

Trusted Timestamping via the Bitcoin Blockchain

Other Conference Item

Author(s):

Gipp, Bela

Publication date:

2019-09-13

Permanent link:

<https://doi.org/10.3929/ethz-b-000366541>

Rights / license:

[In Copyright - Non-Commercial Use Permitted](#)

Trusted Timestamping via the Bitcoin Blockchain



Prof. Dr. Bela Gipp
www.gipp.com
Bela@Gipp.com
Twitter: [@BelaGipp](https://twitter.com/BelaGipp)

Agenda

- What is trusted timestamping?
- What are blockchains? Why and how do we use them?
- Our service OriginStamp
- Q & A

Projekt Teams

Data & Knowledge Engineering Group at Uni Wuppertal



www.dke.uni-wuppertal.de

OriginStamp AG

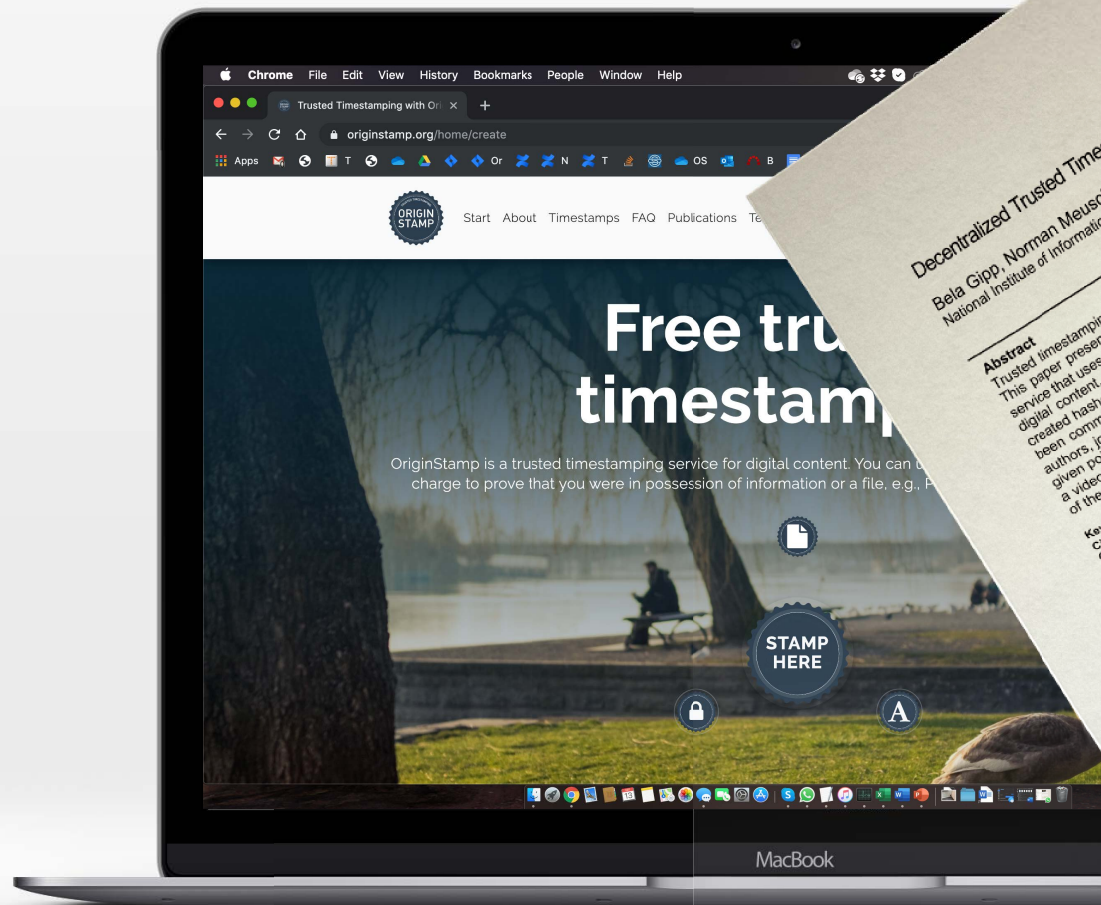
Team

We are a team that is passionate and enthusiastic about making the benefits of blockchain-based timestamping accessible to everyone.

				
Friedrich Kisters Co-Founder & CEO	Prof. Dr. Bela Gipp Co-Founder & CIO	Thomas Hepp Co-Founder & CTO	Philip Ehret Co-Founder & CMO	Christopher Gondek Co-Founder & COO

www.originstamp.com

My Motivation



Retraction Watch

Tracking retractions as a

Peer reviewer steals text for his own chemistry paper, gets sanctioned by journal

with 6 comments

A peer reviewer apparently thought portions of a manuscript he was reviewing were so good he wanted them for himself.

Substantial sections of a paper that [Junwei Di](#) reviewed appear in his own paper on a method for making tiny particles of silver to precise specifications. Di is a chemist at Soochow University in China. The journal has banned Di from submitting papers or serving as a peer reviewer "for a certain time."



This retraction has been agreed upon because the above mentioned manuscript contains substantial sections of text from a manuscript (still unpublished) that the corresponding author has reviewed for a different journal,

The paper has been cited twice, according to Thomson Scientific's Web of Knowledge.

We asked the journal's [EIC Greta Heydenrych](#) if there were any consequences for Di beyond the retraction:

“

Yes, he has been sanctioned: No submissions or peer review for a certain time.

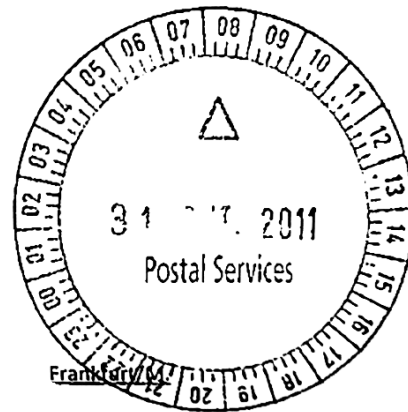
Source: <http://retractionwatch.com/2016/02/18/peer-reviewer-steals-text-for-his-own-chemistry-paper/>

Trusted Timestamping

How can you prove that a certain information existed at a certain point in time?

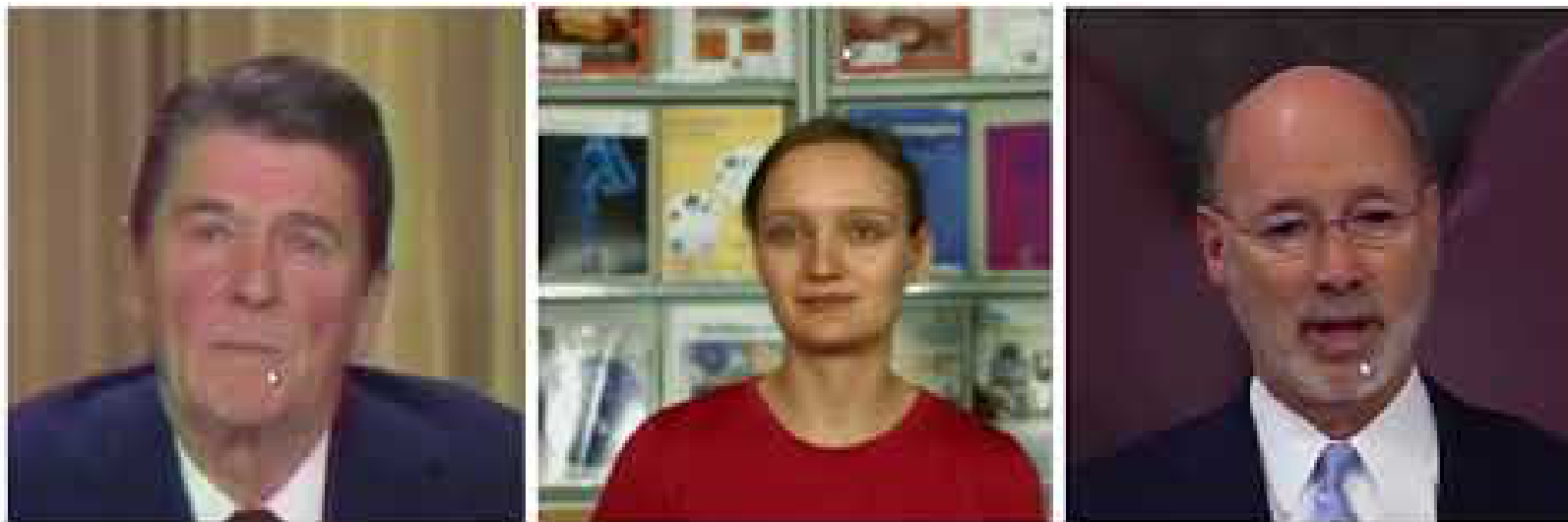
Trusted Timestamping

How is it currently done?



What is Real? What is Fake?

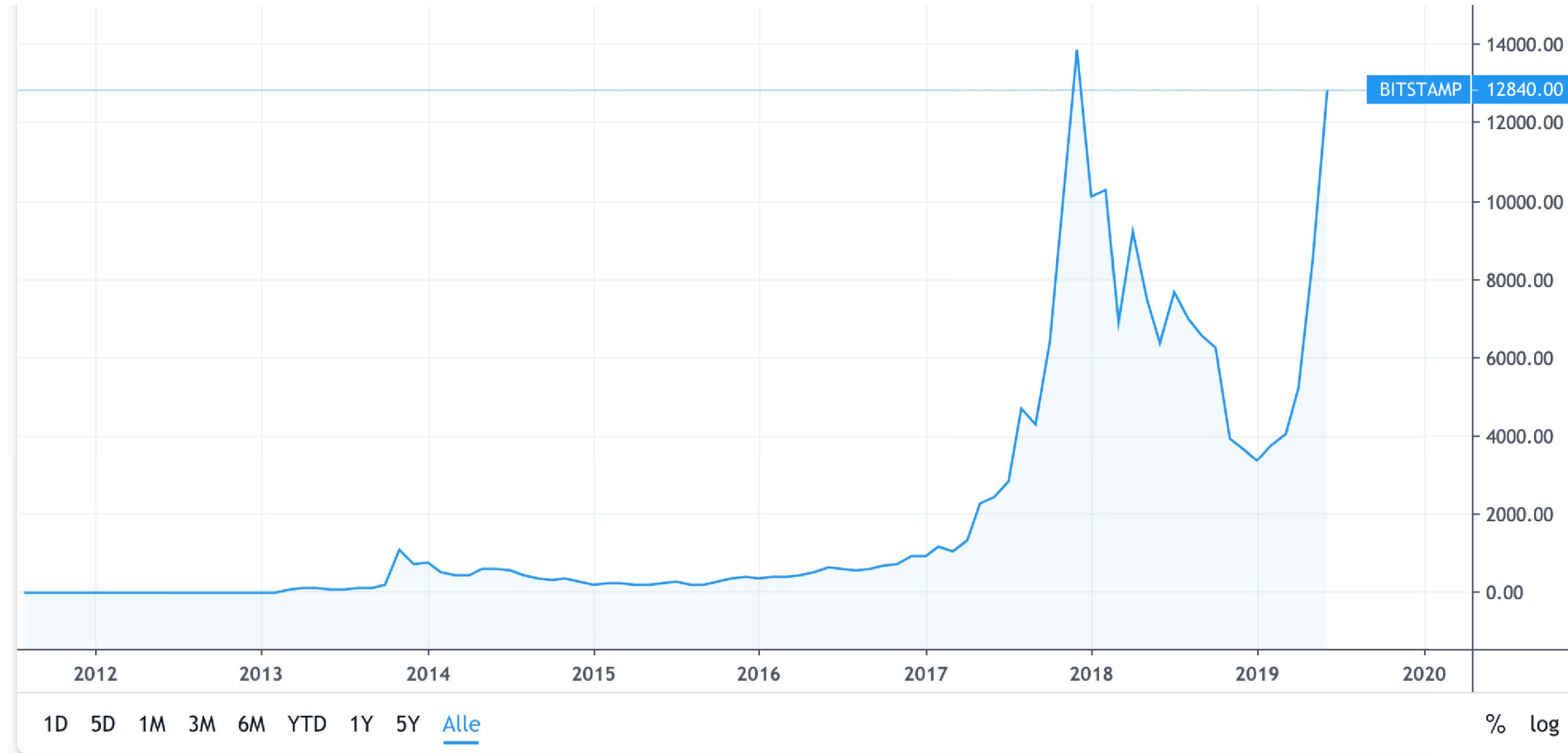
Interactive Editing



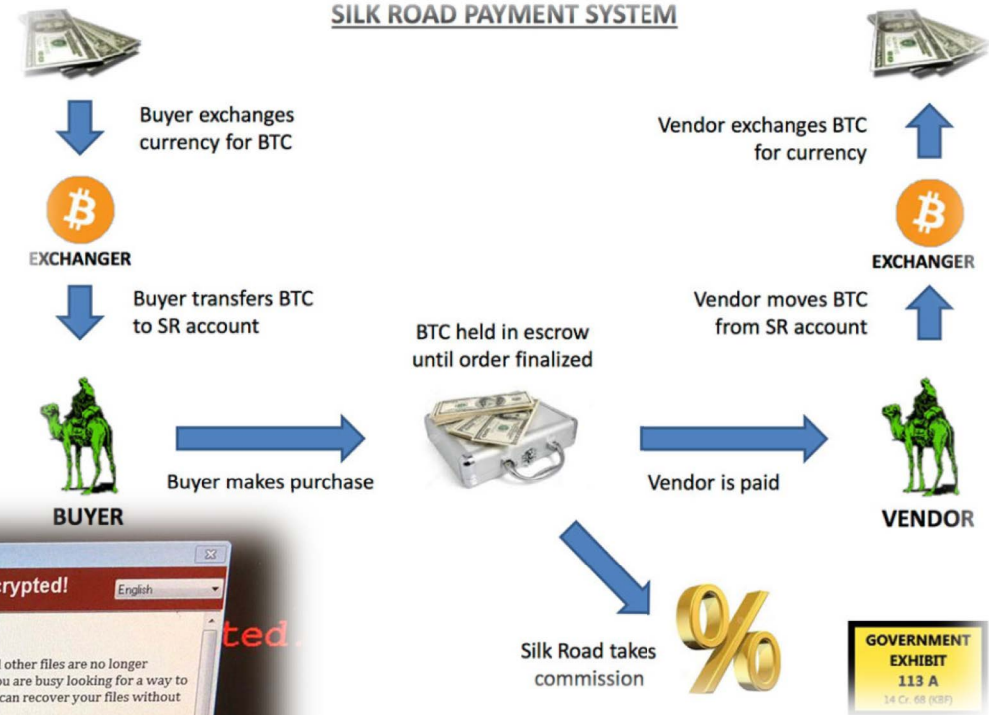
2x Speed

Source: <https://www.youtube.com/watch?v=qc5P2bvfl44>

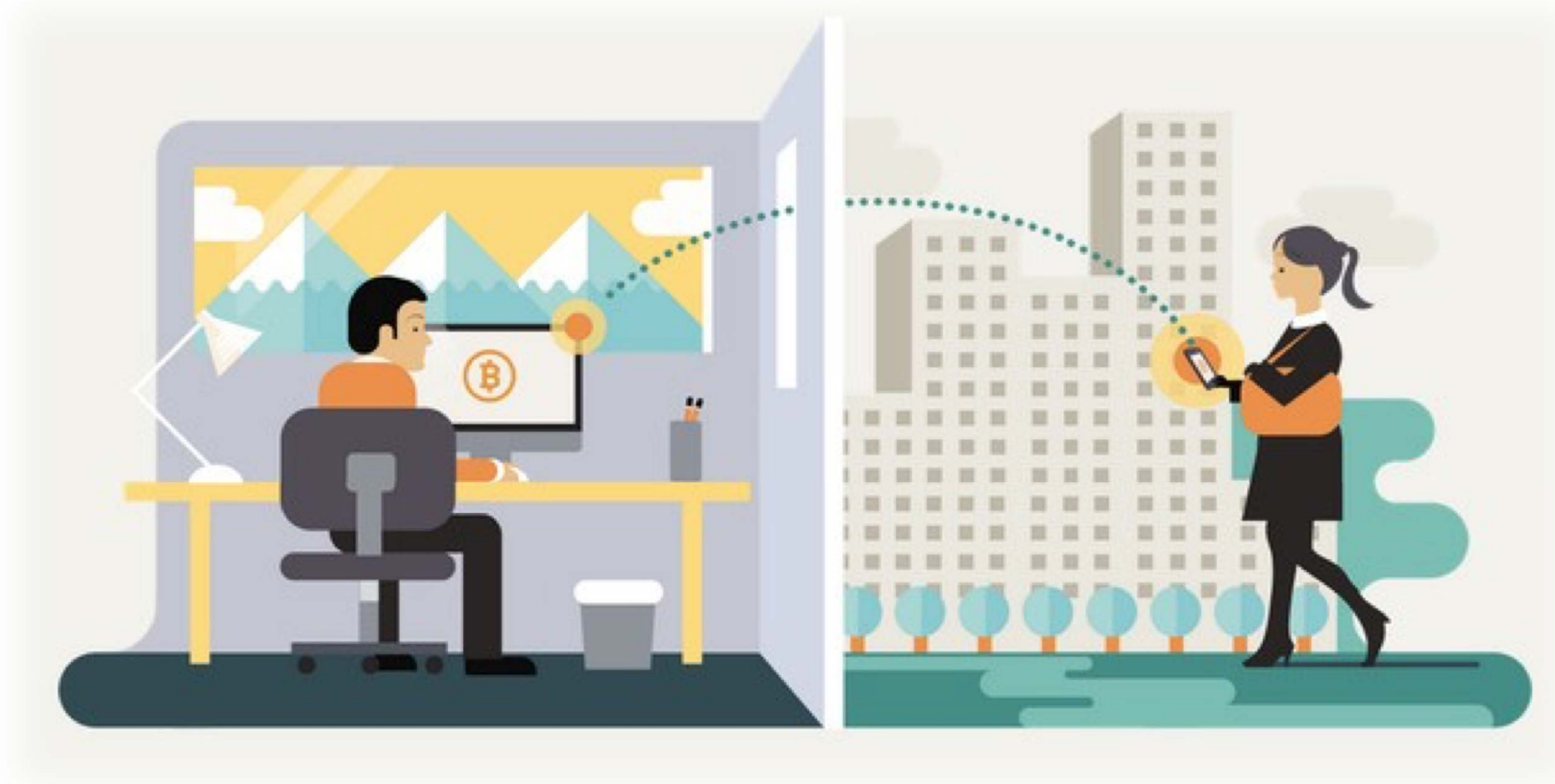
What does this chart display?



Crypto-currencies...



History



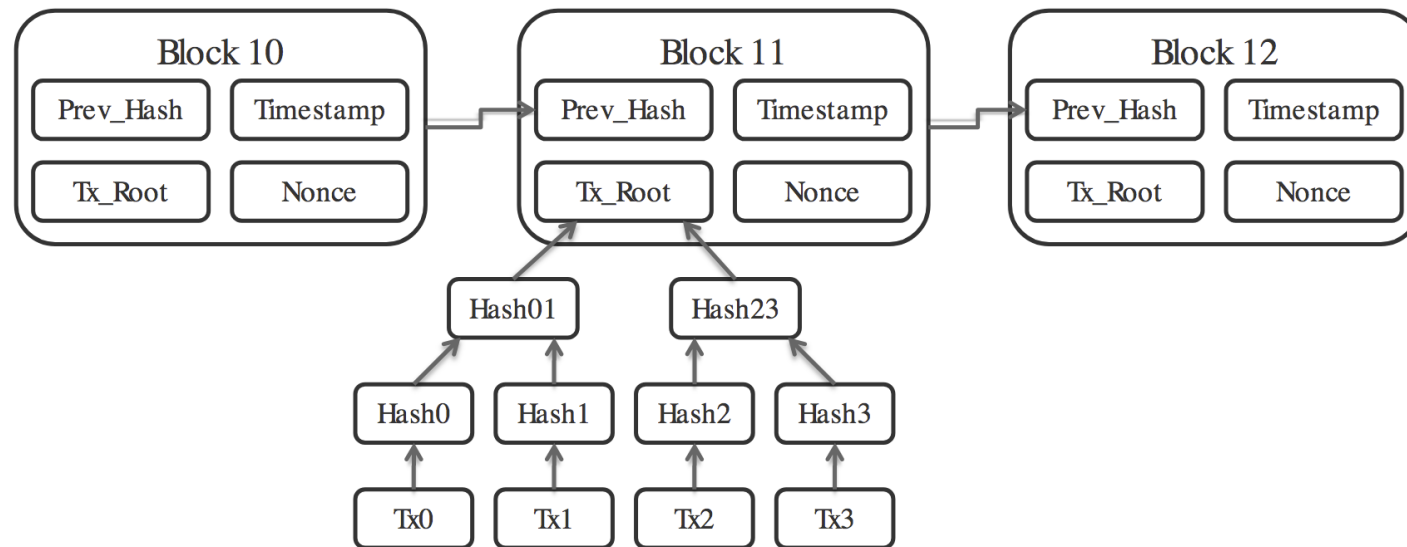
Blockchain vs. Bitcoin

“[Blockchain] is to Bitcoin, what the internet is to email. A big electronic system, on top of which you can build applications. Currency is just one.”

—Sally Davies, FT Technology Reporter

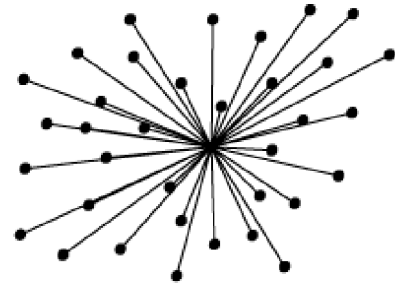
Blockchain Concept

The blockchain is a public distributed record (ledger) of all transactions that occurred in a cryptocurrency network.

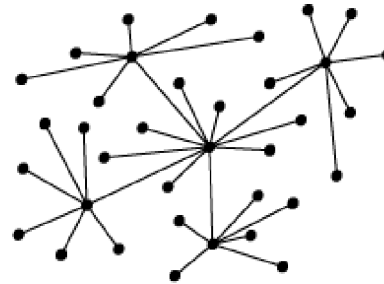


Source: Wikipedia

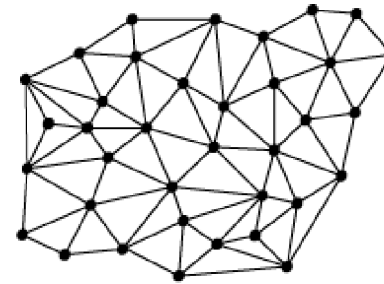
Characteristics



centralised



decentralised

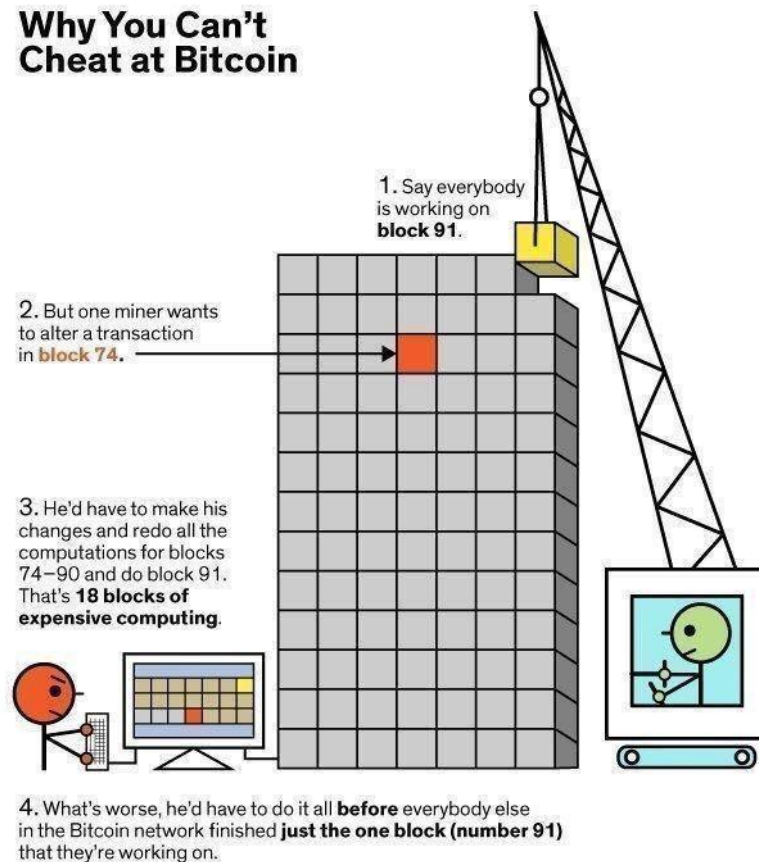


distributed

Source: Wikipedia

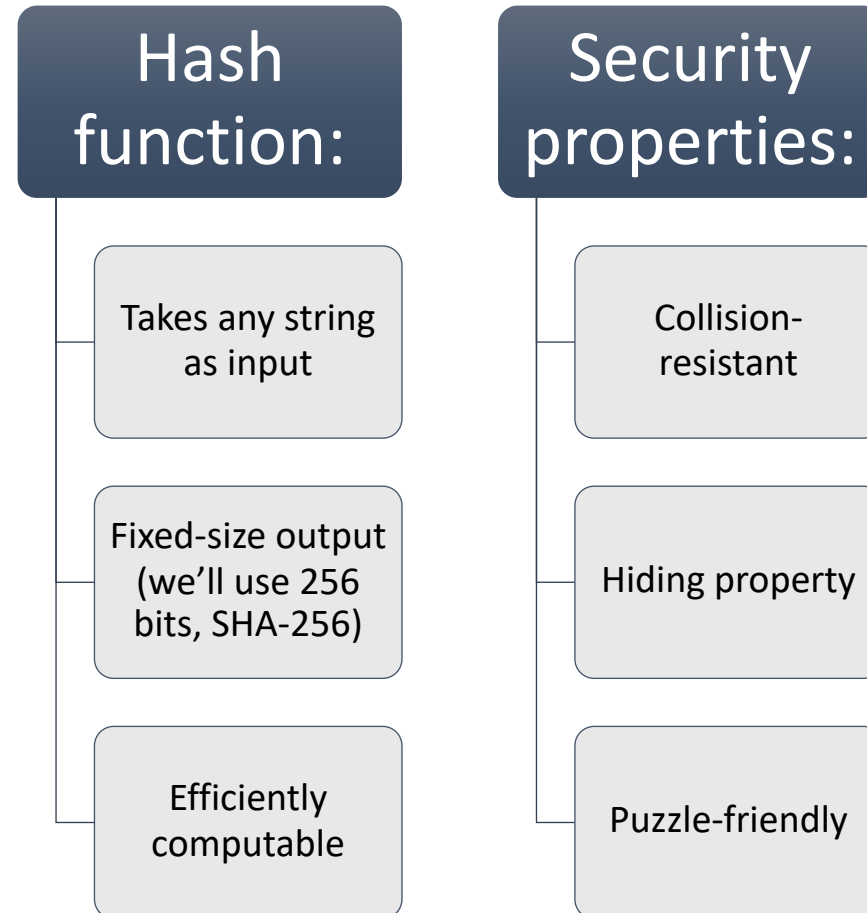
- Distributed
- Secure by design
- Collaboratively maintained
- Open source protocol
- “Cryptographic proof instead of trust” (Nakamoto, 2008) (independent of centralized authority, banks or governments) → Tamperproof using hashing.

Why are Blockchains Tamperproof?




Source: unknown

Cryptographic Hash Functions



Hashing Demo via OriginStamp.org



Start About Timestamps FAQ Publications Team

Text

Test

Notify me via email.

Anonymous

Notify me via email.

Create a unique URL for my timestamp.

Title

optional - will be public

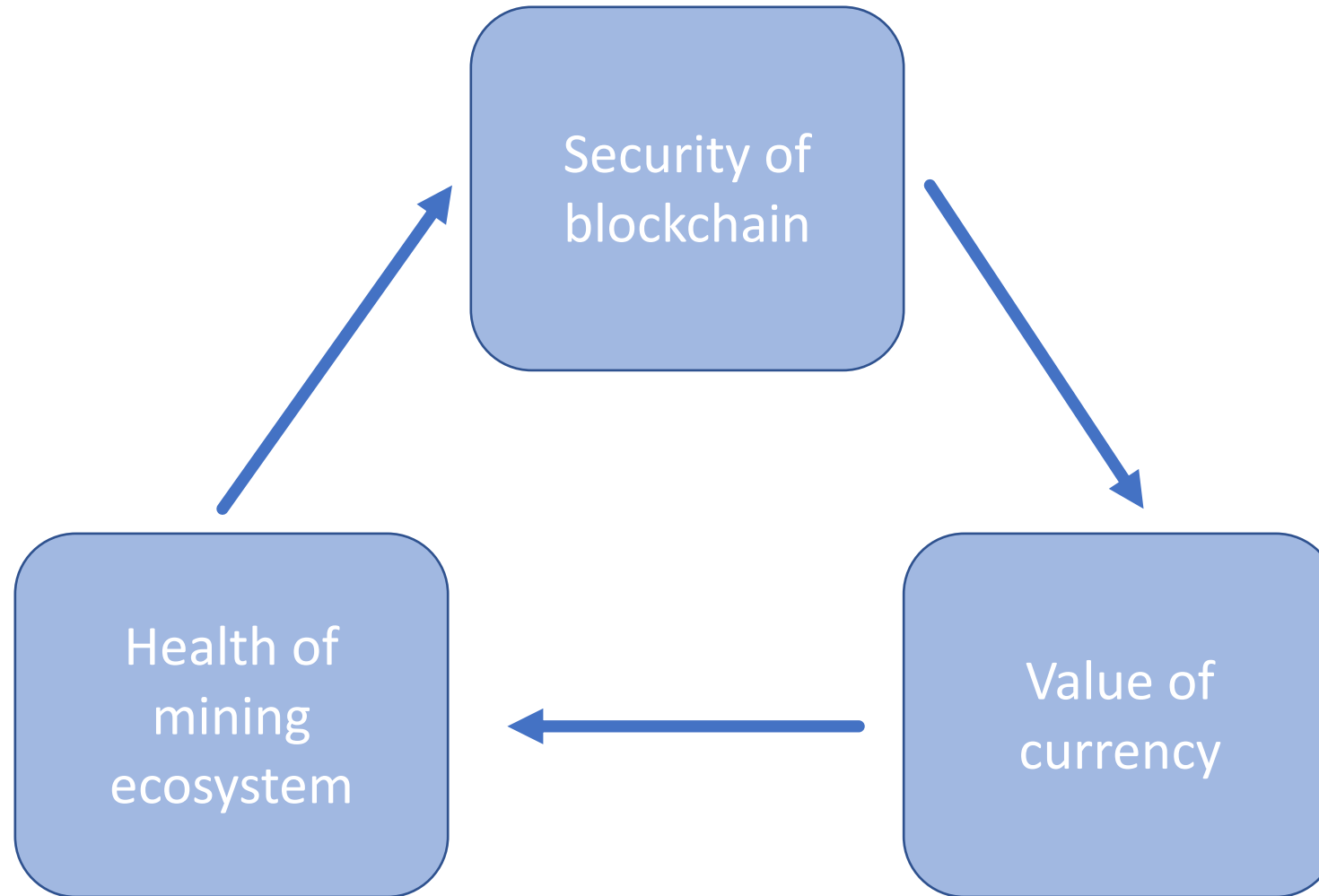
Add a title or comment to your hash. Attention: This information will be public!

Hash

532eaabd9574880dbf76b9b8cc00832c20
a6ec113d682299550d7a6e0f345e25

STAMP

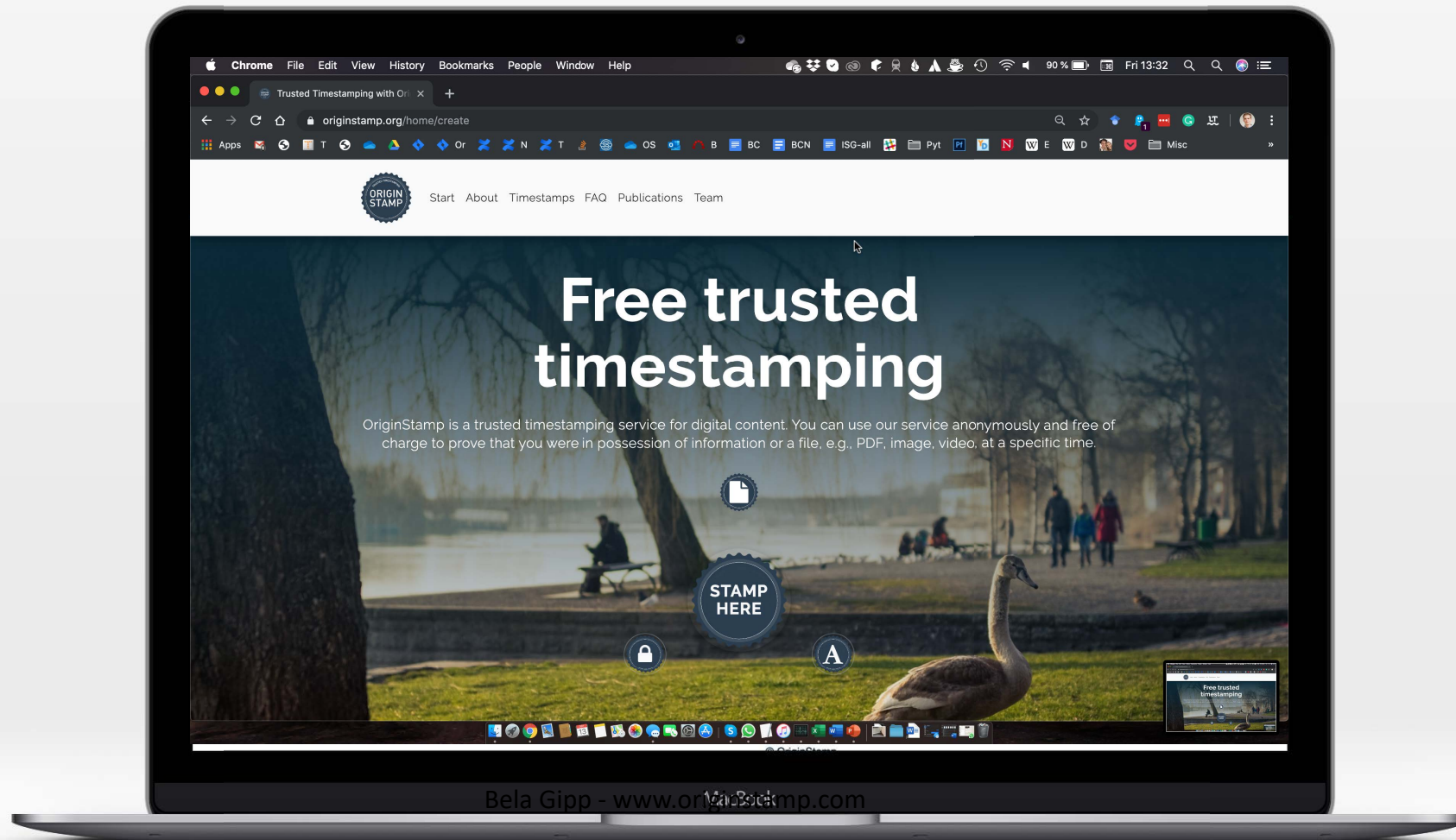
Why does Bitcoin work?



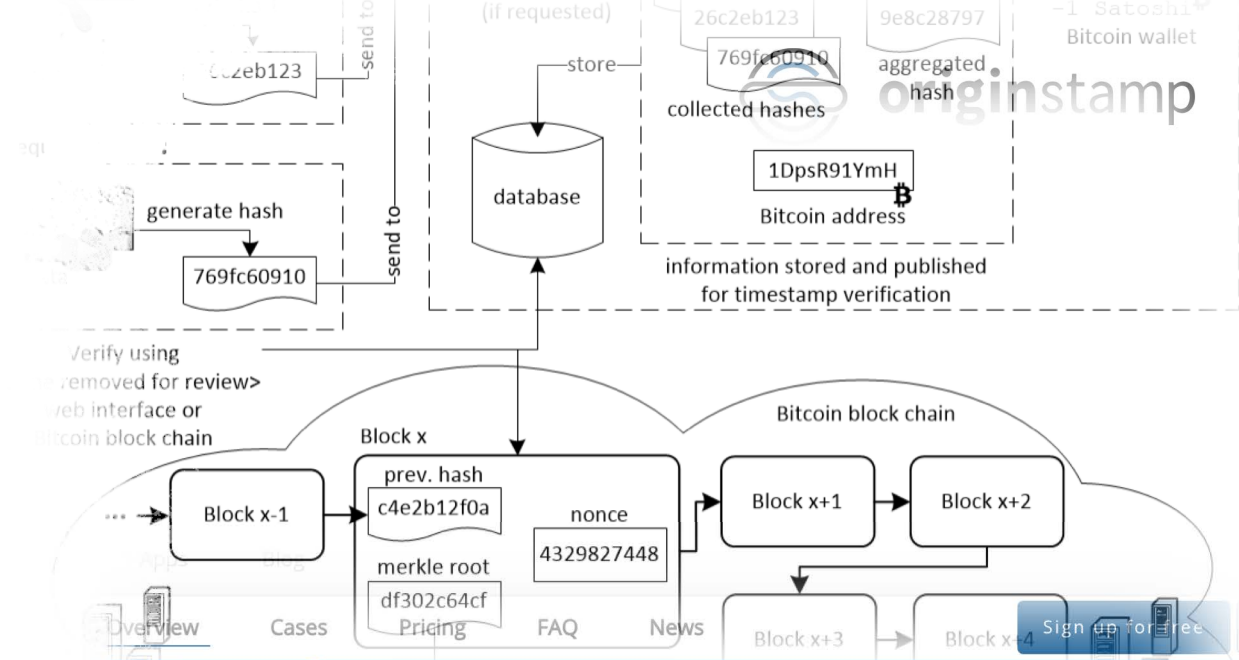
With OriginStamp, you can prove that

- 1 a data record already existed at a certain point in time
- 2 and that the record has not been manipulated since then

Our Approach using the Blockchain



Live Demo OriginStamp

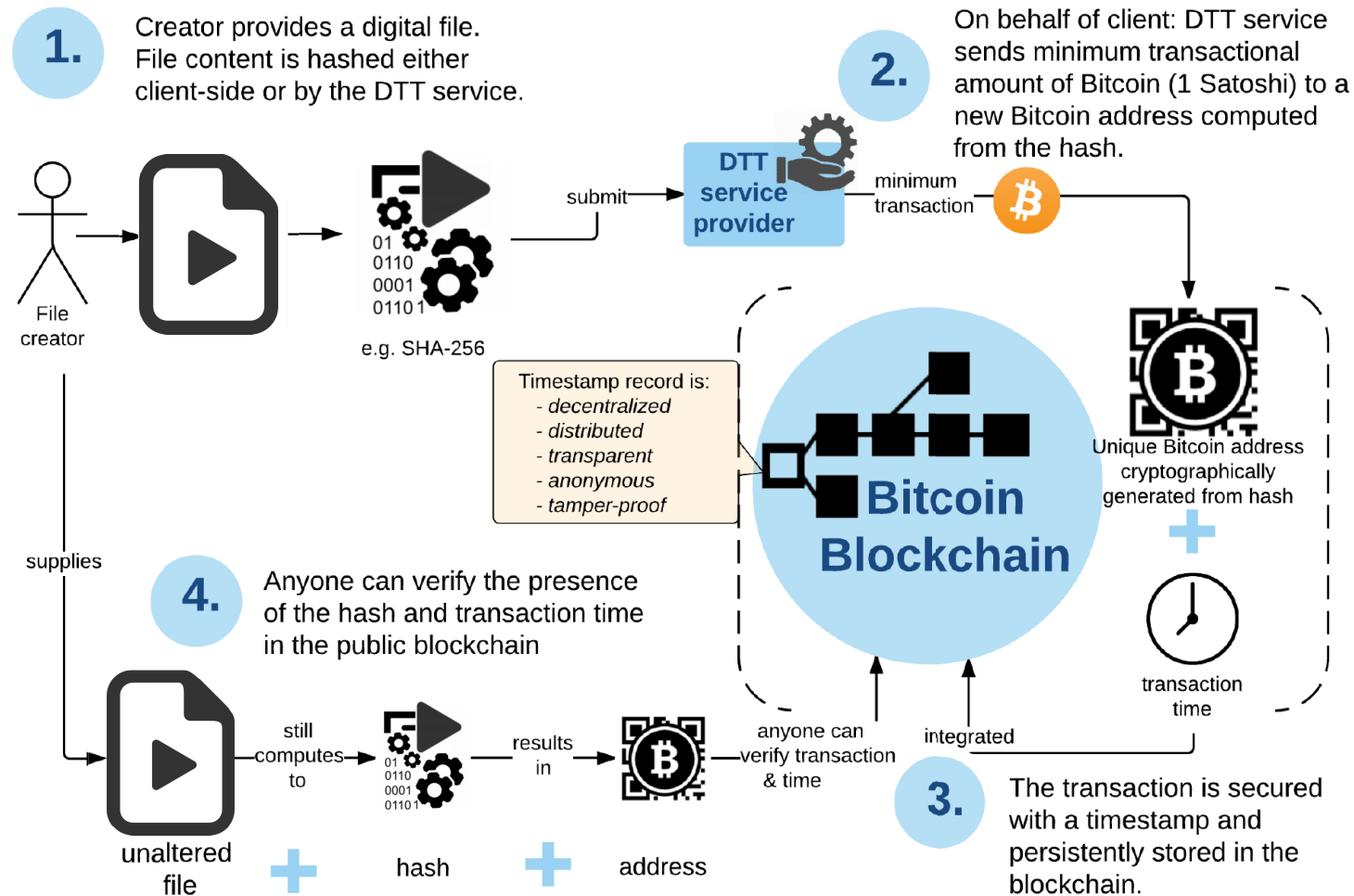


www.originstamp.org (Research)

www.originstamp.com (Commercial)



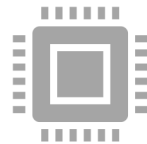
How does it work?



Selected Extensions



API



GIT (version-control system)



Content Management plugin for Wordpress



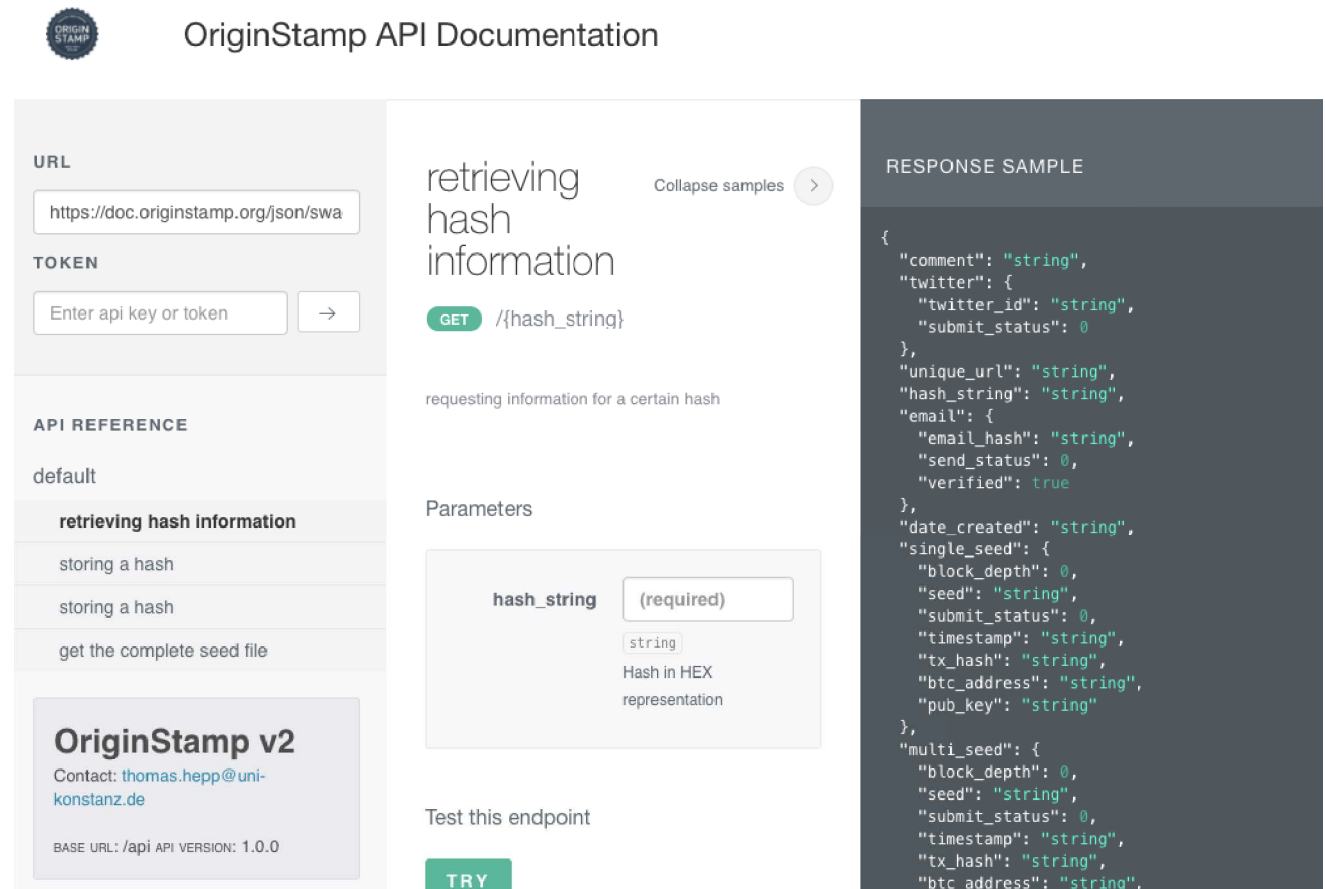
JavaScript plugin for web-based applications



Time Machine Backup (Mac OS)

Develop your own Service

- OriginStamp API
 - Create an API-Key from originstamp.org/com



The screenshot shows the OriginStamp API Documentation page for the 'retrieving hash information' endpoint. The page is divided into several sections:

- URL:** `https://doc.originstamp.org/json/swa`
- TOKEN:** A field labeled 'Enter api key or token' with a right-pointing arrow button.
- API REFERENCE:** A list of API endpoints with 'retrieving hash information' selected.
- Endpoint:** 'retrieving hash information' with a 'GET' method and a parameter `/{hash_string}`.
- Description:** 'requesting information for a certain hash'
- Parameters:** A table with one parameter: `hash_string` (required), type `string`, description 'Hash in HEX representation'.
- Response Sample:** A JSON object representing the response structure, including fields like `comment`, `twitter`, `unique_url`, `hash_string`, `email`, `date_created`, `single_seed`, and `multi_seed`.
- Footer:** 'OriginStamp v2', contact info 'thomas.hepp@uni-konstanz.de', and 'BASE URL: /api API VERSION: 1.0.0'.

Try yourself (Playstore)



OriginStamp - Trusted
Timestamping

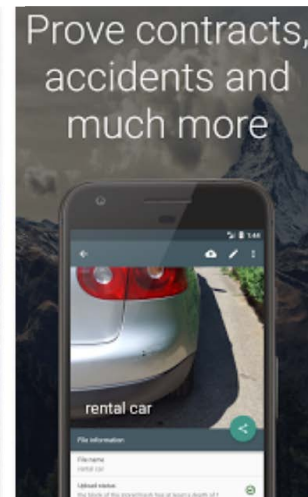
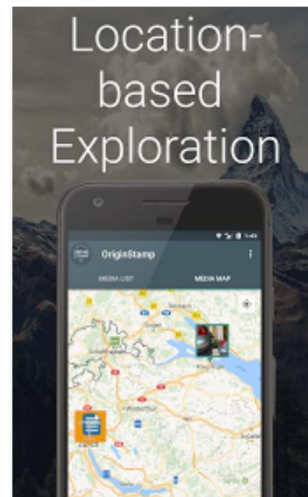
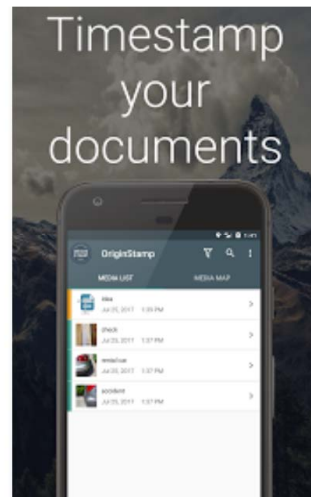
BLOC Productivity

★★★★★ 10 

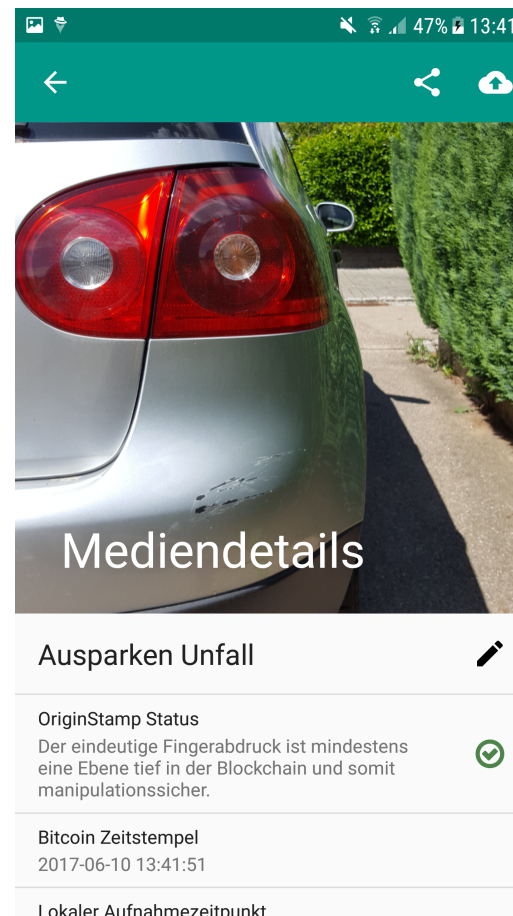
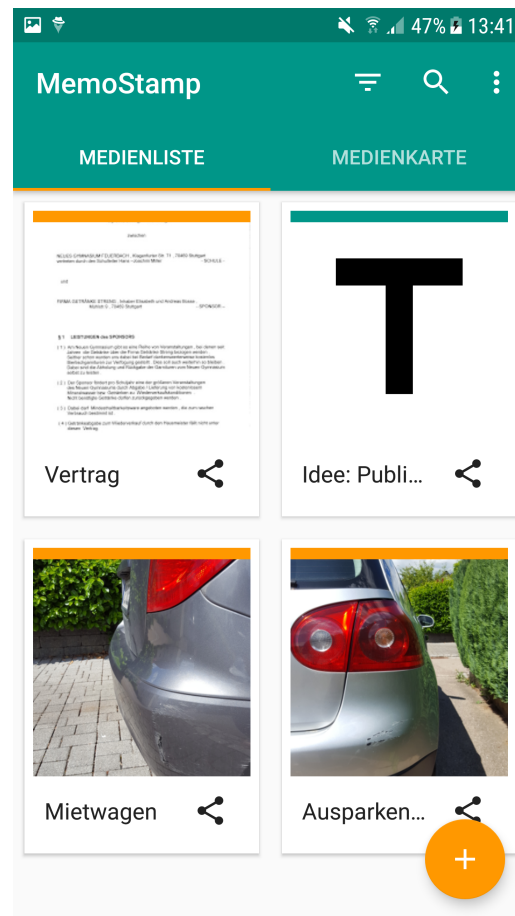
 USK: All ages

 Add to Wishlist

Install



Mobile Phone App



Other Applications

Dashboard camera (“dashcam”) recordings are not considered “tamperproof evidence”



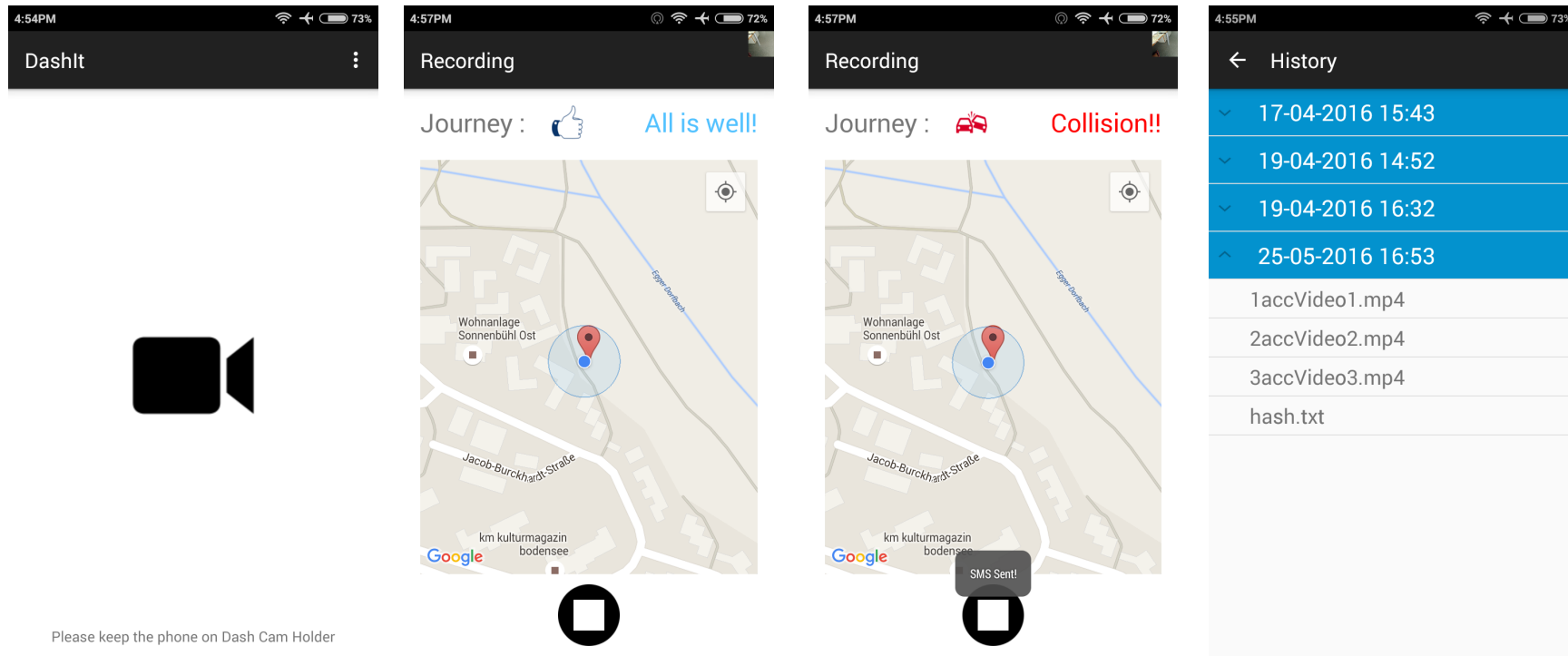
Dashcam Evidence

23.07.2018

**German Supreme Court cites our
Research in its Ruling on Dashcam
Recordings**



System: Frontend



Please keep the phone on Dash Cam Holder

Current Users or Originstamp.org

- Journalists e.g. from **theguardian** to timestamp photo and video evidence
- Researchers to timestamp research data and preprints
- Insurance
- Patent lawyers
- Several timestamps per minute – 4.000.000+ timestamps since 2012



The screenshot shows the top of a Spektrum.de article. The header includes the site name 'Spektrum.de', a search bar with 'SUCHEN', and navigation links for 'Magazine | Abo | Archiv'. Below the header is a menu with categories: 'Archäologie', 'Astronomie', 'Biologie', 'Chemie', 'Erde/Umwelt', 'Mathematik', 'Medizin', and 'Phy:'. The article title is 'Die Verkettung der Welt' under the subheading 'BLOCKCHAIN'. The author is 'Stefan Mey'. The main image is a cityscape at night with glowing lines connecting various points, representing a network or blockchain.

Spektrum.de SUCHEN

Magazine | Abo | Archiv

Archäologie | Astronomie | Biologie | Chemie | Erde/Umwelt | Mathematik | Medizin | Phy:

Startseite » Technik » Die Blockchain könnte die Weltwirtschaft revolutionieren

Hintergrund | 13.07.2016 | Drucken | Teilen

BLOCKCHAIN

Die Verkettung der Welt

Eine unscheinbare Innovation lockt Investoren in Scharen: Die Blockchain ist radikal offen, kaum zu manipulieren - und könnte bald Wirtschaft und Gesellschaft gehörig aufmischen.

von [Stefan Mey](#)



© iStock / cofotoisme (Ausschnitt)

Potential use cases in the are of digital libraries

- Preprinting services such as zenodo & arXiv?
- The Wayback Machine by Internet Archive
- Paper submission systems such as EasyChair or the Open Journal Systems (OJS)
- ...

Questions?

Bela Gipp
www.gipp.com
Bela@Gipp.com
Twitter: @BelaGipp

Try yourself:

www.originstamp.org (Research)

www.originstamp.com (Commercial)

Or the Android / iOS app from the App Store

