Software Heritage
Building the Universal Software Archive

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OW2con
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Software Heritage

Software is pervasive

At the heart of *our society*

- communication, entertainment
- administration, finance
- health, energy, transportation
- education, research, politics
- ...

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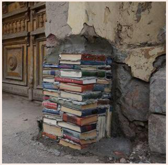
At the heart of *technology*

- house appliances ≈ 10M SLOC
- phones ≈ 20M SLOC, *cars* ≈ 100M SLOC
- Internet of things, …

Software is knowledge

Key mediator for accessing *all* information



Information is a main pillar of our modern societies.

> *Absent an ability to correctly interpret digital information, we are left with [...] "rotting bits" [...] of no value.*
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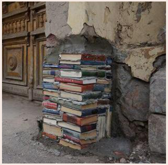

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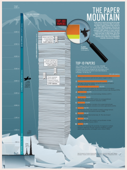
Essential component of modern scientific research

> *[. . .] the vast majority describe experimental methods or sofware that have become essential in their fields.*

Top 100 papers (Nature, October 2014)



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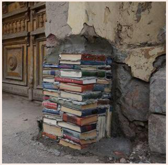

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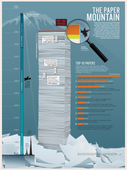

Bottom line: software embodies our *Knowledge* and *Cultural Heritage*

It *must* be *collected*, *preserved*, *referenced* and made *accessible*!

Software is fragile

like all digital information, FOSS is fragile

- inconsiderate and/or malicious code loss (e.g., Code Spaces)
- business-driven code loss (e.g., Gitorious, Google Code)
- for obsolete code: physical media decay (data rot)

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If a website disappears you go to the Internet Archive. . .

. . . where do you go if (a repository on) GitHub goes away?

Mission

Software Heritage

Collect, *organise*, *preserve* and *share all the software source code* that lies at the heart of our culture and our society.

https://www.softwareheritage.org/

The archive

Our sources

- GitHub — all public repositories as of August 2016
- Debian — daily snapshots of all suites since 2005–2015
- GNU — all releases as of August 2015
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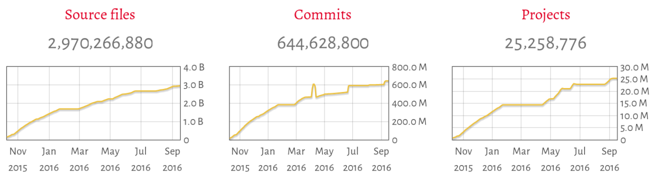

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Commits

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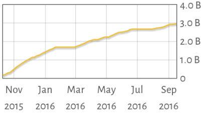

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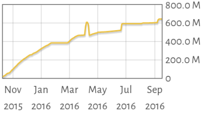

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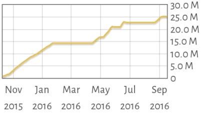

The *richest* source code archive already, … and growing daily!

The road ahead

Planned features…

- *lookup* by hashes for contents (done)
- *download*: git clone from Software Heritage
- *provenance information* for all the content
- *browsing*: wayback machine for software source code
- *full text search*: dive into the Software Heritage archive

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… and much more one could possibly imagine

all the world's software development history in a single graph!

that makes a 150TB archive / 5TB database already…

Making it happen

Inria as initiator

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INVENTEURS DU MONDE NUMÉRIQUE

- funds the *bootstrap phase* of Software Heritage
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Testimonials and early partners

ACM, Bell Labs, Creative Commons, DANS, Eclipse, Engineering, FSF, OSI, GitHub, GitLab, IEEE, Informatics Europe, Microsoft, OIN, OW2, SIF, SFC, SFLC, The Document Foundation, The Linux Foundation, ...

Going global

building an *open, multistakeholder, nonprofit* organisation

Conclusion

Software Heritage is

- a revolutionary *reference archive* of *all* software ever written
- a fantastic new tool for *research* software
- an international, open, nonprofit, *mutualized infrastructure*
- at the service of our community, at the service of society!

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Now open

`www.softwareheritage.org` — *sponsoring, partnerships*
`wiki.softwareheritage.org` — *working groups, leads*
`forge.softwareheritage.org` — *our own code*

Questions?