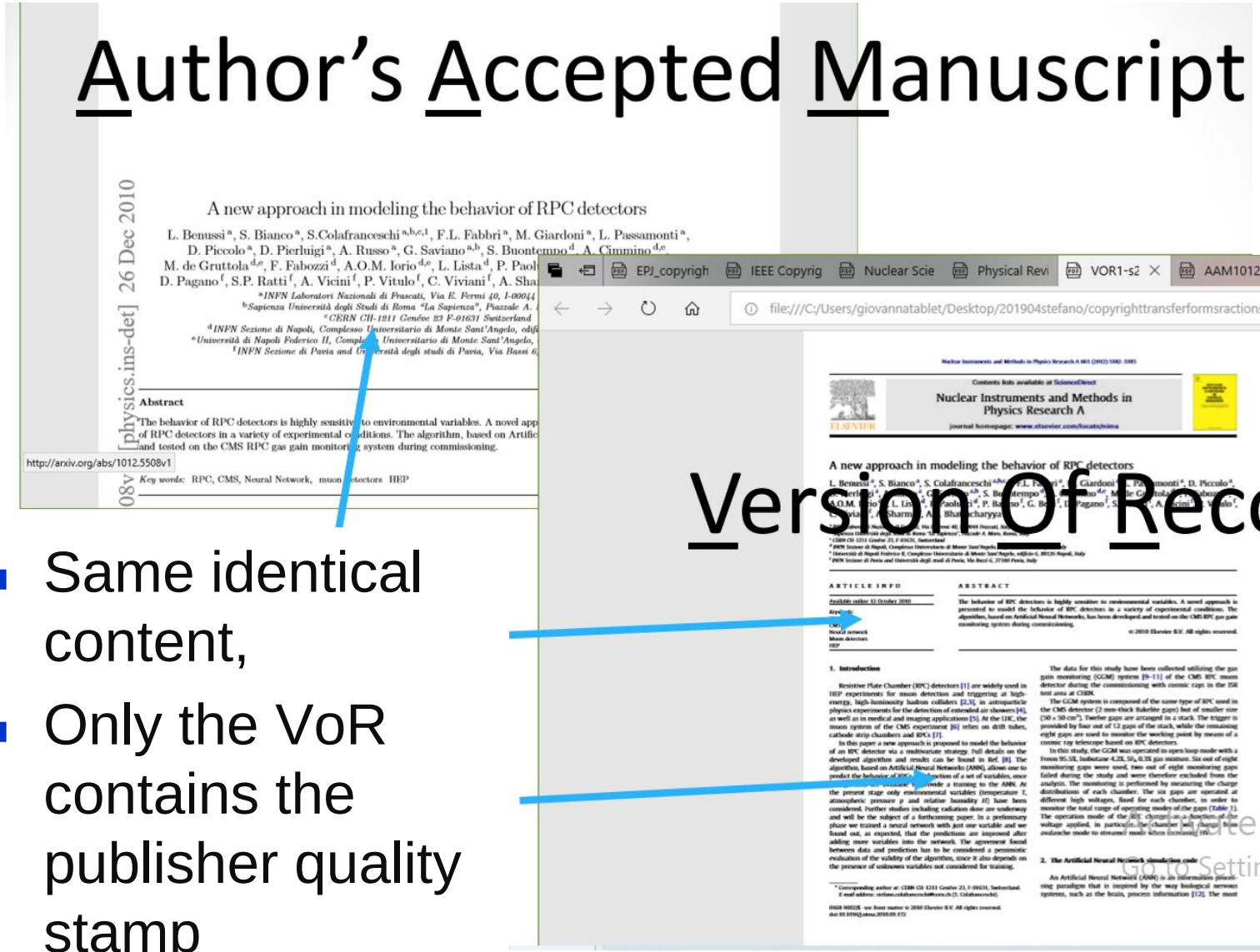
The economics of Journals ☹

- How much do publisher make?

OA, different models, same goal

- Achieving free and unrestricted access to research.
- **Green Open Access (subscription MODEL)**:
  - authors self-archive a version (postprint/author accepted manuscript AAM) of their manuscript in an online repository, typically an institutional repository or a subject-based repository, after it has been published in a traditional subscription-based journal.
  - peer-reviewed and accepted for publication but has not undergone the formatting and editing processes applied by the journal.
  - allows researchers to share their work freely with the public while still publishing in traditional subscription journals

OA, different models, same goal



- Same identical content,
- Only the VoR contains the publisher quality stamp

Release of copyright..

- *This work has been submitted to the IEEE Nucl. Sci. Symp. 2016 for publication in the conference record. Copyright may be transferred without notice, after which this version may no longer be available*

A new Slow Control and Run Initialization Byte-wise Environment (SCRIBE) for the quality control of mass-produced CMS GEM detectors

S. Colafranceschi (for the CMS muon group)

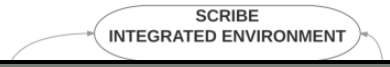
***Abstract*—The CMS collaboration aims at improving the muon trigger and tracking performance at the HL-LHC by installing new Gas Electron Multiplier (GEM) chambers in the endcaps of the CMS experiment. Construction and commissioning of GEM chambers for the first muon endcap stations is ramping up in several laboratories using common quality control protocols. The SCRIBE framework is a scalable and cross-platform web-based application for the RD51 Scalable Readout System (SRS) that controls data acquisition and analyzes data in near real time. It has been developed mainly to simplify and standardize measurements of the GEM chamber response uniformities with x-rays across all production sites. SCRIBE works with zero suppression of raw SRS pulse height data. This has increased acquisition rates to 5 kHz for a CMS GEM chamber with 3072 strips and allows strip-by-strip response comparisons with a few hours of data taking. SCRIBE also manages parallel data reconstruction to provide near real-time feedback on the chamber response to the user. Preliminary results on the response performance of the first mass-produced CMS GEM chambers commissioned with SCRIBE are presented.**

I. Introduction

II. The framework objectives

SCRIBE aims at providing a simplified and integrated (section IV) user experience to accomplish electronics configuration (section III-A), data taking (section III-B), and data reconstruction (section III-C) as depicted in Fig. 1. These three functionalities can be performed at the same time and from different devices. Since each functionality runs in a different process, SCRIBE can configure the electronics or take data while analyzing already collected data.

Also, SCRIBE runs in a web server that accepts connections from any device through a web browser. In this way multiple users can perform multiple actions, i.e. as start new runs, analyze data or perform a read/write operation for any register of the electronics.



OA, different models, same goal

- Achieving free and unrestricted access to research.
- **Gold Open Access (Article Processing cost MODEL)**
  - articles are made freely available to readers immediately upon publication, with no subscription fees or paywalls.
  - authors or their institutions typically pay an article processing charge (APC) to the publisher to cover the costs of peer review, editing, and publishing.
  - OA journals often have liberal licensing agreements, such as Creative Commons licenses, allowing for maximum reuse and redistribution of the content.

OA, different models, same goal

- Achieving free and unrestricted access to research.
- **Hybrid Open Access (double dipping MODEL)**
  - traditional subscription-based journals that offer authors the option to make their individual articles open access upon payment of an APC.
  - some articles are freely accessible to readers (typically those for which authors or their institutions have paid the APC), while others are accessible only to subscribers.
  - criticized for charging both subscription fees and APCs and the risk to pay for open access without seeing a corresponding decrease in subscription costs

OA, different models, same goal

- Achieving free and unrestricted access to research.
- **Diamond/platinum Open Access (pure OA)**:
  - journals that are both free to read and free to publish in, with no APCs or subscription fees!
    - supported by academic institutions, scholarly societies, or funding agencies and operate on a non-profit basis.

Journal metrics: Impact Factor (1960)

- Metric to evaluate the relative importance/prestige of scholarly journals within a field.

  1) Citation Count determine the number of citations received by articles published in a journal during a specific period, usually the preceding two years.

  - same journal (self-citations) or from articles published in other journals.
  - new journal has IF=0 for two years

  2) **Article Count** determine the number of articles published by the journal during the same period is counted.

$$IF = \frac{total\ citations}{number\ of\ article\ published}$$

Journal metrics: Impact Factor (1960)

- **Impact Factor and bias towards high-IF journals**
  - Many academic institutions and funding agencies use the IF as a measure of the quality and impact of researchers' work when making decisions about promotions, grants, and tenure.
  - However, the reliance on Impact Factor as a sole measure of research quality has been criticized for various reasons, including its potential to incentivize researchers to prioritize publishing in high-IF journals over other considerations like scientific rigor or societal impact.

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Open Journal System (OJS) by PKP

- open-source, user-friendly, highly customizable (settings, layout, policies) software platform designed to support/assist with the management and publication of scholarly journals online
- comprehensive system for journal editors, authors, reviewers, and readers to facilitate the entire publishing workflow
- designed to support open access publishing, allowing journals to make their content freely available to readers online

Open Journal System (OJS)

- **Submission Management**: Editors can manage submissions, assign reviewers, and track the progress of manuscripts through various stages of review and publication.
- **Peer Review**: editors can assign reviewers to submitted manuscripts, collect feedback, and make editorial decisions based on reviewer recommendations. Reviewers can access manuscripts securely through the system and submit their comments and evaluations.
- **Editorial Workflow**: tracking submissions, communicating with authors and reviewers, and making editorial decisions. Editors can customize workflows to fit the specific needs of their journal.

Open Journal System (OJS)

- **Online Publication**: production and publication process, to generate HTML, PDF, and other formats for online publication. Published articles are organized into journal issues and made accessible to readers through a user-friendly interface.
- **Indexing and Archiving**: Journals can be indexed in databases such as PubMed, Web of Science, and Scopus, and archived in repositories for long-term preservation.

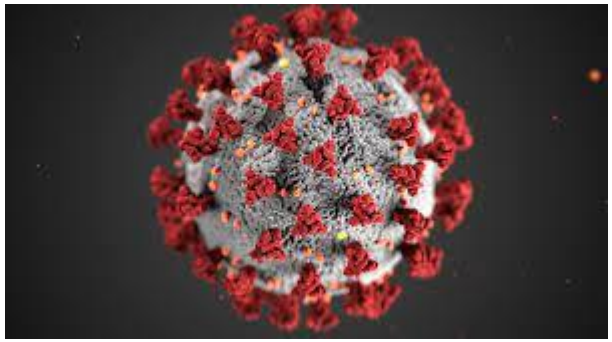
Virginia Journal of Business, Technology, and Science (VAJBTS)

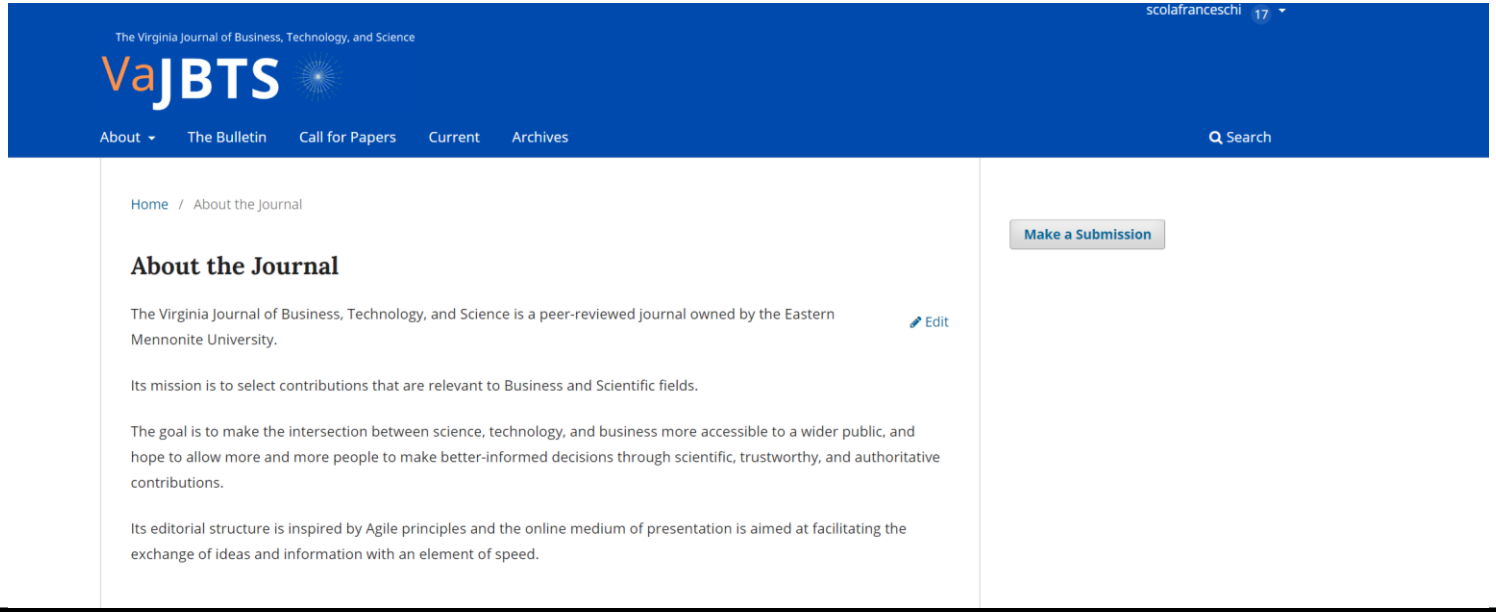
- Simple and reproducible instructions!
  - Register a domain* (~$10/year)
  - Rent a cloud space* (~$50/year)
  - Deploy OJS (free!)
  - Publish (free!)

*IT student loved it!

Virginia Journal of Business, Technology, and Science (VAJBTS)

- It's here: https://vajbts.org/index.php/vaJBTS/about





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Virginia Journal of Business, Technology, and Science (VAJBTS)

- Learning how to publish research and doing so early in one's academic career (undergrad) is highly beneficial

Virginia Journal of Business, Technology, and Science (VAJBTS)

- **Skill Development**: Engaging in the publishing process early on provides valuable experience in conducting research, writing scholarly articles
  - We actually almost never teach students how to navigate the publication process!

Virginia Journal of Business, Technology, and Science (VAJBTS)

- **Contribution to Knowledge**: Publishing research allows students to learn how to share findings with the broader academic community

Conclusions

- It’s nice to play/contribute to OA involving student in setting up a journal and giving a local/free access point to enter into the publishing business
  - And observe student’s skill grow..
- Several models available (short/compact research paper, capstone project repository), you choose ☺
- It’s no true that there is no free lunch after all..
- BTW, If you need help setting your journal, keep calm and stefano.colafranceschi@cern.ch