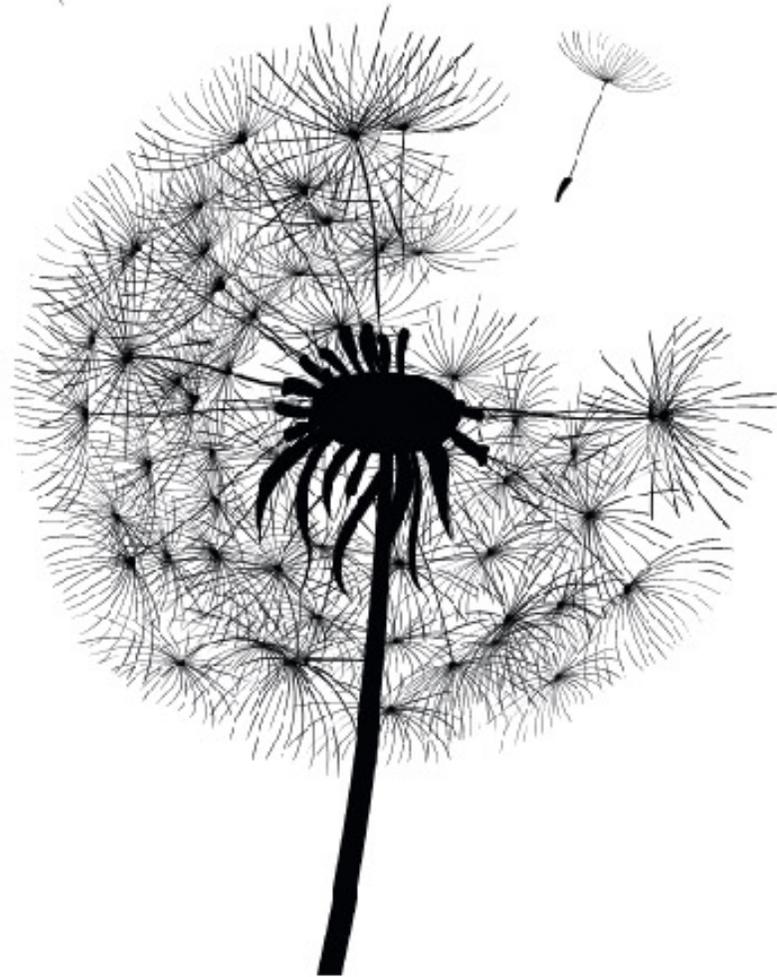


PRESERVING LANDMARK LEGACY SOFTWARE SOFTWARE HERITAGE ACQUISITION PROTOCOL (SWHAP) AND THE SOFTWARE STORIES

CHIARA BODEI - UNIVERSITY OF PISA, ITALY

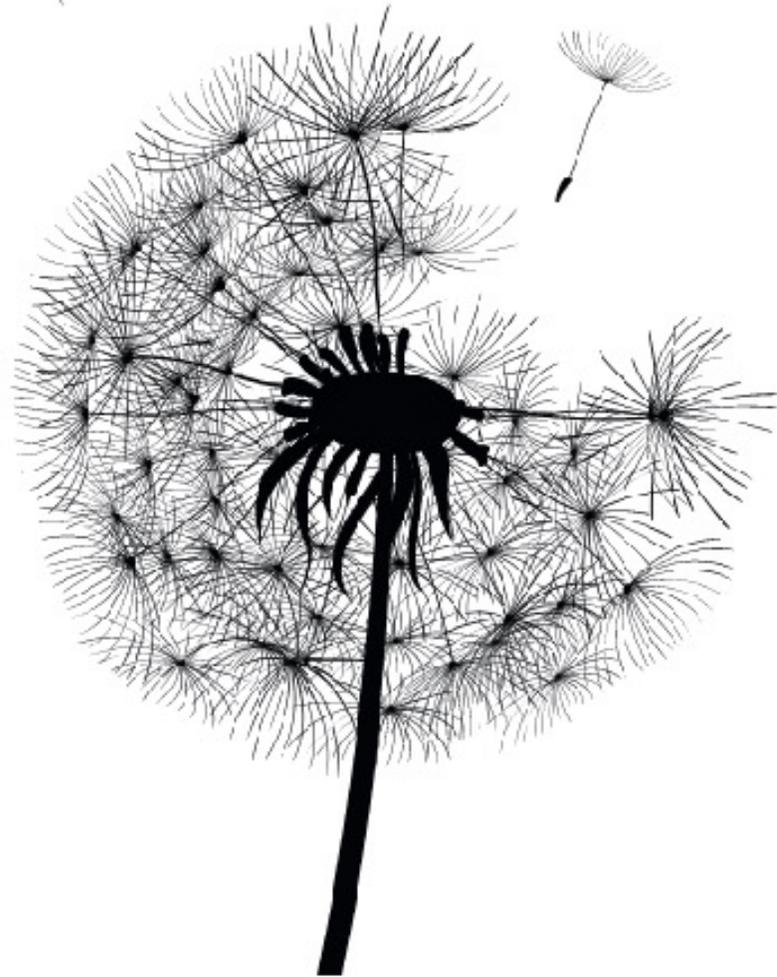
UNESCO, PARIS, NOVEMBER 30, 2021

The importance of passing on



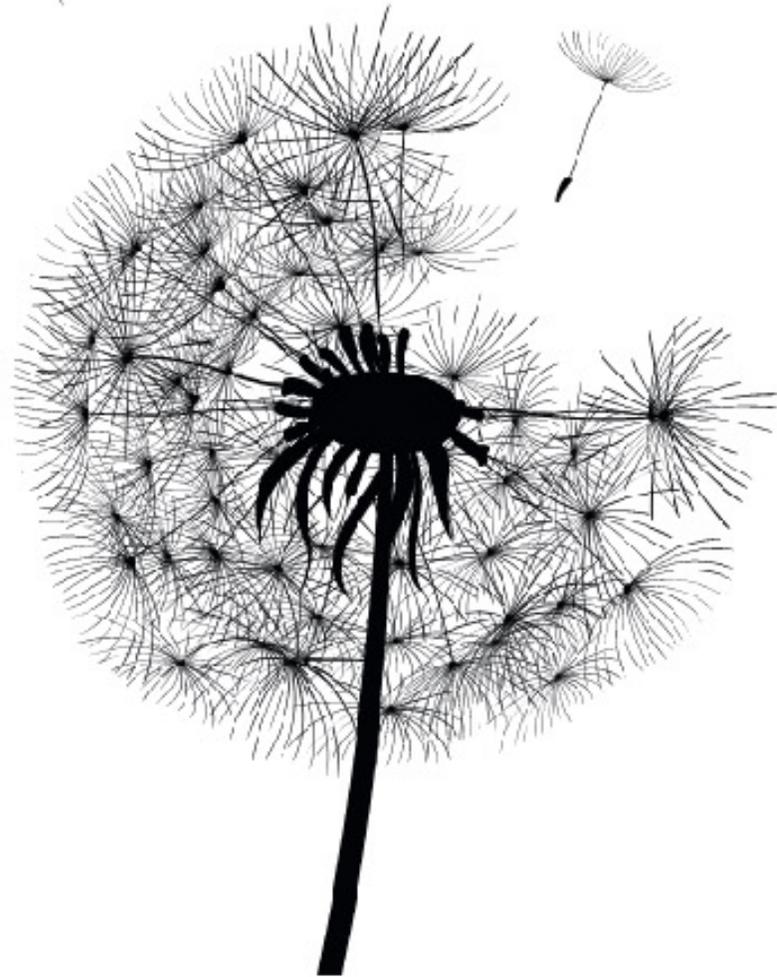
- Many **poems**, many tragedies, many books, many musical scores, many manufactures have been lost and with them the worlds they represent and an important part of our cultural heritage

The importance of passing on



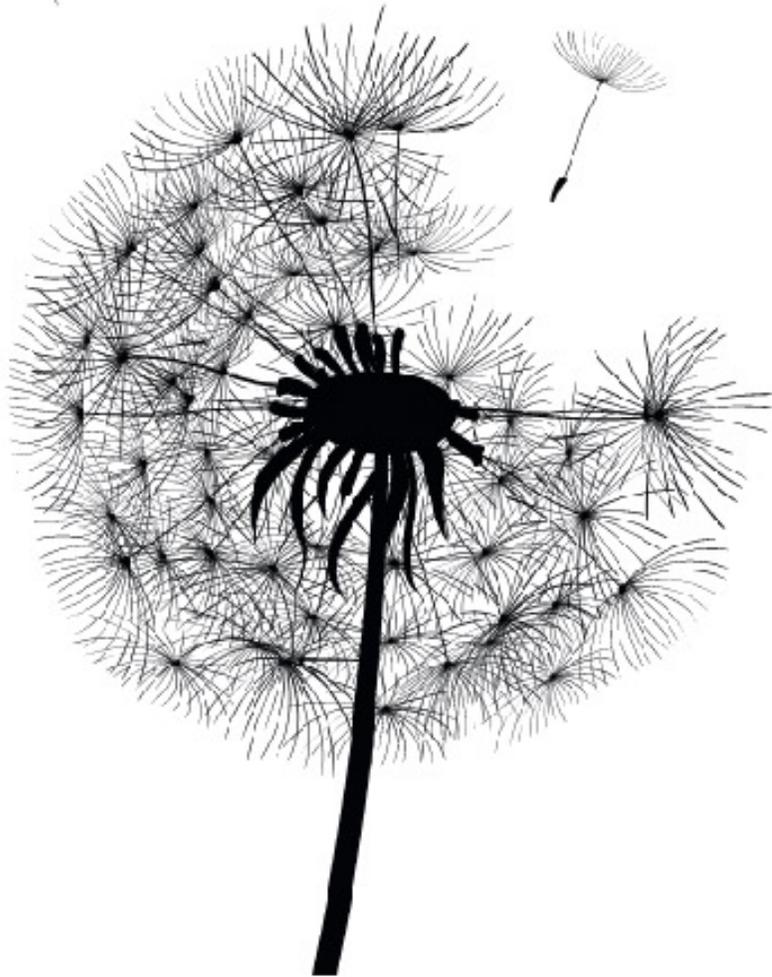
- Also the **source code of landmark legacy software** is an important part of our cultural heritage
- It sheds insights in the history of the evolution of a technology that has changed the world, and tells a story of the humans that dedicated their lives to it

The importance of passing on



- Many **poems** handed down orally have been saved once
 - they have been transcribed in **written form**, and
 - they have been **collected in wide-access infrastructures** like libraries, able to preserve and to disseminate them

The importance of passing on



- **Legacy code** has been transcribed into paper or digital stores that are however as labile as memories of human minds
- To be saved it needs to be copied in a **public, persistent archive**, whose keys are always available



PARIS CALL
SOFTWARE SOURCE CODE
AS HERITAGE FOR SUSTAINABLE DEVELOPMENT



A CALL TO PRESERVE

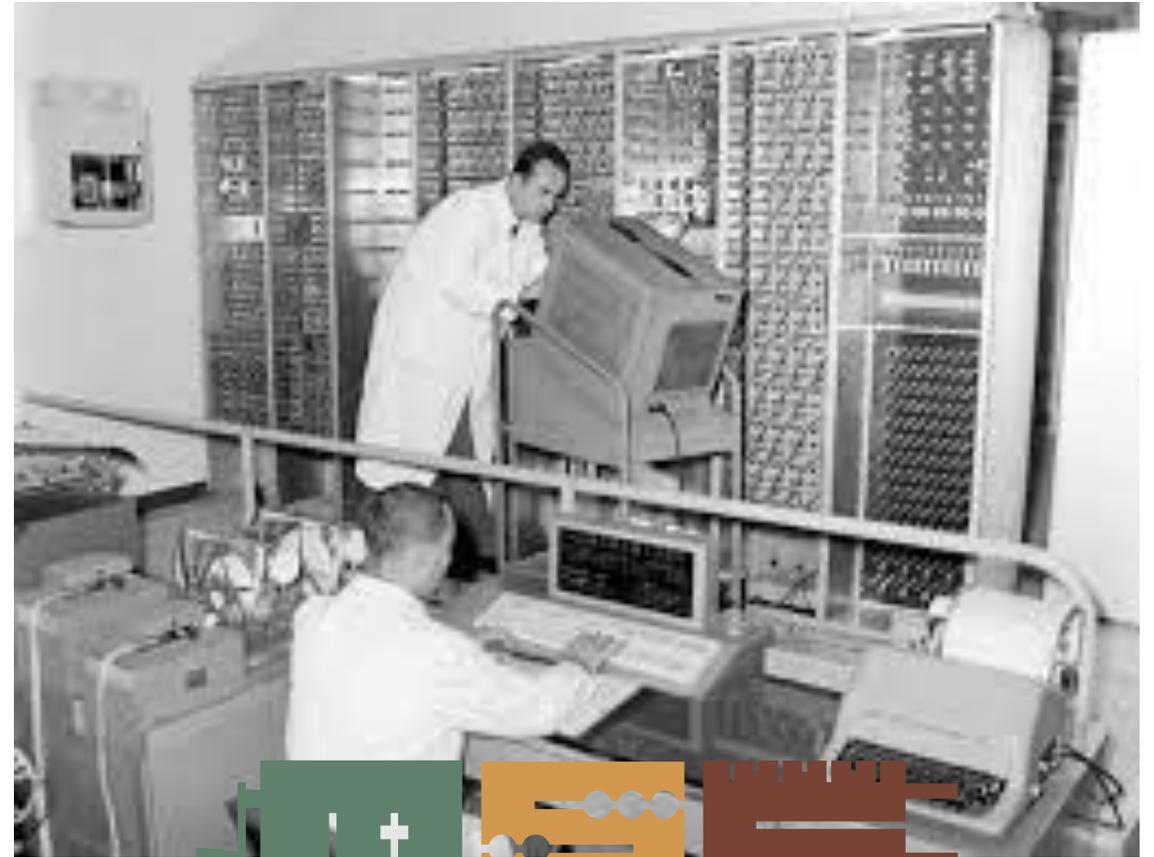
“[We call to] support efforts to gather and preserve the artifacts and narratives of the history of computing, while the earlier creators are still alive”

Paris Call, November 2018

THE KEY ROLE OF PISA IN THE ITALIAN HISTORY OF COMPUTING

- Pisa and its University have been the **cradle of Italian computer science since the 1950s**
- **1961: CEP (Calcolatrice Elettronica Pisana), the first scientific computer built in Italy**
- **1969: the first Italian degree course in Computer Science**
- Pisa University hosts a **Museum of Computing Machinery**

In 2019, the University of Pisa decided to answer this call!



Museo degli Strumenti per il Calcolo

The Software Heritage Acquisition Process



JOINING FORCES WITH UNESCO AND SOFTWARE HERITAGE

- **June 2019:** Joint task force University of Pisa, Software Heritage and UNESCO
 - Mission: design a process to properly rescue, curate and archive landmark legacy source code
 - Tech team: Laura Bussi, Carlo Montangero, Guido Scatena and Roberto Di Cosmo
- **October 2019:**
 - On the 50th anniversary of the creation of the **first Italian degree course in Computer Science**
 - Unveiling of the Software Heritage Acquisition Process (**SWHAP**)

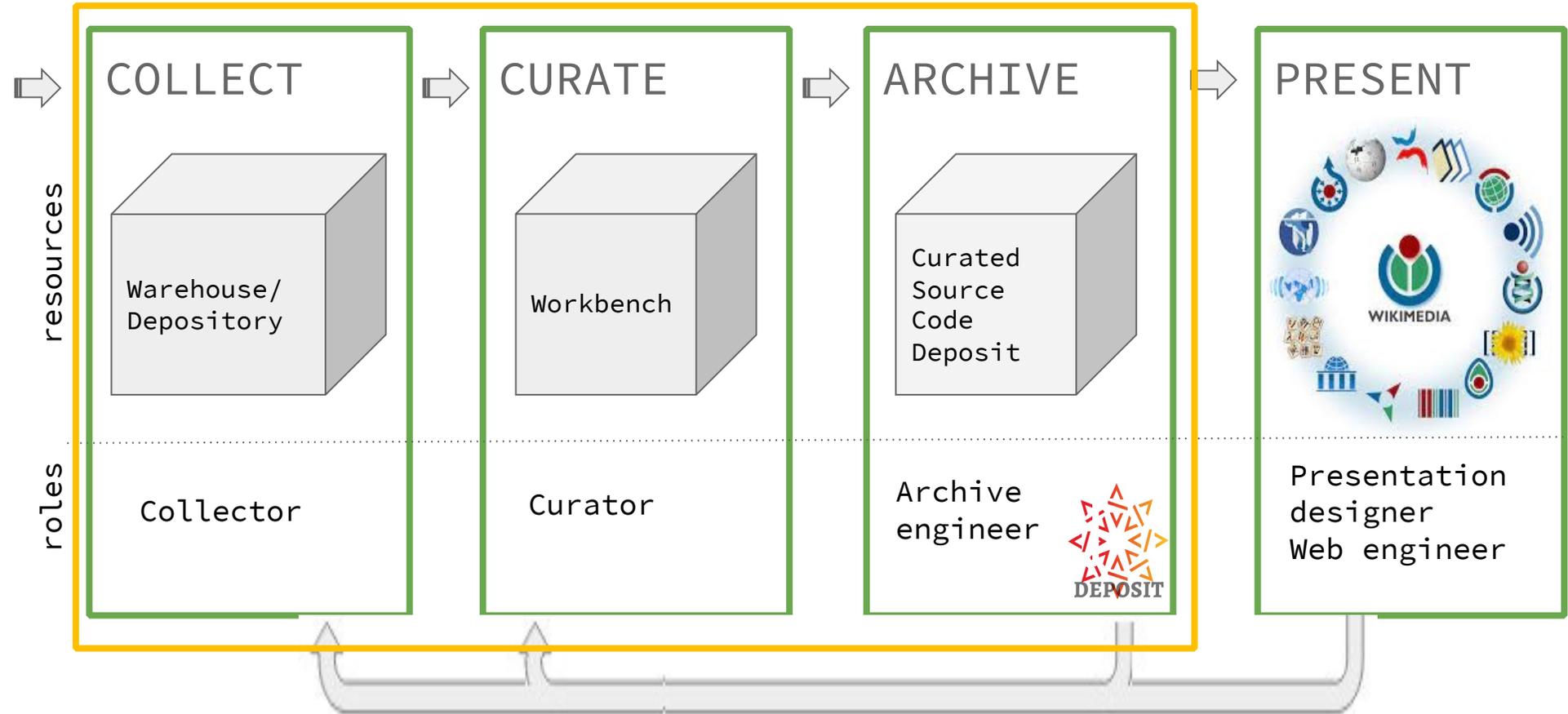
SWHAP FOR LEGACY SOFTWARE

SoftWare Heritage Acquisition Process (SWHAP)

- to collect and preserve **software of historical, scientific and cultural relevance**
- detailed, **concrete**, actionable **guidelines** to rescue, curate and illustrate legacy source code: a model for future computer historians
- By-product: **validation** of the process on several landmark legacy software developed over **fourty years in Pisa**

</ START YOUR CURATION JOURNEY TODAY! />

SWHAP: A BIRD'S EYE VIEW



VALIDATION

ON SOURCE CODE OF SEVERAL DECADES



1961

First Italian Computer
CEP in Pisa



...

...

1968
SOFTI



1972-77
TAUmus



...

1994-97
CMM



...

TAUMUS (IEI, CNUCE PISA)



- **Purpose of the code:** digital music: control of the TAU2 music synthesizer
- **Size:** 400 lines
- **Support:** paper printouts, handwritten
- **Acquisition mode:** in response to a special call
- **Target machine:** IBM 360/370
- **Programming languages:** FORTRAN 77, Command language
- **Original versioning system:** 2 versions, no VS

TAUMUS (IEI, CNUCE PISA)



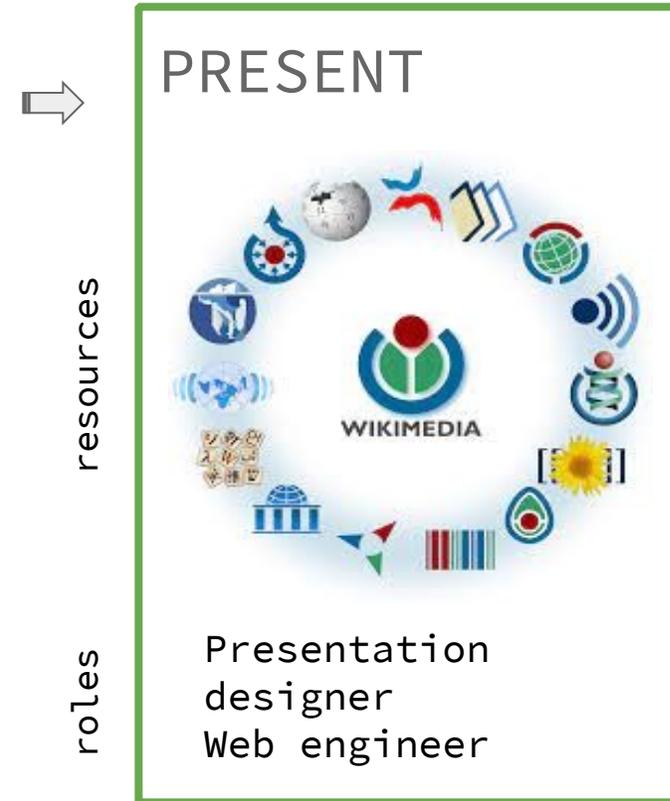
It contributed to one of the first experiments with computer music, long before Spotify

But stories like these deserve to be told and listened

SEE MORE IN A WHILE

WHAT IS LEFT: PRESENT

- *Collect:* the ancillary artifacts relevant for the history of a software project (images, videos, documents, etc.)
- *Preserve:*
 - Wikimedia, Open Access repositories, etc.
- *Share:*
 - Turn all this into **lively stories**



2021: THE SOFTWARE STORIES PROJECT

- Continuing the collaboration:
Software Heritage, UNESCO, University of Pisa,... and Data Current

You'll see a **short demo** in a few minutes



CONCLUSIONS

- **Legacy source code** is an important trace of the human efforts behind the digital revolution: it **must be preserved!**
- **SWHAP** provides concrete and detailed guidelines
- **Software Stories** will make it possible to create lively virtual exhibition
- We **call** on all other Universities and Research Institutions, and more generally, **all stakeholders** that have legacy code, **to adopt SWHAP**, and **join forces in rescuing our software heritage**

Join our team!