Software Heritage

A revolutionary infrastructure for Open Source

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June 17th, 2020
OW2Con - Paris

Software Heritage
THE GREAT LIBRARY OF SOURCE CODE

Outline

1. Knowing Open Source Software
2. The Software Heritage initiative
3. A revolutionary infrastructure
4. Zoom on selected industry use cases
5. Conclusion

Open Source is growing

Software is eating the world

THE WALL STREET JOURNAL.

Home World U.S. Politics Economy Business Tech Markets Opinion Arts

ESSAY

Why Software Is Eating The World

By Marc Andreessen

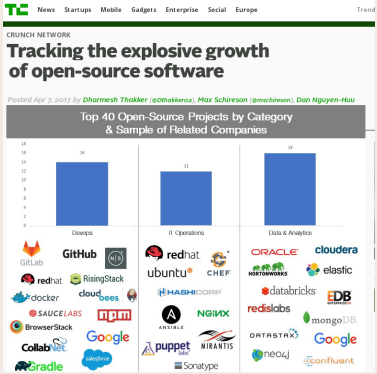
August 20, 2011

This week, Hewlett-Packard (where I am on the board) announced that it is exploring jettisoning its struggling PC business in favor of investing more heavily in software, where it sees better potential for growth. Meanwhile, Google plans to buy up the cellphone handset maker Motorola Mobility. Both moves surprised the tech world. But both moves are also in line with a trend I've observed, one that makes me optimistic about the future

Software companies outperform
or buy out traditional companies

Marc Andreesen, 2011

Open Source is eating the Software World



TC News Startups Mobile Gadgets Enterprise Social Europe Trend

CRUNCH NETWORK

Tracking the explosive growth of open-source software

Posted Apr 7, 2017 by Dharmesh Thakker (@Dthakkeroz), Max Schireson (@mschireson), Dan Nguyen-Hiu

Top 40 Open-Source Projects by Category & Sample of Related Companies

Reuse is the new rule

80% to 90% of a new application is … just reuse! (Sonatype survey, 2017)

Where does reused software come from?

Do *you* know where it comes from?

- the software you ship
- the software you use
- the software you acquire
- the software that
  - has that bug
  - has that vulnerability

KYSW: Know Your SoftWare

Like KYC in banking, KYSW is now essential all over IT

… we need a common infrastructure to track all Open Source software!

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Software Heritage

THE GREAT LIBRARY OF SOURCE CODE

Collect, preserve and share *all* software source code

Preserving our heritage, enabling better software and better science for all

Reference catalog

find and reference all software source code

Universal archive

preserve all software source code

Research infrastructure

enable analysis of all software source code

Sharing the vision

United Nations Educational, Scientific and Cultural Organization

And many more ...

www.softwareheritage.org/support/testimonials

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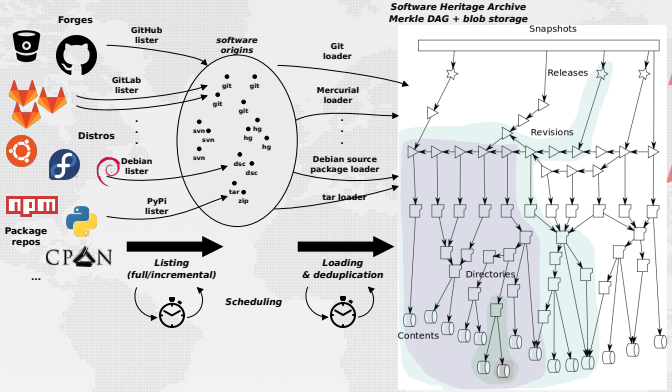
Automation, and storage



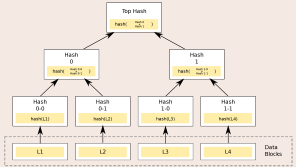
- full development history permanently archived!
- over 8 billions unique source files from 120+ million origins

A revolutionary infrastructure for software source code

The *graph* of Software Development

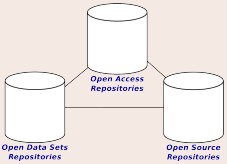
All software development with its history, in a single graph …

The *blockchain* of Software Development



… a single Merkle graph, with *intrinsic ids* for traceability

A *pillar* of Open Science



Reference archive of Research Software

Reference platform for *Big Code*

One uniform data structure enables *massive* machine learning for quality, cybersecurity, etc.

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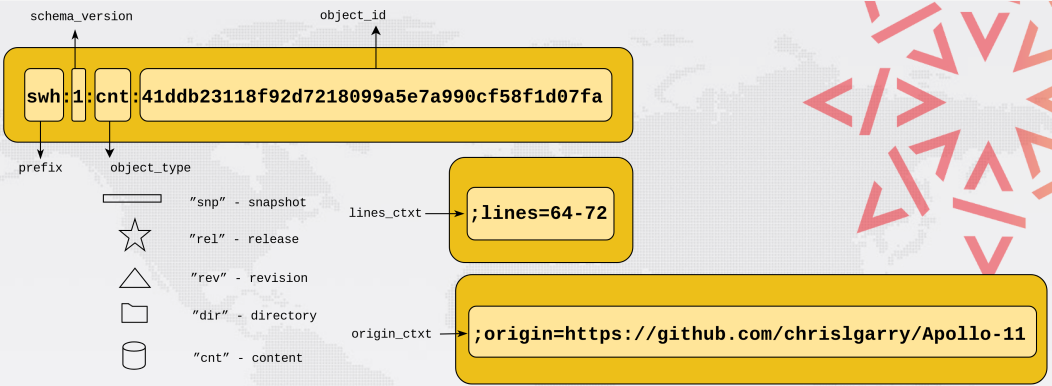
Software Heritage Identifiers (SWHID)

link to full docs



An emerging standard

- in Linux Foundation's SPDX 2.2
- IANA registered, WikiData property P6138

Examples:

- Apollo 11 AGC excerpt,
- Quake III rsqrt

Industry use cases (selection)

Open Source complete and corresponding source code distribution (Intel)

Software Heritage members can:

- archive source code in Software Heritage, distribute only the SWHID

Traceability and integrity (OIN for the *Linux System Definition*)

Software Heritage members can:

- archive source code in Software Heritage
- track it and verify its integrity using its SWHID

And much more!

- compliance (collaborations with Intel, FossId, CAST, …)
- security (ongoing collaboration, US Department of Commerce)
- supply chain management, long term archive

add your use case here

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Join the revolution!

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www.softwareheritage.org @swheritage

Library of Alexandria of code

- recover the past
- structure the future

A CERN for Software

- build better software
  - for industry
  - for society as a whole

Becoming a sponsor

https://sponsorship.softwarheritage.org