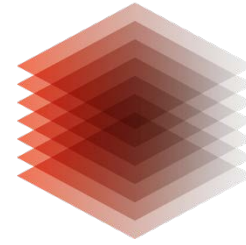


---

LEIBNIZ INFORMATION CENTRE  
FOR SCIENCE AND TECHNOLOGY  
UNIVERSITY LIBRARY



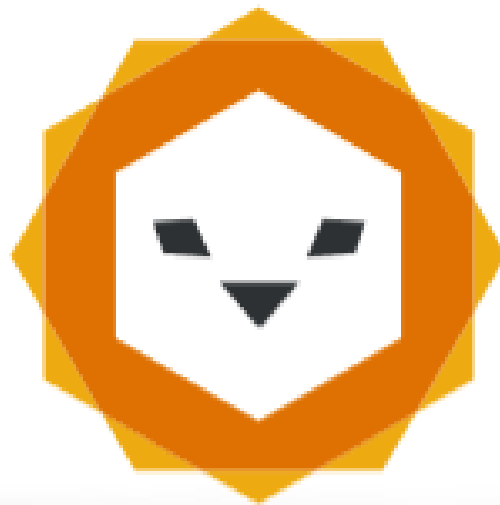
TIB

# Blockchain based educational certificates as a model for a P2P commons of scholarly metadata interaction

Lambert Heller  
7-8 May 2018 WU Vienna  
Scientific Publishing on the Blockchain – SPONBC2018

## Caveat: This talk will get meta towards its end...

- I'm going to give you a talk (slightly modified) I gave two weeks ago at the “Linked Research” workshop co-located with The Web Conf 2018 in Lyon.
- I had a highly interesting public debate with Tim Berners-Lee about this.
- At the end of this talk I will tell you about two interesting outcomes. ;-)

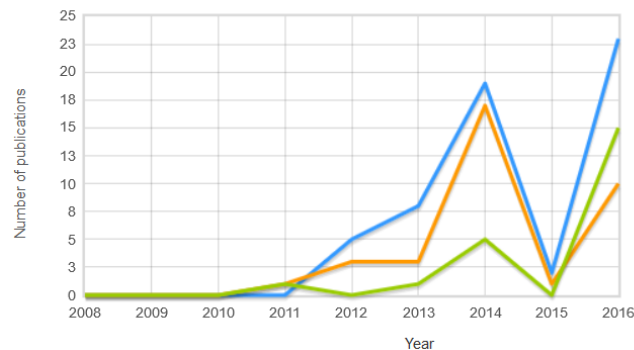


**THE WEB  
CONFERENCE**

## Where I'm coming from: Promoting Linked Open Data in Research Infrastructure, pioneering Open Science Learning, etc.

- I'm not a researcher working in academia
  - ...but an academic librarian
- Two examples from my group (Open Science Lab at TIB, Germany, since 2013):
  - Promoting and enhancing VIVO as a Linked Open Data approach to „current research information systems“ (CRIS)
  - Facilitating the book sprint that resulted in the “Open Science Training Handbook”, have a look <https://book.fosteropenscience.eu/>

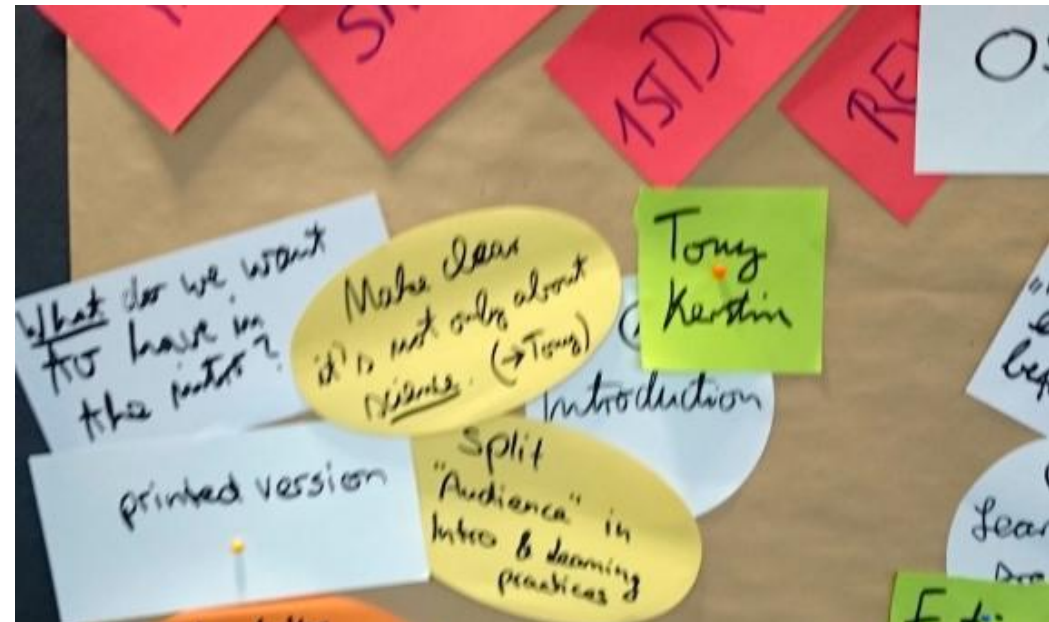
Comparing publications of Organizations and People in Technische Informationsbibliothek (TIB) Leibniz-Informationszentrum Technik und Naturwissenschaften und Universitätsbibliothek



Total Number of publications

You have selected 3 of a maximum 10 organizations and people. [Clear](#)

- Programmbereich C ... 58
- Programmbereich A ... 36
- Programmbereich B ... 23



## Research assessment – and the challenge to give researchers agency, i.e. direct control over their identities, assets & interactions

- Some of the atomic elements of RA are **peer review**, **giving attribution** (e.g. also for minor contribution to collaborative work) or other forms of **mutual (micro) assessment**.
- As you all know, this is a **systemic issue**. When it comes to most critical committee decisions like hiring, promotion, tenure, funding etc., assessment is in many cases still dominated by flawed „proxies“ like the journal impact factor
- Crucial to address this on the policy level (e.g. to sign SF DORA)
- ...but not only a policy issue, as I will try to show

<https://sfdora.org/>



## How we failed to give researchers agency and transparency about mutual assessment – the case of ResearchGate

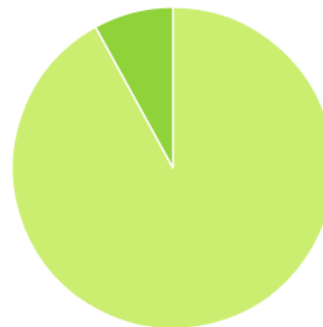
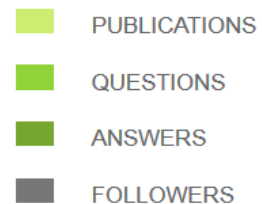
- A critical mass for micro assessment, capturing attribution etc. on the Web, with researchers in the driving seat, was only reached with „Facebook for scientists“ approaches like ResearchGate
- ResearchGate, and to some degree academia.edu, have captured the market for now, resemble somehow Facebook’s business model
- The outcome is highly ambivalent – see recent RG-Springer deal, see „RG score“

# 8.54

RG Score

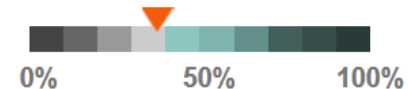
A new way to measure scientific reputation.

The RG Score takes **all** your research and turns it into a source of reputation.



PERCENTILE

Your score is higher than 37.5% of ResearchGate members'.



## How we failed to give researchers agency and transparency about mutual assessment – the case of ORCID

- **ORCID is mostly not the place where input comes directly from researchers.**
- It is primarily seen and used as an aggregator collecting metadata controlled by big publishers in the first place.
- ORCID is real progress. It's indispensable. But it has systemic metadata quality issues, and it's currently not the tool to give researchers and contributors ultimate control about attribution, mutual assessment etc.

The ORCID logo consists of the word "ORCID" in a sans-serif font. The letters "O", "R", "C", and "I" are in a light grey color, while the letters "D" and the dot above the "i" are in a vibrant green color.

Connecting Research  
and Researchers

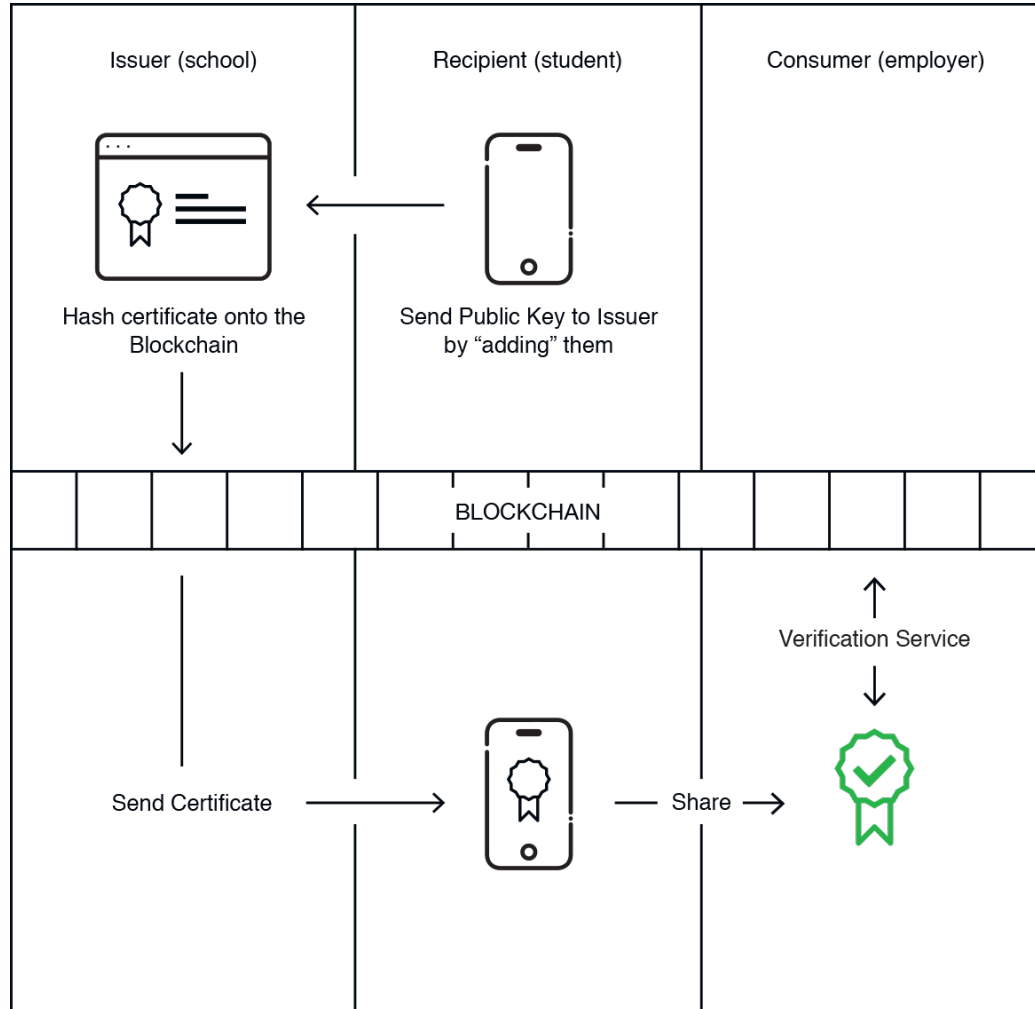
*(See also my – slightly outdated – overview on the whole landscape, at the LSE Impact Blog, <http://blogs.lse.ac.uk/impactofsocialsciences/2015/07/16/scholarly-profile-of-the-future/>)*

## How we failed to give researchers agency and transparency about mutual assessment – a hypothesis

When it comes to attribution and mutual assessment in research,  
we have a serious issue with **data ownership**.

(Rephrase: With **agency** of both senders and recipients of data.)

## And now to something – seemingly? – completely different: How MIT Media Lab et al. came up with blockcerts in 2016





## Three main assumptions of the blockcerts standard for blockchain based educational certificates

We have to...

- follow the „Open Badges“ approach (MacArthur Foundation & Mozilla 2011)
- establish „Verifiable Claims“ (see W3C WG on that)
- allow for „Self-Sovereign Identities“\*, as outlined by Christopher Allen (2016):
  - Access & Control
  - Transparency, Interoperability & Portability
  - Minimization & Consent
  - Individual Privacy vs Protection of the Group

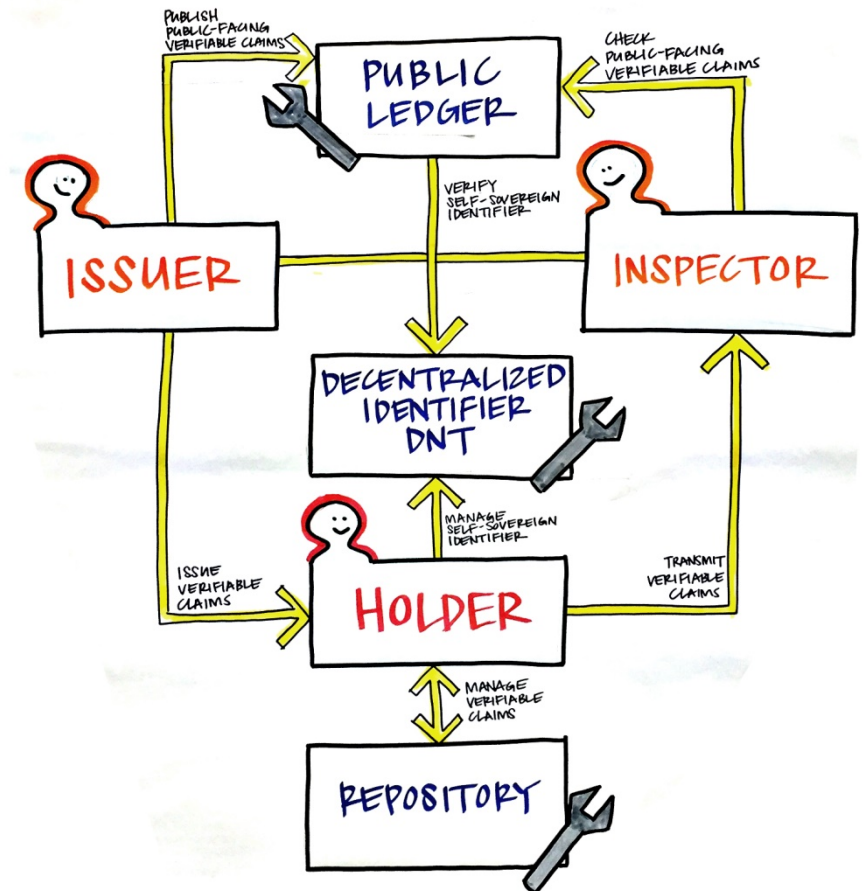
*\*Shermin Voshmgir: Let's actually don't talk about **self-sovereign identity**, but about **individuals** and their **personal data** – it's the same concept in major policy and legal frameworks, like the European Union's GDPR (2018):*

*<https://blockchainhub.net/blog/blog/self-sovereign-identity-vs-data/>*

## Decentralized Identifiers (DID) as an option for Self-Sovereign Identity

- Everyone can join a public peer-to-peer network („blockchain“), setting up a node for a particular transaction (i.e. pull in a prove for some claim)
- ...claims are cheap, but not for free – therefore **few economic assumptions and dependencies**
- „piggybacking“ on a growing ecosystem e.g. of crypto wallet apps, blockchain browsers etc.
- To be fair: blockchain is still experimental & hyped
- Yet this approach might be the best candidate to solve research metadata ownership

### SELF-SOVEREIGN IDENTITY ARCHITECTURE 1.0



(See also W3C draft community report on DID: <https://w3c-ccg.github.io/did-spec/>)

## Attribution tracking and mutual assessment in research – could it be all about researchers' & publics' agency?

Let **every researcher make statements directly** – without any detours, without having to rely on any particular server & dependencies that come along with it.

- **It fixes incentive structures by disintermediating editors etc.** – just the folks actually involved provide the information for their own interest.

Let **the public directly witness** researchers' statements and transactions.

- **It levels the playing field for service model innovation** – one single source of truth, nobody has a privileged access to the data. Permissionless innovation.

## Coming back to that debate at The Web Conf 2018 in Lyon: Two main assumptions that seem to be at stake

### Why should I share data for arbitrary people?

- Economics of incentivized resource sharing are at the core of these new protocols. It challenges the mental model of “my computer = my concerns; sharing with others is just a voluntary option.” Economics isn’t supposed to be part of the protocol layer in this mind set.

### What if e.g. Ethereum comes out of fashion in 20 years?

- Permissionless blockchains offer a better insurance against data loss than many internet protocols, due to built-in redundancy. Still, no protocol offers insurance against “going out of productive service” whatsoever.

## Further information

Article covering some ideas from these slides, with further links:

- <https://bit.ly/blockchain-commons>

**\* Research**

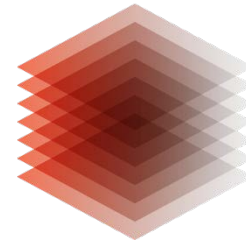


⌕ Back to news

# Blockchain offers a route to a true scholarly commons

Using decentralised networks to share data and publications could make research more open, efficient and fair, says Lambert Heller.

LEIBNIZ INFORMATION CENTRE  
FOR SCIENCE AND TECHNOLOGY  
UNIVERSITY LIBRARY



TIB

## MORE INFORMATION

**tib.eu**

### Contact

Lambert Heller

T +49 511 762-5348, [lambert.heller@tib.eu](mailto:lambert.heller@tib.eu),  @Lambo



Creative Commons Attribution 3.0 Germany  
<https://creativecommons.org/licenses/by/3.0/de/deed.en>