Technical Standards as Intermediaries in EdTech - xAPI as an Example

Workshop on Intermediaries in the Digital Transformation of Schooling, Zürich, January 26-27, 2022

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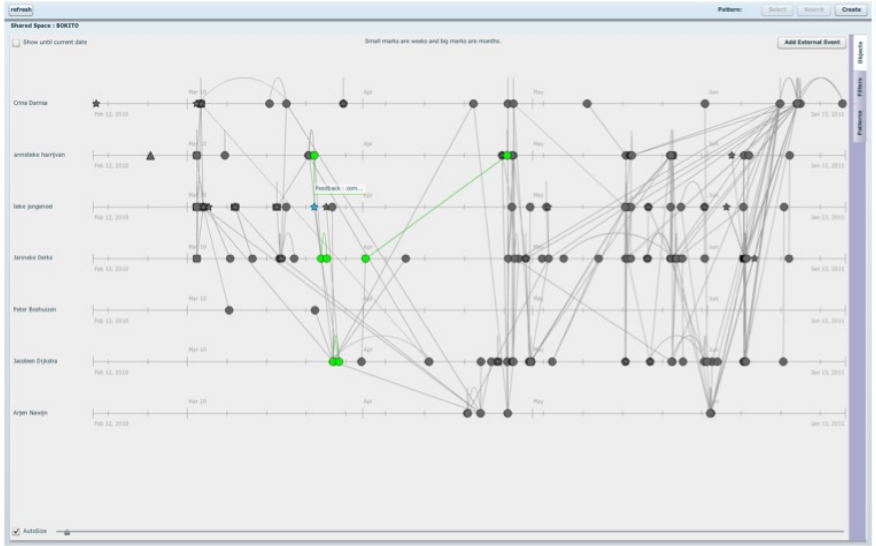
Me as an Intermediary?



TECHNISCHE REGEL [AKTUELL]

PAS 1032-1, -2:2004

Aus- und Weiterbildung unter besonderer Berücksichtigung von e-Learning - Teil 1: Referenzmodell für Qualitätsmanagement und Qualitätssicherung - Planung, Entwicklung, Durchführung und Evaluation von Bildungsprozessen und Bildungsangeboten - Teil 2: Didaktisches Objektmodell; Modellierung und Beschreibung didaktischer Szenarien

Englischer Titel:
Learning, education and training focussing on e-learning - Part 1: Reference model for quality management and quality assurance - Planning, development, realisation and evaluation of processes and offers in learning, education and training - Part 2: Didactic objects model; Modelling and description of scenarios for lerning, education and training

Ausgabedatum:
2004

Artikel mit elektronischer Beilage:
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Technical Standards

»Standards are published documents that establish specifications and procedures designed to maximize the reliability of the materials, products, methods, and/or services people use every day. […]

It is only through the use of standards that the requirements of interconnectivity and interoperability can be assured.«

(IEEE Standards Association, n.D.)

Technical (Industry) Standards in EdTech

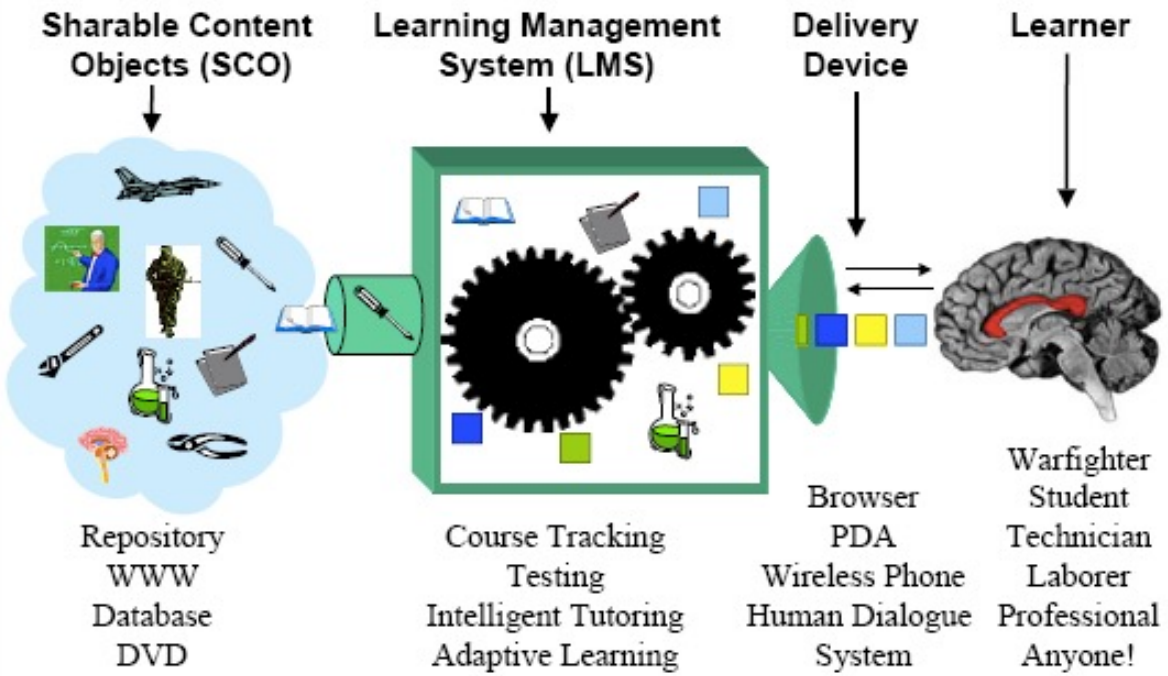
Some examples

IEEE Standard for Learning Object Metadata (LOM) (approved by IEEE in 2002)

Sharable Content Object Reference Model (SCORM®) (4th ed. published by ADL in 2004)

IMS Question & Test Interoperability (QTI) Specification (3rd ed. pubished by IMS Global Learning Consortium in 2020)

Technical Standards & Imag(inari)es of Education



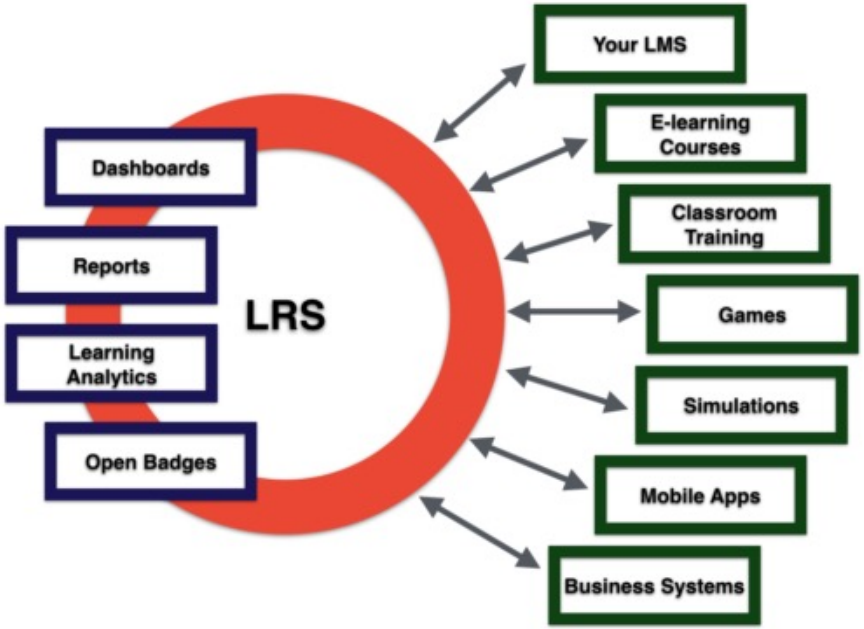
ADL and the Sharable Content Object Reference Model (Slosser, 2001)

The Experience API (xAPI)

»The Experience API (or xAPI) is a new specification for learning technology that makes it possible to collect data about the wide range of experiences a person has (online and offline). This API captures data in a consistent format about a person or group's activities from many technologies. […]« (https://xapi.com/overview/)

The Experience API (xAPI)

»xAPI changes the way we think about the enterprise learning ecosystem. It's been designed with a completely different mindset than previous learning specifications. Learning happens everywhere, not just the LMS and often that learning is self directed by the learner.« (https://xapi.com/ecosystem/)



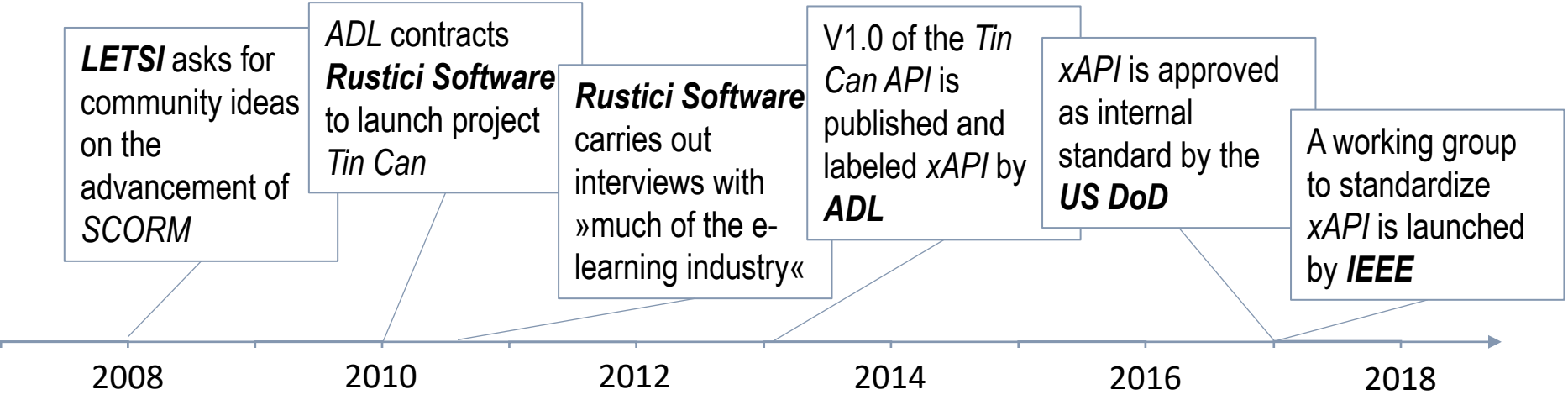
xAPI Statements 101

»At the simplest level, xAPI statement structure can be expressed in the form of ›actor verb object‹.

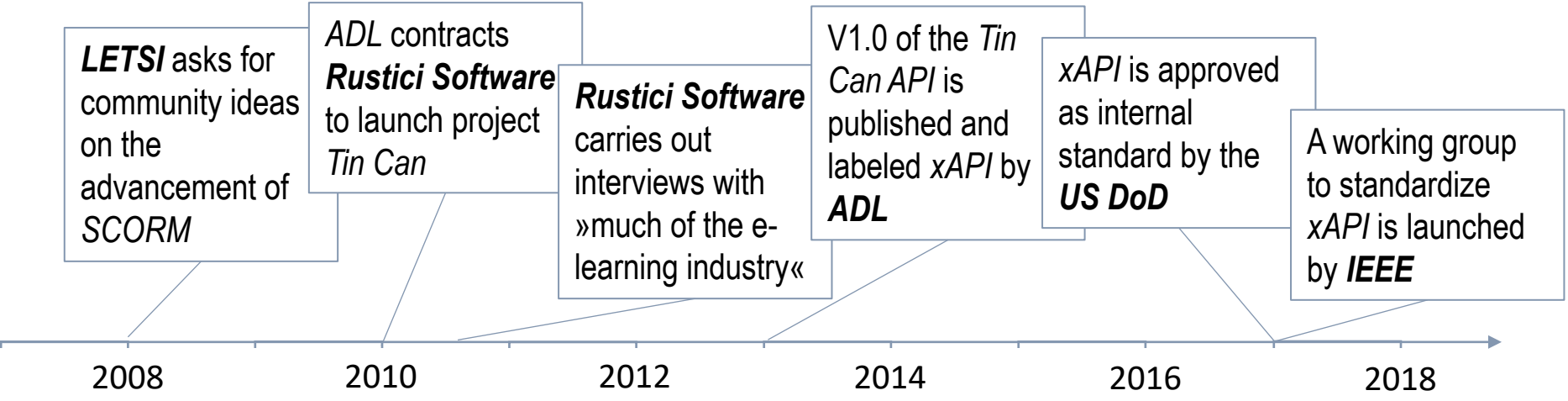
An example of this sort of statement is ›Sally experienced ‘Solo Hang Gliding‘‹.« (https://xapi.com/statements-101/)

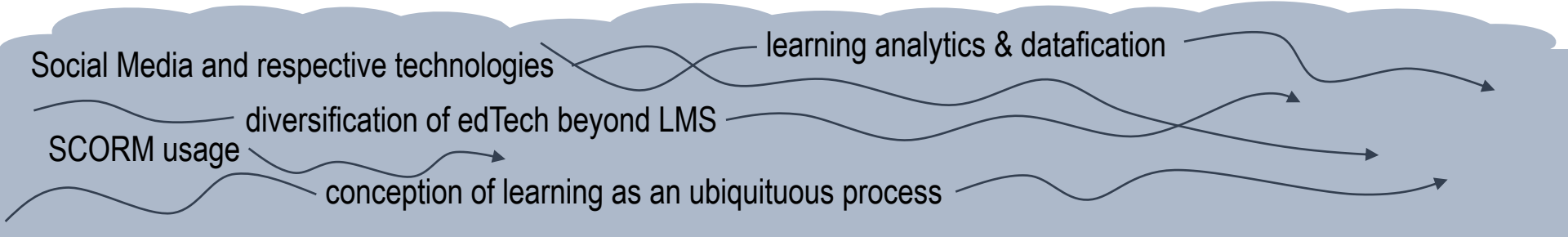

```
{
   "actor": {
        "name": "Sally Glider",
        "mbox": "mailto:sally@example.com"
   },
   "verb": {
        "id": "http://adlnet.gov/expapi/verbs/experienced",
        "display": { "en-US": "experienced" }
   },
   "object": {
        "id": "http://example.com/activities/solo-hang-gliding",
        "definition": {
                "name": { "en-US": "Solo Hang Gliding" }
                }
   }
}
```

A Multilayered ›History‹ of xAPI



A Multilayered ›History‹ of xAPI





A Multilayered ›History‹ of xAPI

LETSI asks for community ideas on the advancement of *SCORM*

ADL contracts ***Rustici Software*** to launch project *Tin Can*

Rustici Software carries out interviews with »much of the e-learning industry«

V1.0 of the *Tin Can API* is published and labeled *xAPI* by ***ADL***

xAPI is approved as internal standard by the ***US DoD***

A working group to standardize *xAPI* is launched by ***IEEE***

2008 2010 2012 2014 2016 2018

Blackboard

Social Media and respective technologies

learning analytics & datafication

diversification of edTech beyond LMS

SCORM usage

conception of learning as an ubiquituous process

xAPI & its ›Master Narrative‹ (Star & Lampland, 2009)

»The structure of ›statements‹ using nouns, verbs and objects lets you record almost any activity. Think: ›I did this.‹« (https://xapi.com/overview/)

»We based xAPI on Activity Streams* because it's a brilliant model. By tying xAPI into another emerging spec there's huge potential for compatibility and data that can be pulled in to do greater things.«

(https://xapi.com/blog/tin-can-vs-activity-streams/)

**A specification for the syndication of social web applications recommended by the World Wide Web Consortium (W3C)*

Making Use of xAPI – a Practical Example

SCoRe
Student Crowd Research

Inhaltsverzeichnis

Nachhaltiger Verkehr im urbanen Raum: Die städtische Kreuzung im Fokus

Zielvorgabe 11. Um die Agenda 2030 zu erfüllen, kann eine gesundheitsfördernde und nachhaltige Verkehrspolitik somit einen wesentliche leisten (vgl. ebd.).

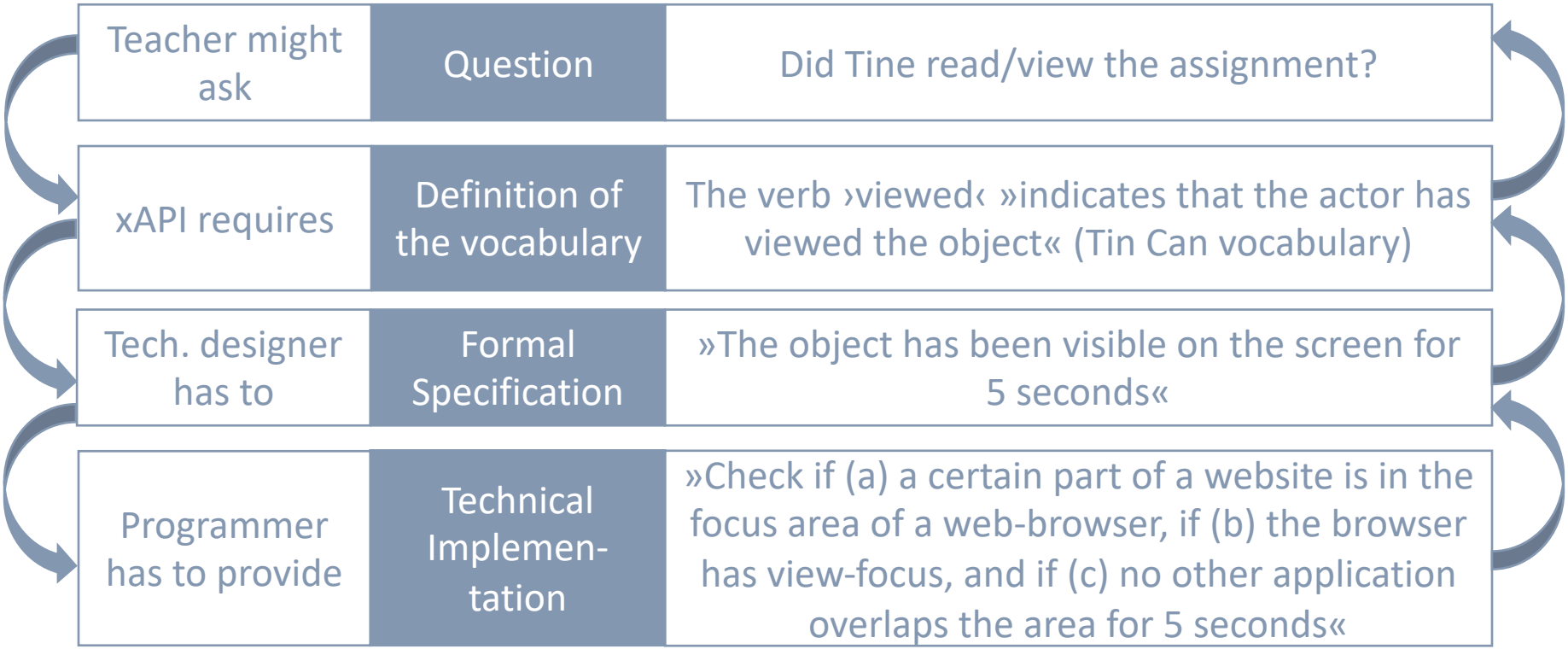
4. https://pixabay.com/de/illustrations/zeit-stadt-landschaft-fantasy-2101549/

1.1.3 Eingrenzen/Konkretisieren

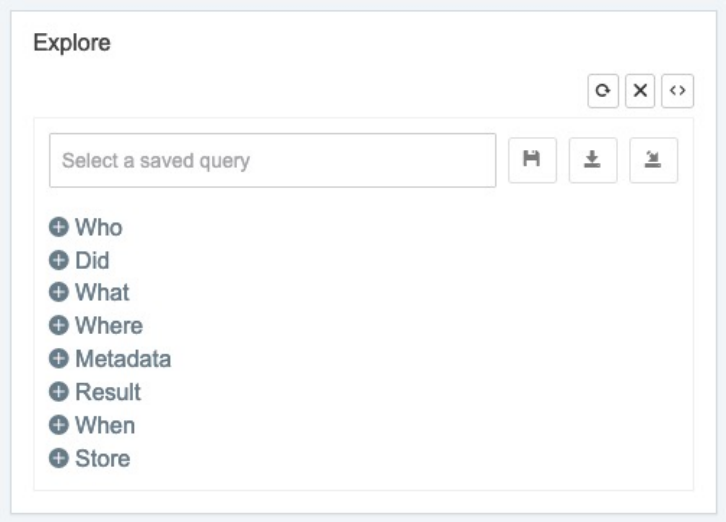
Um bei der Mobilität im Stadtverkehr den Radverkehrsanteil zu steigern bedarf es einerseits objektive Sicherheit als auch su Sicherheitsempfinden im Straßenverkehr sowie eine Optimierung der Rahmenbedingungen für Radfahrende. Ein besonders wichtiger Faktor auf den Sicherheitsaspekt der Radfahrenden stellt die Gestaltung von Knotenpunkten, also Kreuzungen, dar (vgl. bspw. Umweltbundesamt 201 2019), weshalb diese den primären Untersuchungsgegenstand dieses Projektes darstellen.

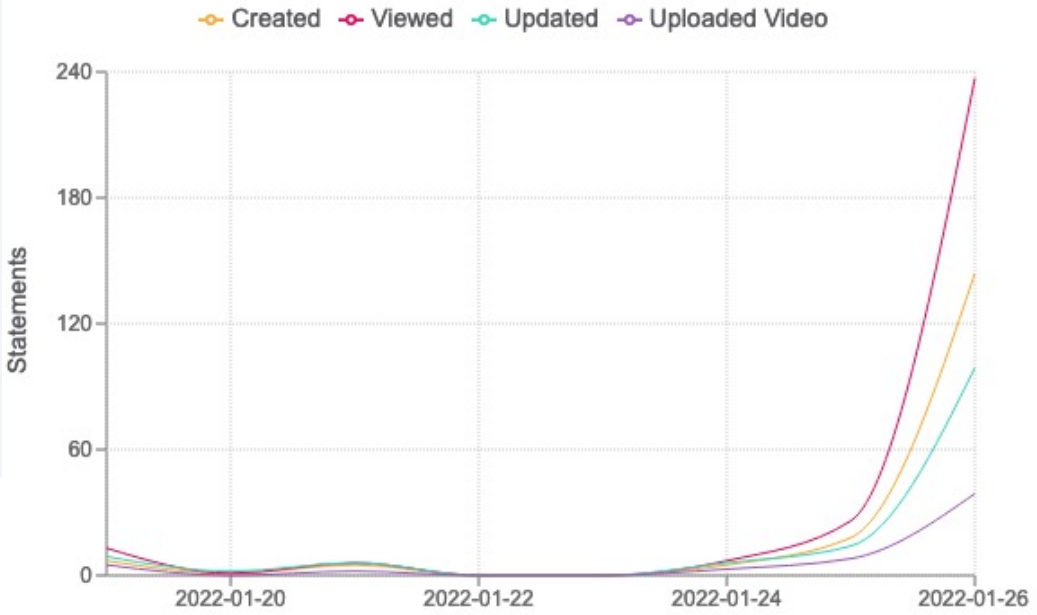
(Source: SCoRe-Docs. Screenshot: C. Richter, 2022, https://www.score-docs.de)

The Production of Data & the Operationalization of xAPI



Questions & Answers on Display





(Source: Learning Locker. Screenshot: C. Richter, 2022, https://learninglocker.score-docs.de)

Questions that Turned Cumbersome to Ask and Answer

Who has been collaborating with whom?

How did ideas emerge and manifest in different artifacts?

Are there things/ideas that were forgotten along the way?

How did people respond to and interact with each other?

In sum, xAPI is ill-suited to capture educational processes in which the proper unit of analysis is an exchange or relation rather than an individual action (cf. Baker, 2000).

Some Open Questions

How to account technological objects such as standards as evolving ‚in-betweens‘ in the digital transformation of schooling?

Are technical standards intermediaries, mediators, agents, or something else?

References

Baker, M. J. (2000). The roles of models in Artificial Intelligence and Education research: A prospective view. *International Journal of Artificial Intelligence in Education*, *11*, 122–143.

IEEE Standards Association. (n.D.). *What Are Standards?* Abgerufen am 24. Januar 2022, von https://standards.ieee.org/develop/develop-standards/overview.html

Richter, C., Raffel, L., & Allert, H. (2021). Towards a Closer Look at the Pipes and Joints of Educational Data Infrastructures: A Technogenetic Analysis of the Experience API . International Journal of Media, Technology & Lifelong Learning *Seminar.net*, *17*(2). https://doi.org/10.7577/seminar.4232

Slosser, S. (2001). *ADL and the sharable content object reference model (SCORM*). Retrieved 16. September, 2005, from http://www.nectec.or.th/courseware/pdf-documents/adl-scorm.pdf

Star, S. L., & Lampland, M. (2009). Reckoning with Standards. In M. Lampland & S. L. Star (Eds.), *Standards and their stories: How quantifying, classifying, and normalizing practices shape everyday life* (pp. 3–24). Cornell University Press.