

Jan Kaßel* & Thomas Koentges

Leipzig University, Germany

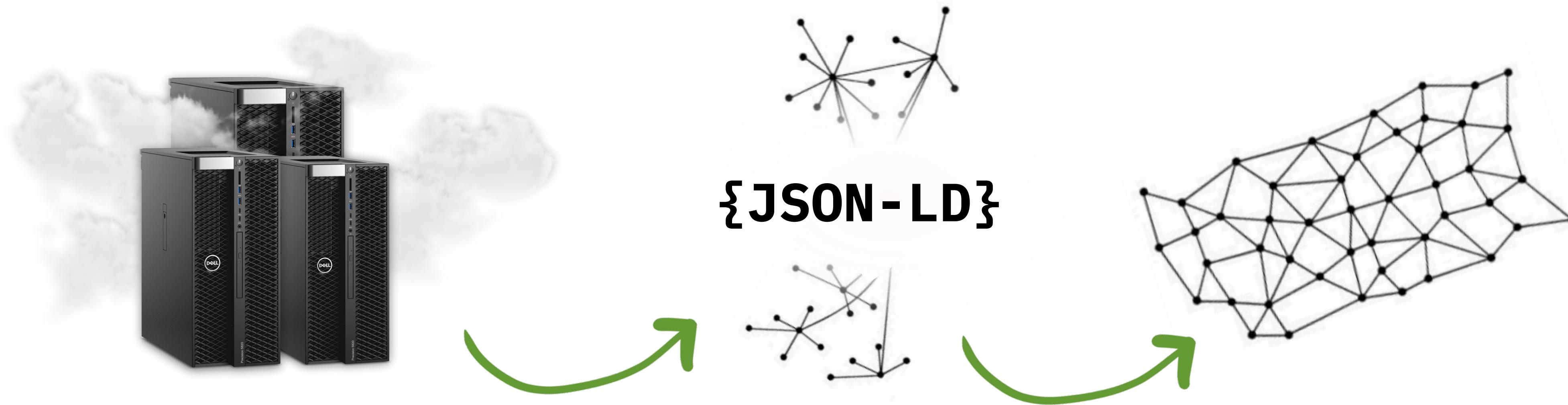
Sharing the Experience: Workflows for the Digital Humanities

DARIAH-CH Workshop #2

Neuchatel, Switzerland

5-6 Dec, 2019

Contents



- Platforms and the Digital Humanities
- Interoperability via Linked Data Standards
- Peer-to-Peer (P2P) techniques
- Personal, digital notebooks with hyperwell

<https://techcrunch.com/2019/07/29/github-ban-sanctioned-countries/>



GitHub confirms it has blocked developers in Iran, Syria and Crimea

10:44 am CEST • July 29, 2019

The impact of U.S. trade restrictions is trickling down to the developer community. [GitHub](#), the world's largest host of source code, is preventing

A Silent River

} the Count

Cotford

a Detective

a Psychical Research Agency

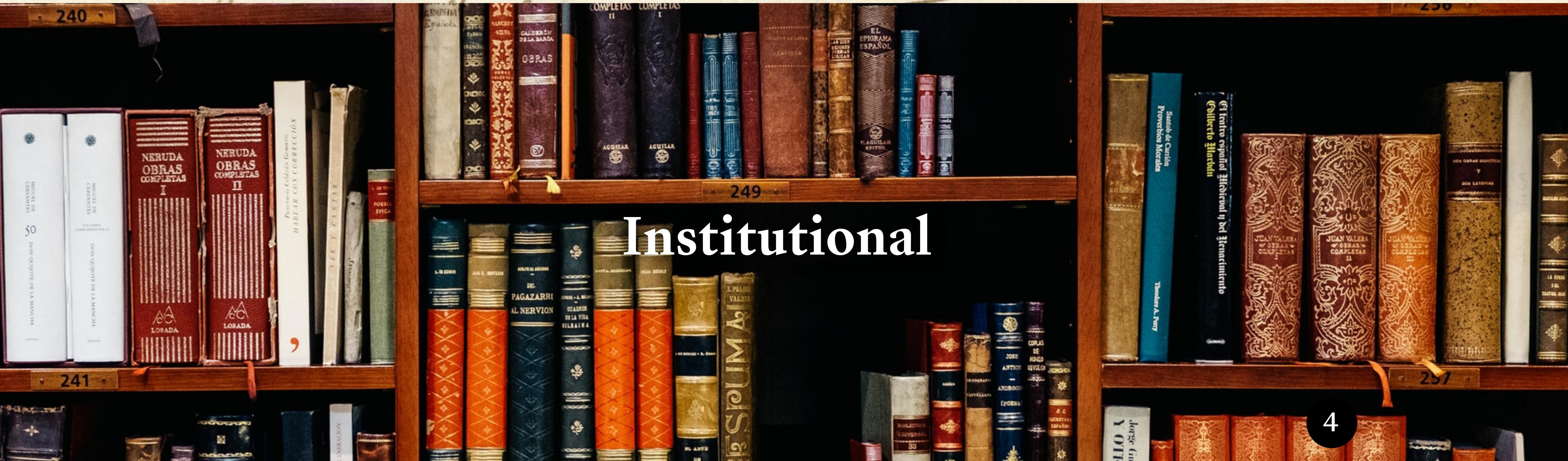
Personal

Alfred Singleton

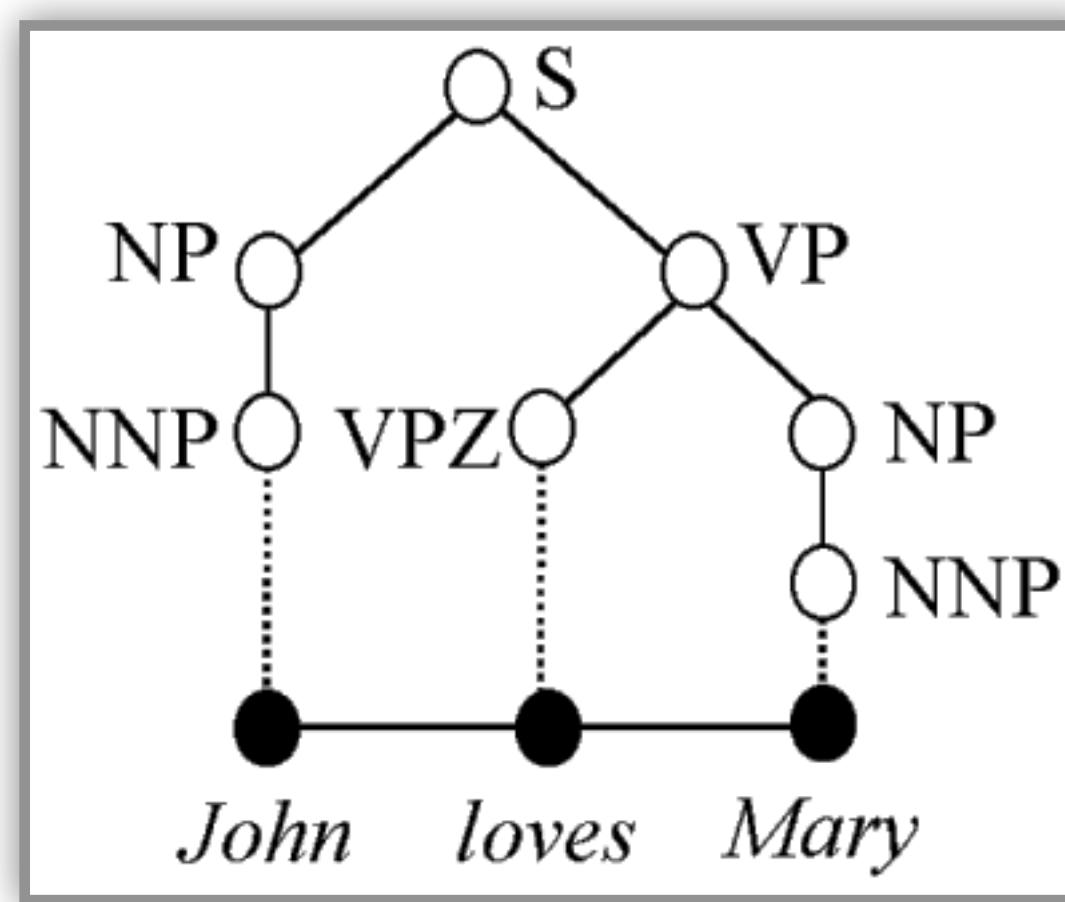
~~An American Invader from Texas~~

Max Hirschfeld

240



Institutional



In Progress

Server Overview Layout Metadata Tools
 Document Structural Textual Comments

Tags of current Transcript

Tag	Value	Text
1	date	17.1.6. [242] 17.1.6.
2	person	Rilke Lieber Herr Rainer M
3	abbrev	R.
4	place	Hamburg
5	place	die beste Ham- burger St
6	organization	Firma
7	place	ein ähnliches Lokal wie de
8	organization	Keller & Lokal wie das von Keller 8
9	place	Berlin
10	organization	Keller & Reiner in Berlin
11	organization	Kunstge
12	textStyle	Ihren Brief an das Kunstge
13	textStyle	haus Hu
14	person	Kunstgewerbe- haus Hult
15	textStyle	zu Händen des Herrn Agt
16	textStyle	Matinée den Vortrag als Matinée u
17	textStyle	Sonntag und auf einen Sonntag ar

Tags Properties

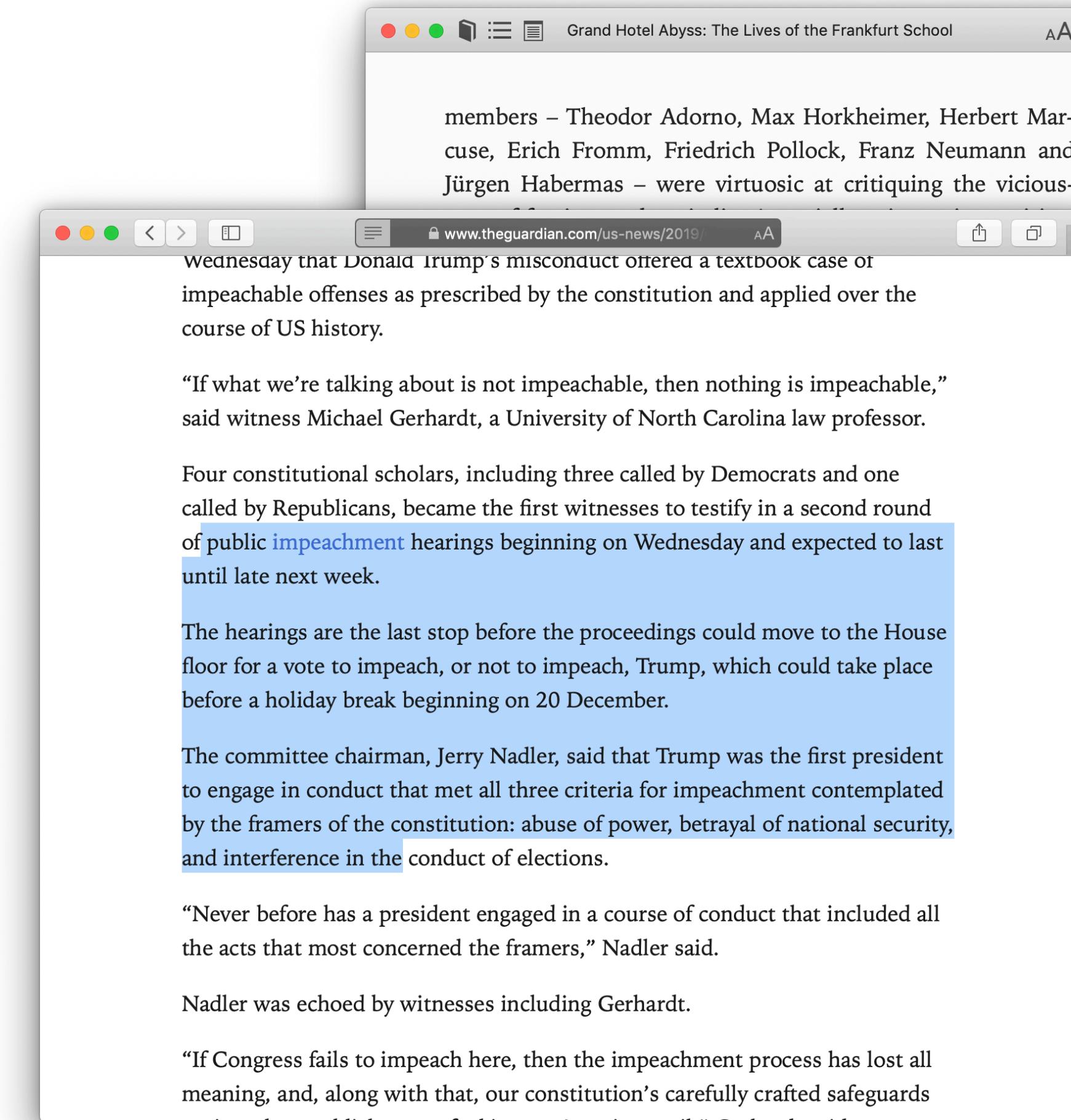
All Tags Show all Customize...

Tag specification	Color	Shortcut
abbrev	red	
add	teal	
Address	purple	
blackening	black	
date	blue	
div	dark blue	
gap	light blue	
organization	pink	
person	green	
place	yellow	
sir	light green	

12 Doch möchte ich Ihnen in keiner Weise vorgehen, teile
 13 also der Firma Ihre Adresse nicht mit, sondern über- ↵
 14 lasse Ihnen selbst die Anknüpfung der Verhandlungen; ↵
 15 Sie würden dann gut tun, Ihren Brief an das Kunstgewerbe- ↵
 16 haus Hulte zu Händen des Herrn Agt zu adressieren. ↵
 17 Ich empfehle Ihnen noch, den Vortrag als Matinée und ↵
 18 auf einen Sonntag anzusetzen; das entspricht am besten. ↵

Web Annotation: Data Model

```
{  
  "@context": "http://www.w3.org/ns/anno.jsonld",  
  "id": "http://example.org/anno1",  
  "type": "Annotation",  
  "body": {  
    "type": "TextualBody",  
    "value": "J'adore !",  
    "language": "fr"  
  },  
  "target": {  
    "source": "https://www.theguardian.com/...",  
    "selector": {  
      "type": "TextPositionSelector",  
      "start": 412,  
      "end": 795  
    }  
  }  
}
```



Web Annotation: Protocol

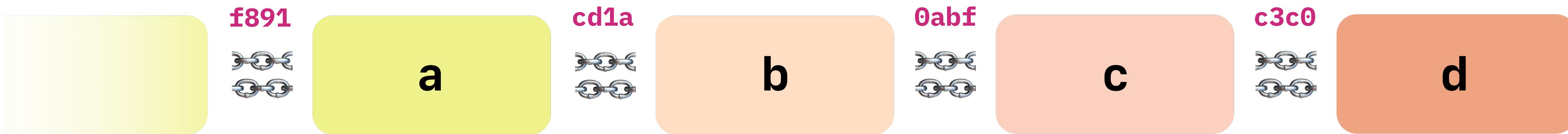
- HTTP-based REST-based interface
 - **GET**: Retrieve annotation(s)
 - **POST**: Create annotation
 - **PUT**: Update annotation
 - **DELETE**: Delete annotation



Local-First Collaboration

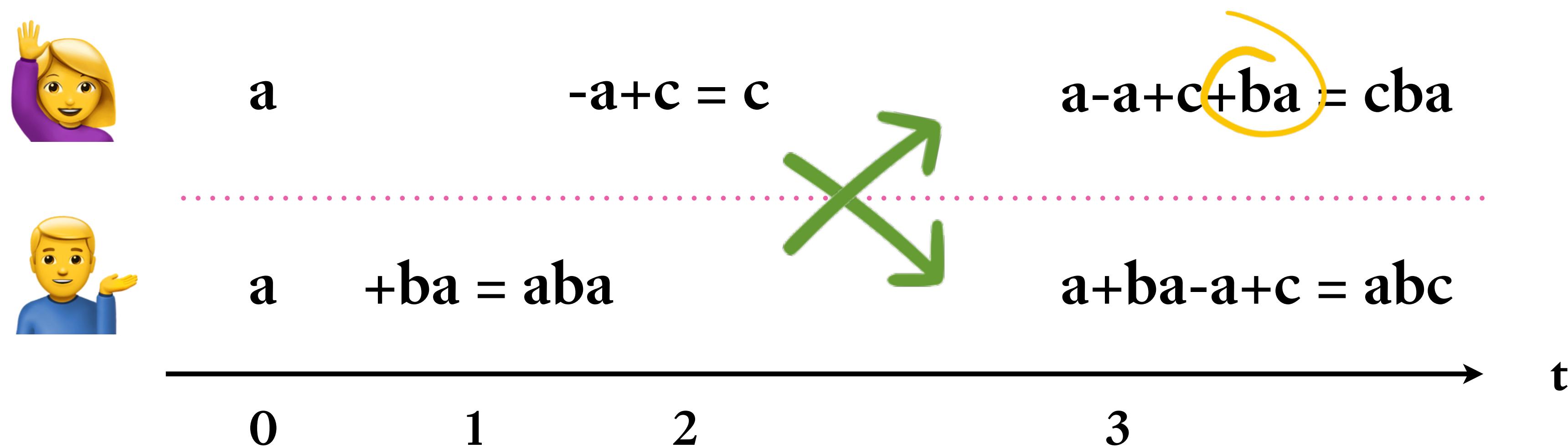
- Local-first software (Kleppmann et al., 2019)
 - Primarily storing data on your local device
 - Replicating changes with peers
 - **Google Docs, but without the Google**
- 👉 1) Preserve history, 2) exchange changes, 3) merge.

Append-Only Logs



- An ordered list where items only can be appended
- Can contain each change over time
- Immutability via cryptography — integrity of history

Conflict-Free Replicated Datatypes



Changes made to data by different peers will, after individual exchange, lead to the same state on all peers without central authority.

hyperwell **



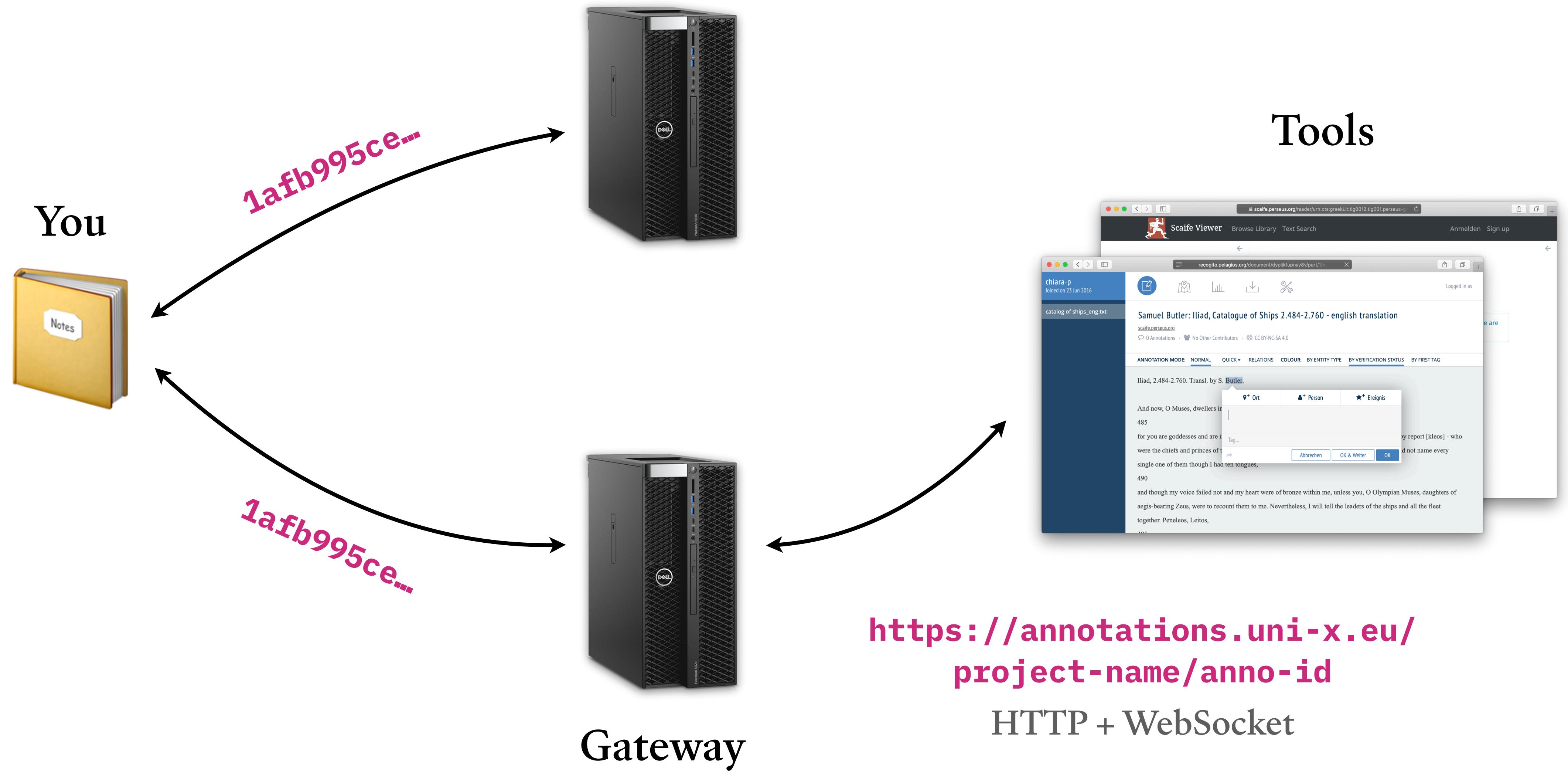
- Locally available on your device, encrypted
- Notebooks can be shared selectively, updated in real-time
- Compatible with the Web Annotation specification

hyperwell **

- Store changes within append-only log (hypercore)
 - *<https://github.com/mafintosh/hypercore>*
- Merge changes in real-time without conflicts (hypermerge)
 - *<https://github.com/automerge/hypermerge>*
- Provide a desktop application for managing annotations
- Bridging the distributed network into HTTP-land



Institutional Archive



Sustainability Checklist

-  Immutable history log
-  Local-first approach
-  Real-time, decentralized collaboration
-  Institutional archiving and replication
-  Discovery
-  Missing authentication, access control

Summary

Tools & Platforms

- Linked Data is getting popular in DH infrastructure
- All platforms have their downsides
- Standards enable interoperability

hyperwell

- Local-first annotation, store on individual devices
- Publish to HTTP-land via gateway, W3C Web Annotation Protocol
- Real-time collaboration, maintain ownership, easier publishing

P2P Principles

- Preserve, replicate, merge
- Append-Only Logs: Immutable lists that are safe to distribute
- CRDTs: Merge changes without conflicts or authority

References

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- **Kreps**, Jay. “The Log: What Every Software Engineer Should Know about Real-Time Data's Unifying Abstraction.” LinkedIn Engineering, 2013. <https://engineering.linkedin.com/distributed-systems/log-what-every-software-engineer-should-know-about-real-time-datas-unifying>.
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Media References

- Page 2: <https://www.amd.com/de/graphics/workstations-partner-dell>, <http://pngimg.com/download/4311>
- Page 5: <https://en.wikipedia.org/wiki/File:Example-tree.png>
- Page 4: <https://unsplash.com/photos/NIJuEQw0RKg>, https://de.m.wikipedia.org/wiki/Datei:Stoker_Dracula_Notes_Personal.jpg
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