

Preserving our Software Heritage

Roberto Di Cosmo
Software preservation workshop

Director, Software Heritage
Inria and Université de Paris Cité

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Software Heritage

THE GREAT LIBRARY OF SOURCE CODE

- 
- 1 Software as Heritage
 - 2 Software Heritage's commitment
 - 3 Working together

Software *Source Code* is Precious Knowledge

Harold Abelson, *Structure and Interpretation of Computer Programs* (1st ed.)

1985

“Programs must be written for people to read, and only incidentally for machines to execute.”

Apollo 11 source code (excerpt)

```
P63SP0T3      CA      BIT6      # IS THE LR ANTENNA IN POSITION 1 YET
              EXTEND
              RAND    CHAN33
              EXTEND
              BZF     P63SP0T4      # BRANCH IF ANTENNA ALREADY IN POSITION 1

              CAF     CODE500      # ASTRONAUT:  PLEASE CRANK THE
              TC      BANKCALL     #              SILLY THING AROUND
              CADR    GOPERF1
              TCF     GOTOP00H     # TERMINATE
              TCF     P63SP0T3     # PROCEED   SEE IF HE'S LYING

P63SP0T4      TC      BANKCALL     # ENTER     INITIALIZE LANDING RADAR
              CADR    SETPOS1

              TC      POSTJUMP     # OFF TO SEE THE WIZARD ...
              CADR    BURNBABY
```

Quake III source code (excerpt)

```
float Q_rsqrt( float number )
{
    long i;
    float x2, y;
    const float threehalfs = 1.5F;

    x2 = number * 0.5F;
    y = number;
    i = * ( long * ) &y; // evil floating point bit level hacking
    i = 0x5f3759df - ( i >> 1 ); // what the fuck?
    y = * ( float * ) &i;
    y = y * ( threehalfs - ( x2 * y * y ) ); // 1st iteration
    // y = y * ( threehalfs - ( x2 * y * y ) ); // 2nd iteration, this
    // can be removed

    return y;
}
```

Len Shustek, Computer History Museum

2006

“Source code provides a view into the mind of the designer.”

Calling for preservation: UNESCO

Experts call for greater recognition of software source code as heritage for sustainable development

6 November 2018



UNESCO, Inria, Software Heritage invite
40 international experts meet in Paris ...

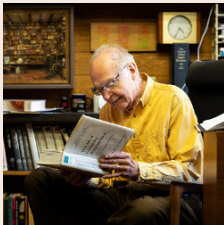
The call is published on Feb 2019

“[We call to] support efforts to gather and preserve the artifacts and narratives of the history of computing, while the earlier creators are still alive”

<https://en.unesco.org/foss/paris-call-software-source-code>



Communications of the ACM, February 2021



"Telling historical stories is the best way to teach. It's much easier to understand something if you know the threads it is connected to."

Let's Not Dumb Down the History of Computer Science


Donald E. Knuth, Len Shustek

<https://doi.org/10.1145/3442377>

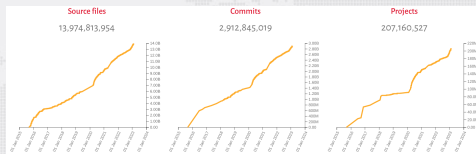
A unique opportunity

most of the creators are still here: we can talk to them!

but the clock is ticking...

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One infrastructure
open and shared



Largest archive

Technology

- transparency and FOSS
- replicas all the way down

Content (billions!)

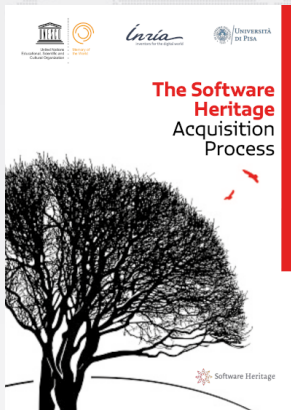
- **intrinsic identifiers**
- facts and provenance

Organization

- non-profit
- multi-stakeholder

Paris Call on Software Source Code

“[We call to] support efforts to gather and preserve the artifacts and narratives of the history of computing, while the earlier creators are still alive”




- **Detailed process** for Legacy Software
 - *curation*
 - reconstruction of the development history
 - collecting metadata
 - *archival*
 - in Software Heritage
- **Traceability** of all process phases
 - using modern version control tools

Paris Call on Software Source Code

“[We call to] support efforts to gather and preserve the artifacts **and narratives** of the history of computing, while the earlier creators are still alive”



- **Expand** the SWHAP scope to
 - documents
 - media (videos, pictures, images, etc.)
 - oral history
 - **Preserve and Present** all this material
 - **Share** process and tools (all open source!)
 - with museums, archives and all interested parties
- see this live on [the Software Stories website](#), and get [the guide](#) and [the SWHAP Days hybrid event](#), 19 and 20 october 2022

- 
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A noble and urgent mission

A great challenge

collecting, curating, preserving and telling the history of landmark software

Software Heritage's commitment

- provide archival and reference infrastructure
- humbly contribute some tools to the vast preservation landscape
 - the SWHAP source code acquisition and curation protocol
 - the Software Stories approach to interconnect historical data with source code
- help bring together the community of software preservation enthusiast

Thank you for being here, our software legacy needs you!

alone we go faster, together we go further
ancient african saying