Running SWHAP: the CMM and TAUMus case studies

TAUmus : why is it so interesting?

TAUmus : why is it so interesting?

- Developed in Pisa: fits well the SWHAP@Pisa project

TAUmus : why is it so interesting?

- Developed in Pisa: fits well the SWHAP@Pisa project
- Dedicated (and still existing) hardware

TAUmus : why is it so interesting?

- Developed in Pisa: fits well the SWHAP@Pisa project
- Dedicated (and still existing) hardware
- A pioneeristic work

TAUmus : why is it so interesting?

- Developed in Pisa: fits well the SWHAP@Pisa project
- Dedicated (and still existing) hardware
- A pioneeristic work
- Tons of related material (thanks to Leonello Tarabella)

Home art nowadays

An overview of Grossi's work

- Born in 1917 in Venice
- 1965: professor for the first electronic music course in Italy
- 1967: starts exploring computer music (first Olivetti, then CNUCE)
- 1970: first experiment on musical telematics
- 1975: deployment of TAU2/TAUmus system
- 1985: introduces the concept of Home Art

An overview of Grossi's work

- Born in 1917 in Venice
- 1965: professor for the first electronic music course in Italy
- 1967: starts exploring computer music (first Olivetti, then CNUCE)
- 1970: first experiment on musical telematics
- 1975: deployment of TAU2/TAUmus system
- 1985: introduces the concept of Home Art
- More info: https://www.pietrogrossi.org

The heritage of CMM

The heritage of CMM

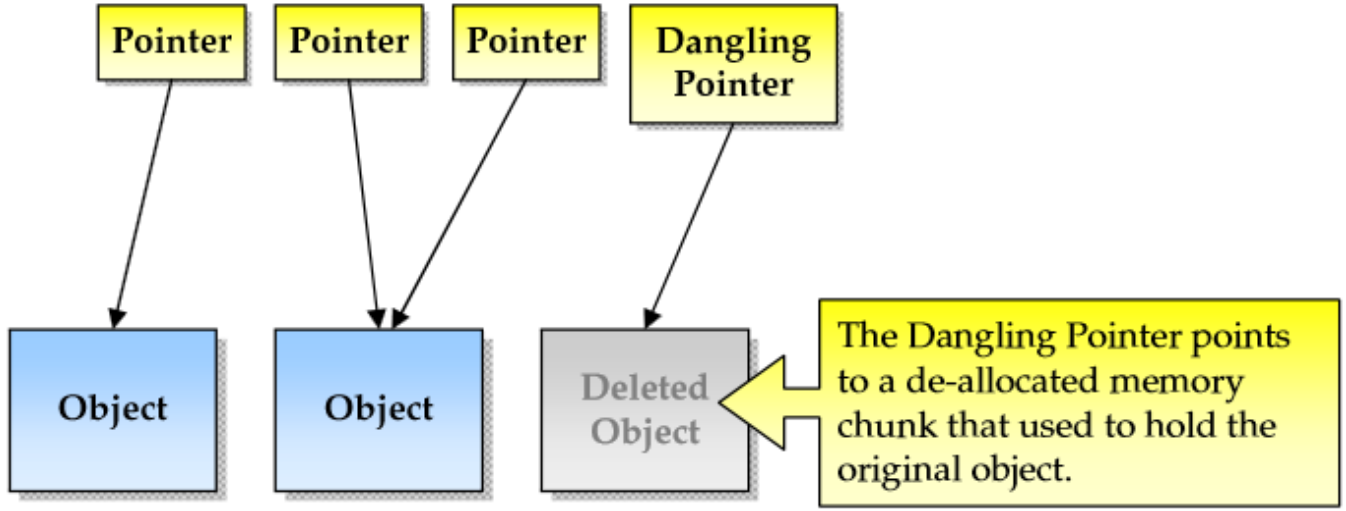
- CMM: Customisable Memory Manager, what for?

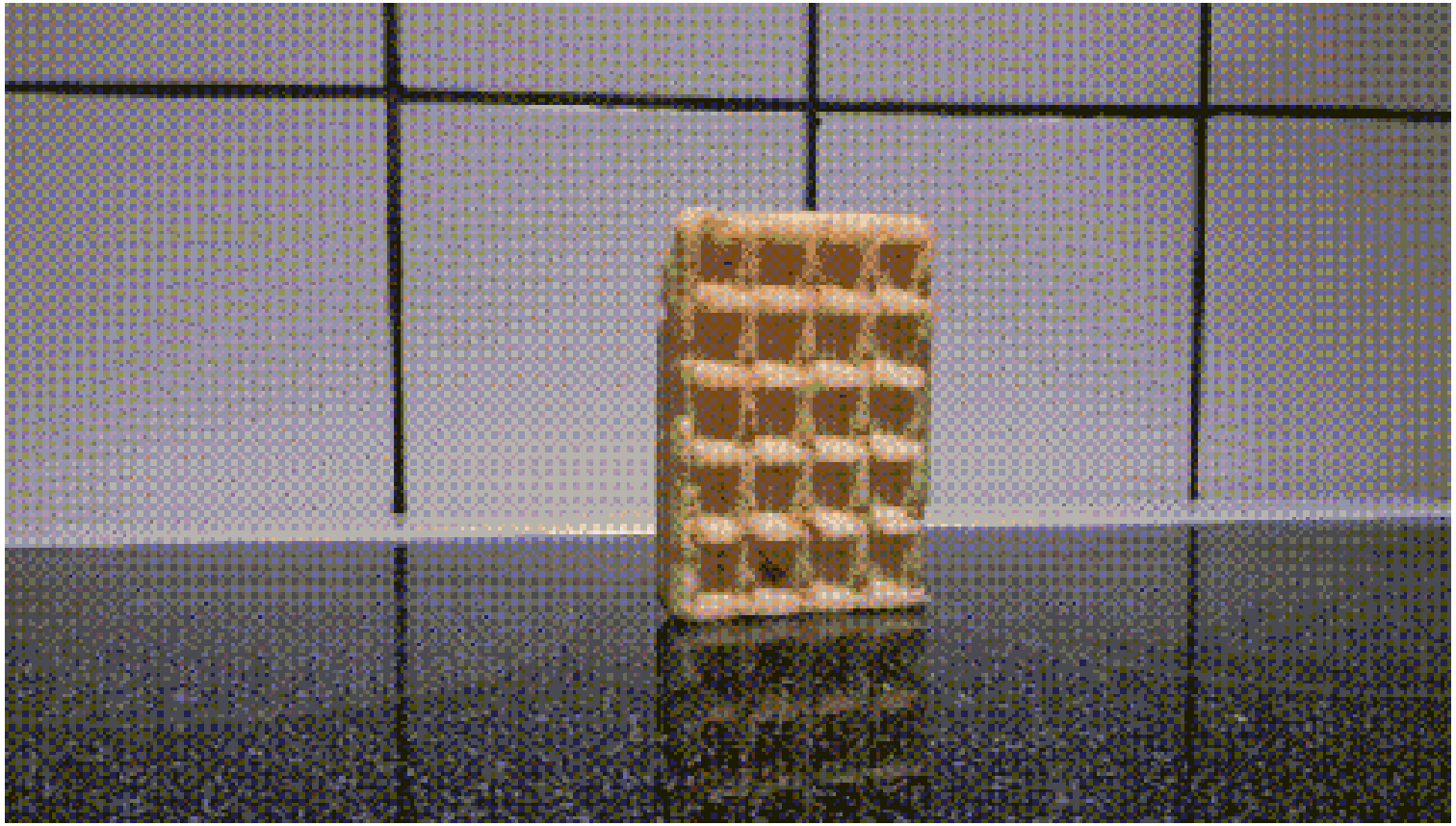
The heritage of CMM

- CMM: Customisable Memory Manager, what for?
- Managing memory: a hard task for a programmer!

The heritage of CMM

- CMM: Customisable Memory Manager, what for?
- Managing memory: a hard task for a programmer!





The heritage of CMM

- CMM: Customisable Memory Manager, what for?
- Managing memory: a hard task for a programmer!
- CMM automatise the process of managing memory

The heritage of CMM

- CMM: Customisable Memory Manager, what for?
- Managing memory: a hard task for a programmer!
- CMM automatise the process of managing memory
- Inspired the Java garbage collector

The heritage of CMM

- CMM: Customisable Memory Manager, what for?
- Managing memory: a hard task for a programmer!
- CMM automatise the process of managing memory
- Inspired the Java garbage collector

The heritage of CMM

- CMM: Customisable Memory Manager, what for?
- Managing memory: a hard task for a programmer!
- CMM automatise the process of managing memory
- Inspired the Java garbage collector

The heritage of CMM

- CMM: Customisable Memory Manager, what for?
- Managing memory: a hard task for a programmer!
- CMM automatise the process of managing memory
- Inspired the Java garbage collector
- Developed at the University of Pisa by Prof. Giuseppe Attardi

Tarabella's fonds of TAUmus

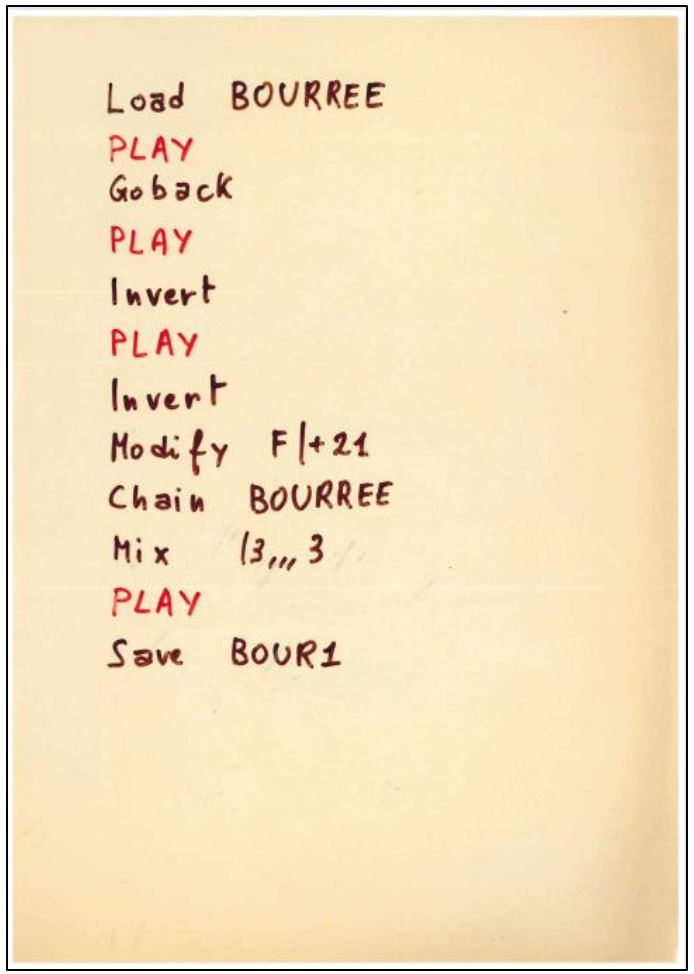
- Three main categories:

Tarabella's fonds of TAUmus

- Three main categories:
  - Papers and sketches

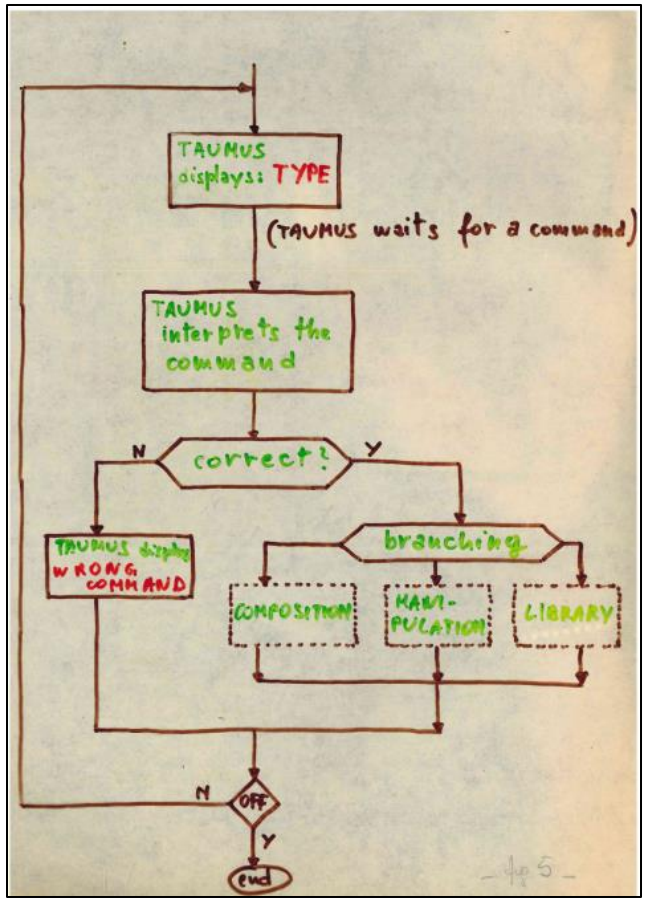
Tarabella's fonds of TAUmus

- Three main categories:
  - Papers and sketches
  - Source code



Tarabella's fonds of TAUmus

- Three main categories:
  - Papers and sketches
  - Source code
  - Project specifications



Different kinds of Source Code

Different kinds of Source Code

- FORTRAN listings:
  - TAU2 was just an audio terminal: it didn't run code
  - Code ran on the CNUCE's IBM 370
  - These are (part of) the code of the TAUmus interpreter

Different kinds of Source Code

- FORTRAN listings:
  - TAU2 was just an audio terminal: it didn't run code
  - Code ran on the CNUCE's IBM 370
  - These are (part of) the code of the TAUmus interpreter
- TAUmus listings:
  - Hand-written, the actual code of music sessions
  - The interpreter was basically a terminal
  - The user could play music using the TAUmus commands

Attardi's CMM source code archive

Attardi's CMM source code archive

- Whole source code available

Attardi's CMM source code archive

- Whole source code available
  - 8 versions
  - A compressed archive

Attardi's CMM source code archive

- Whole source code available
  - 8 versions
  - A compressed archive
- Scarce raw material

Attardi's CMM source code archive

- Whole source code available
  - 8 versions
  - A compressed archive
- Scarce raw material
  - The original archive
  - The accompagning email

Attardi's CMM source code archive

- Whole source code available
  - 8 versions
  - A compressed archive
- Scarce raw material
  - The original archive
  - The accompagning email

Le sam. 2 mars 2019 à 12:11, Giuseppe Attardi <attardi@di.unipi.it> a écrit :

CMM (Customizable Memory Management) è il conservative garbage collector
per C++ che sviluppai per il progetto PoSSo (Polynomial System Solver).

Il solver aveva delle fasi in cui venivano creati tantissimi oggetti
temporanei, che potevano essere cancellati in un botto solo alla fine
della fase.

Segnalai CMM a Bill Joy nel 1994, quando mi disse che stava cercando un
GC per un nuovo linguaggio che stavano sviluppando alla Sun Microsystems.

Gli consegnai una copia dell'articolo presentato a USENIX C++ 1994, che
riportava un link ftp da cui scaricare il codice:

http://usenix.org/publications/library/proceedings/c++94/full_papers/attardi.ps

BTW, alla conferenza Bjarne Stroustrup fu colpito dal lavoro e mi disse
che con il miglioramento delle tecniche di GC, stava ricredendosi sulla
possibilità di introdurle nel C++.

Qualche tempo dopo incontrai Ted Goldstein, del dipartimento Sun
Engineering, che mi ringraziò, dicendo che avevano utilizzato il codice
nella loro implementazione del linguaggio Oak, il nome che gli aveva
dato James Gosling, guardando fuori dalla finestra del suo studio. Poi
dovettero rinominarlo Java, per questioni di copyright.

A quel tempo non usavamo sistemi di versionamento, ma ci eravamo fatti
uno script noi per fare versioni.

Eccoti un link a un tar che contiene diverse versioni:

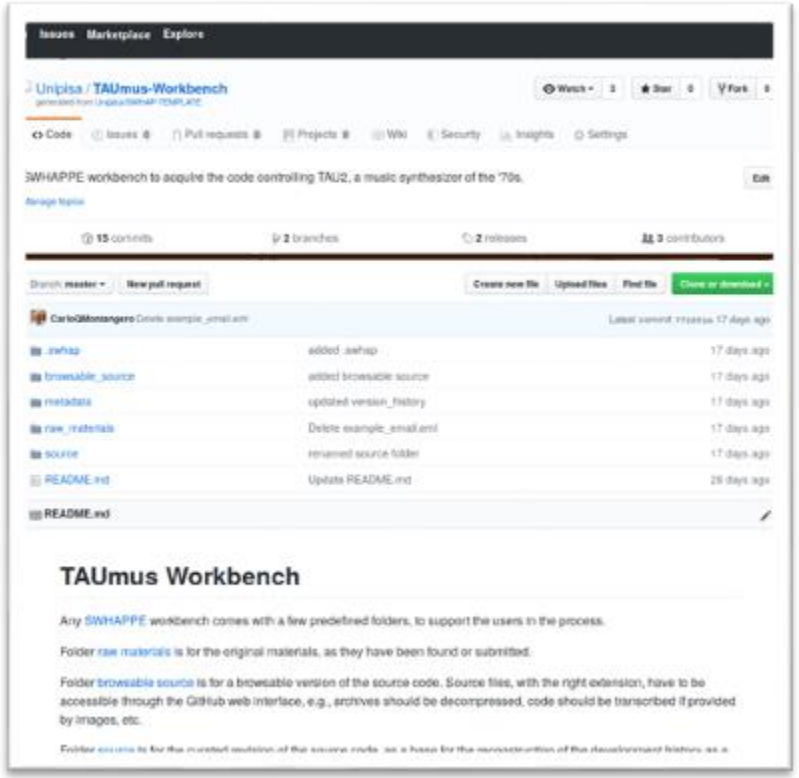
    http://medialab.di.unipi.it/ftp/cmm.tgz

Enjoy

-- Beppe

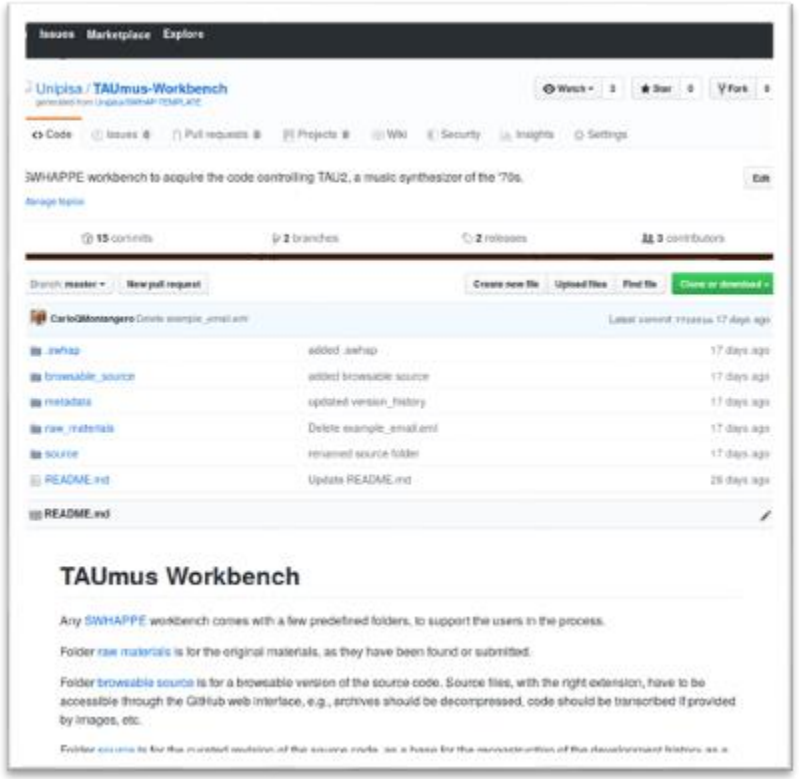
The process, instantiated

- TAUmus Workbench is the (virtual) place where the work actually started



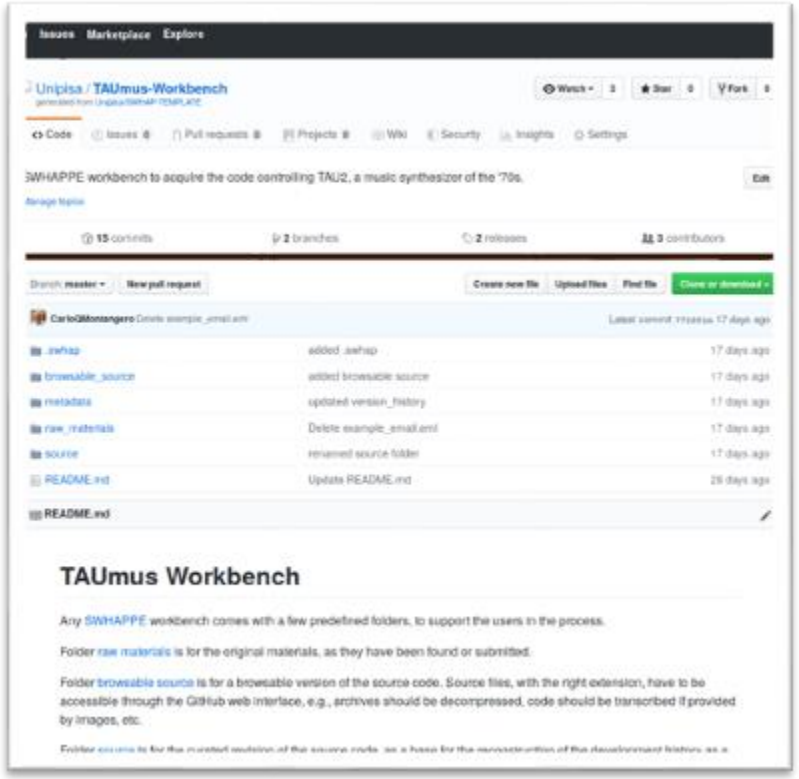
The process, instantiated

- TAUmus Workbench is the (virtual) place where the work actually started
- The directory structure is inherited from the SWHAP template



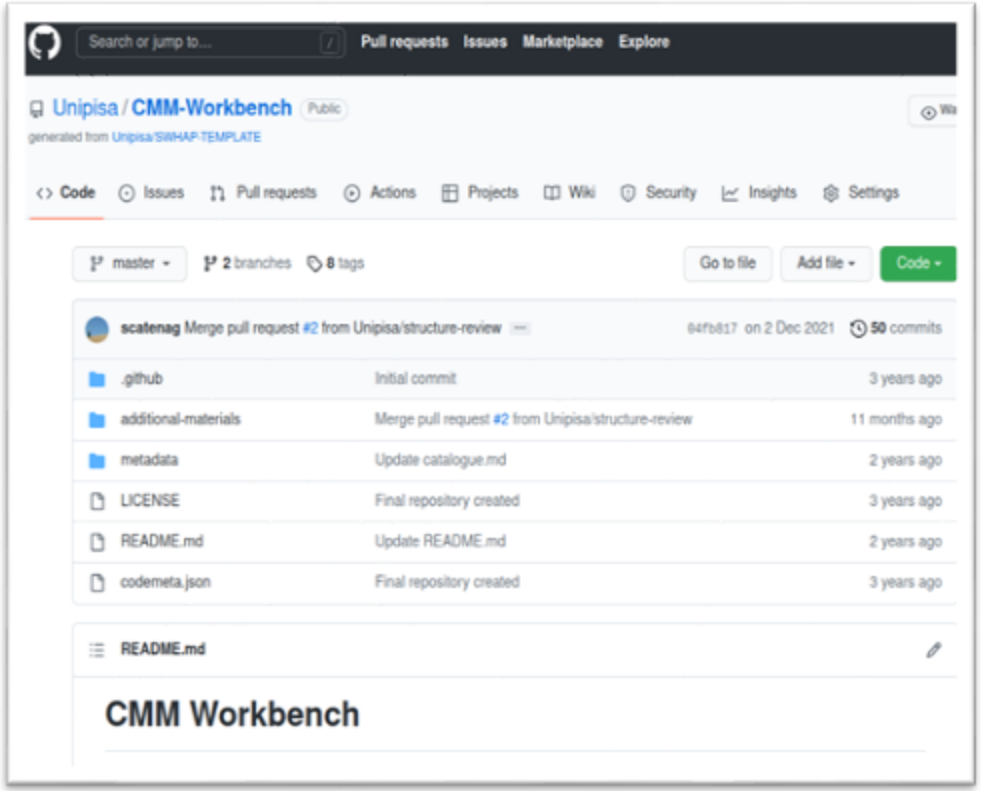
The process, instantiated

- TAUmus Workbench is the (virtual) place where the work actually started
- The directory structure is inherited from the SWHAP template
- From here, we performed the process's steps



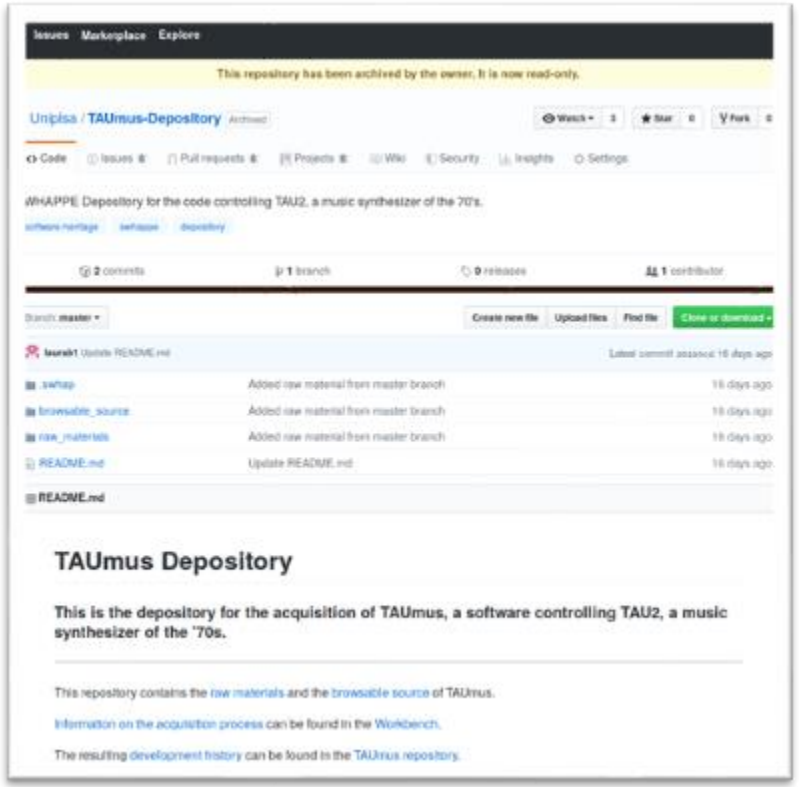
The process, instantiated

- The same is done for CMM



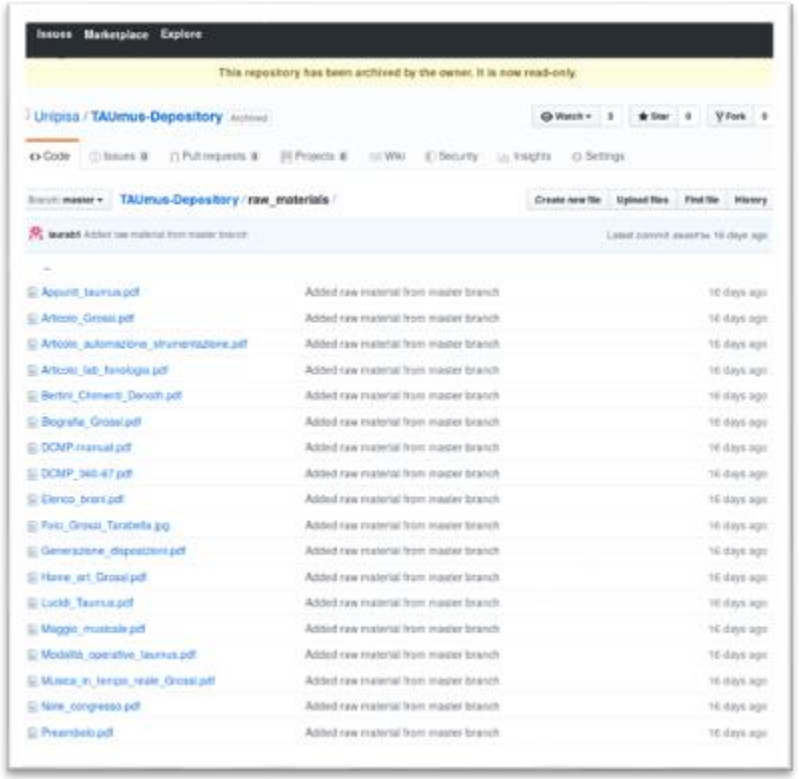
The process, instantiated

- First we created the Depository



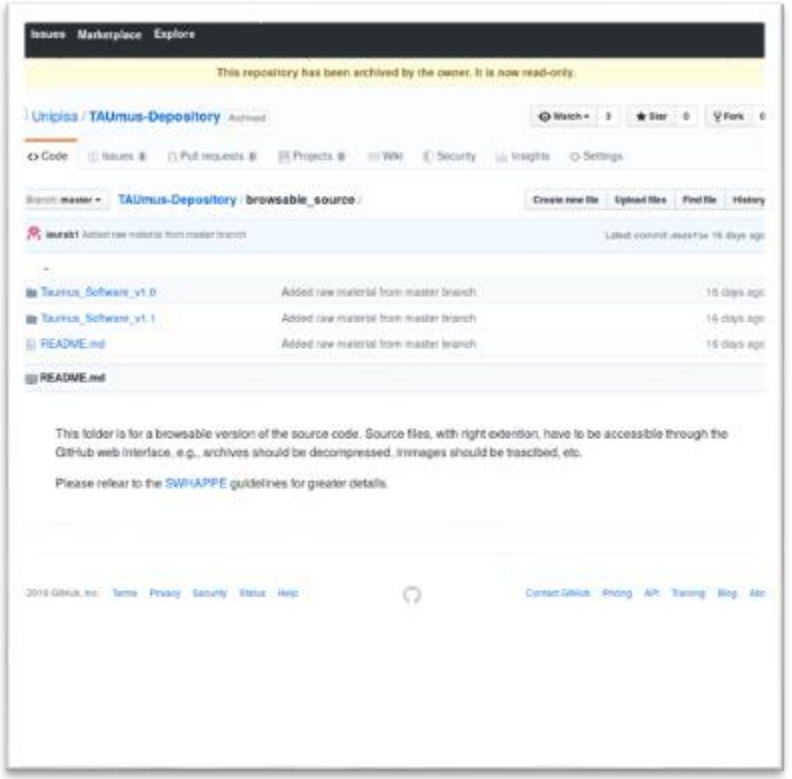
The process, instantiated

- First we created the Depository
  - Here we have raw-material…



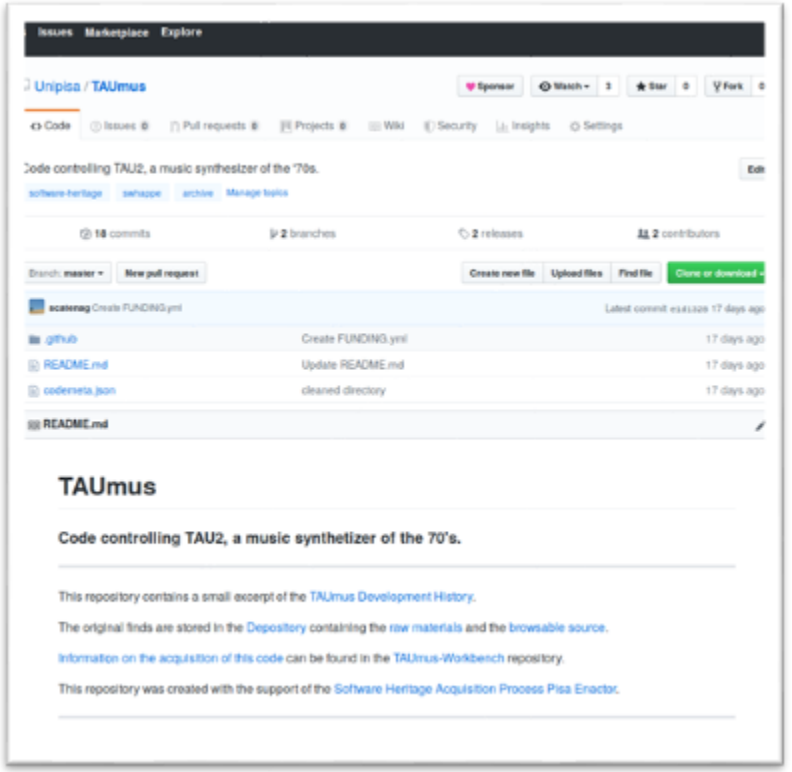
The process, instantiated

- First we created the Depository
  - Here we have raw-material…
  - …and browsable-source



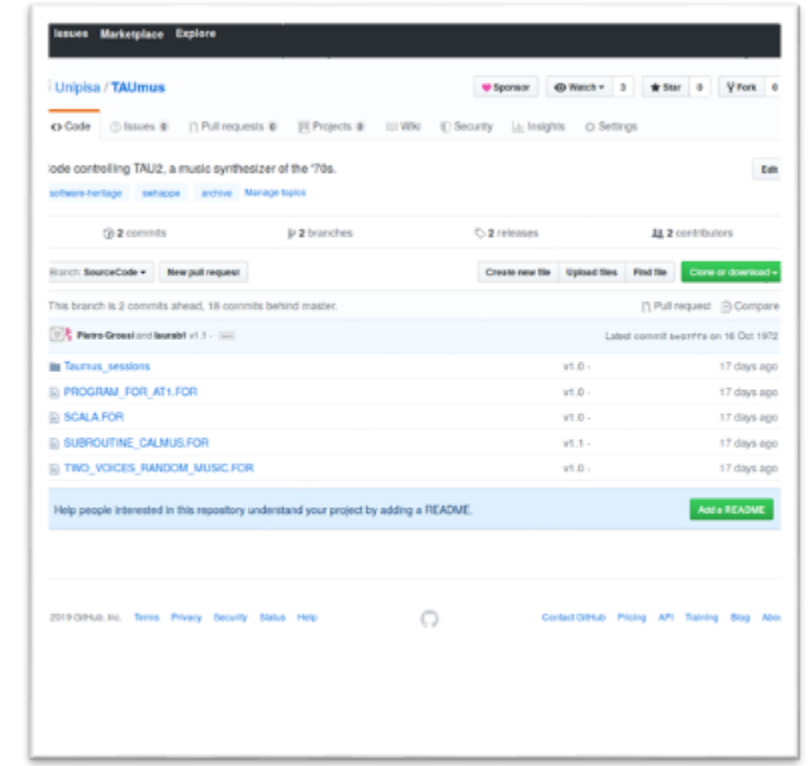
The process, instantiated

- First we created the Depository
  - Here we have raw-material…
  - …and browsable-source
- Then we (re)created the development history



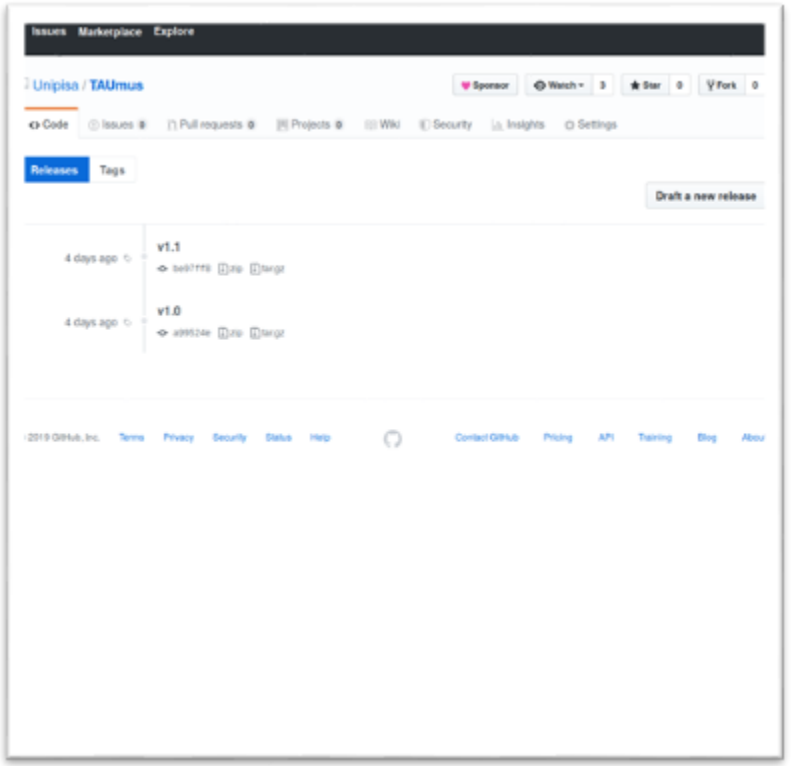
The process, instantiated

- First we created the Depository
  - Here we have raw-material…
  - …and browsable-source
- Then we (re)created the development history
  - The SourceCode branch contains the versioned code

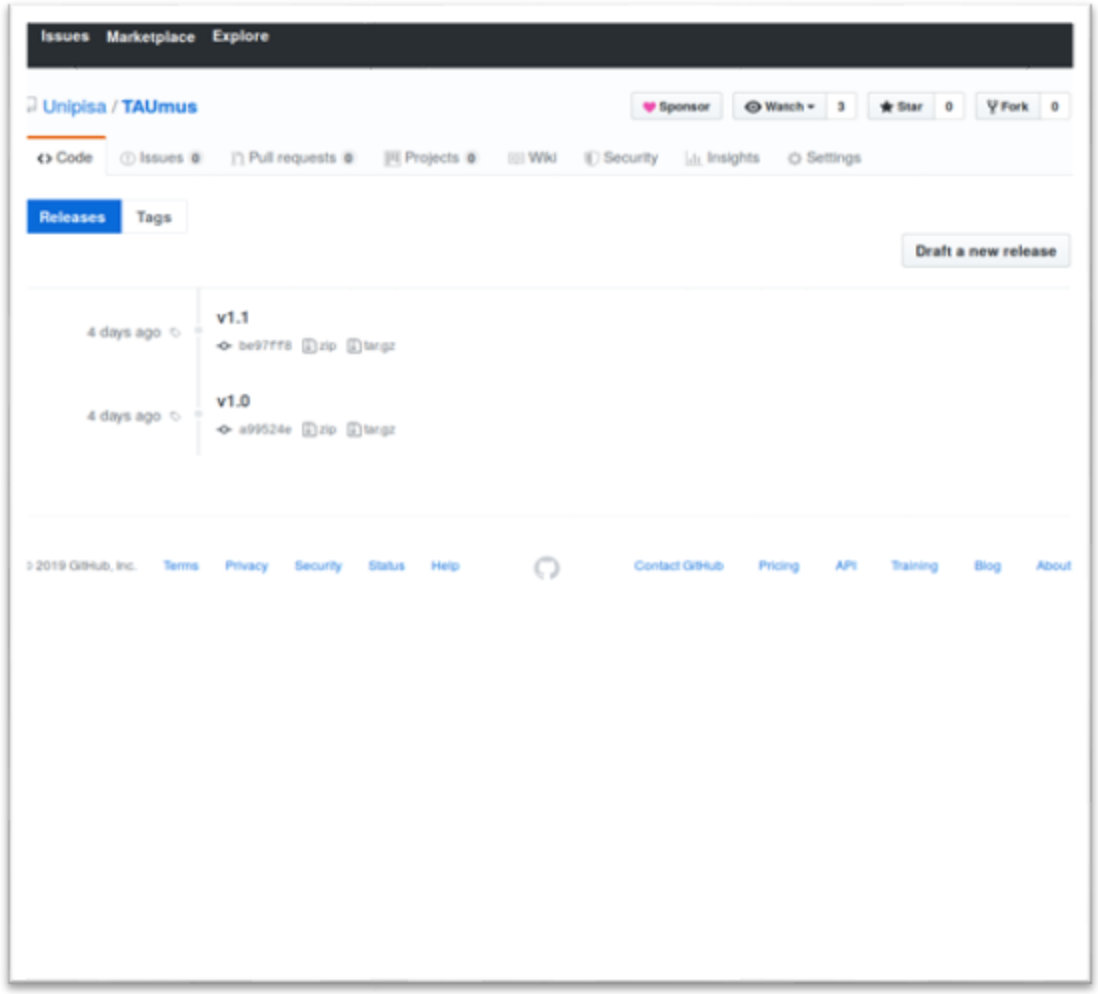


The process, instantiated

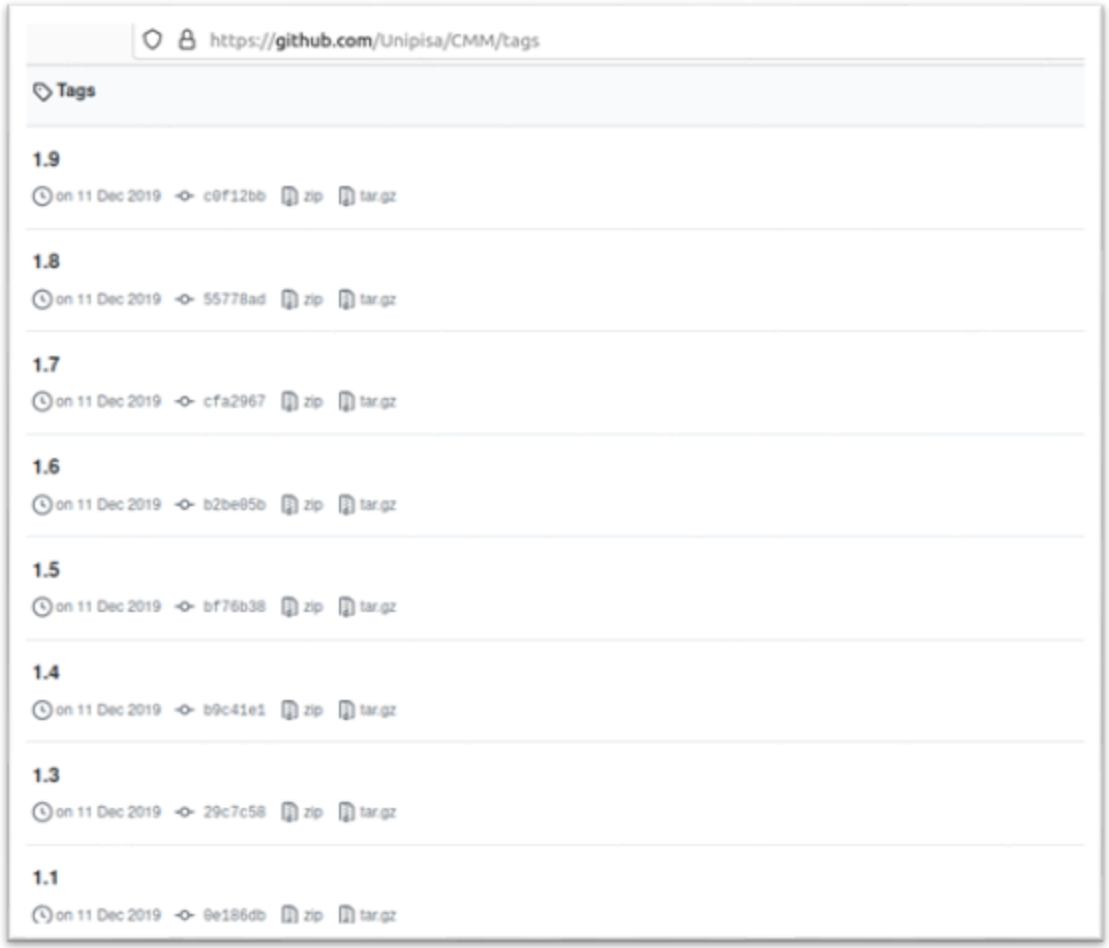
- First we created the Depository
  - Here we have raw-material…
  - …and browsable-source
- Then we (re)created the development history
  - The SourceCode branch contains the versioned code
  - The development history can be seen by checking for releases



Spot the differences!



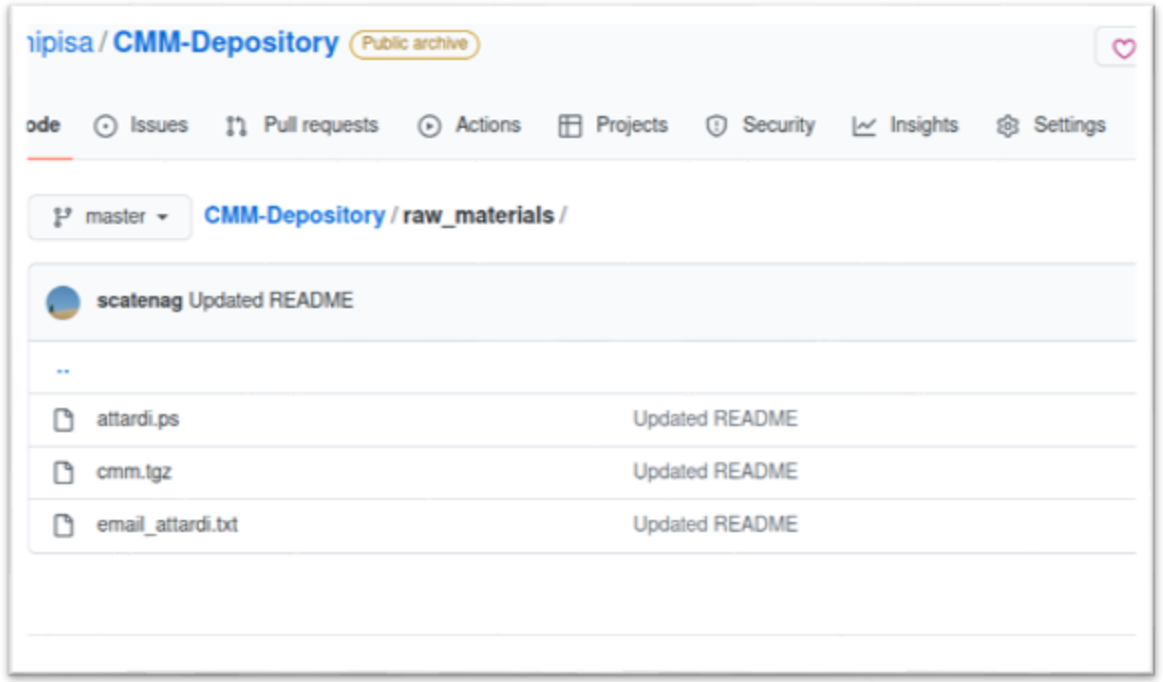
Spot the differences!



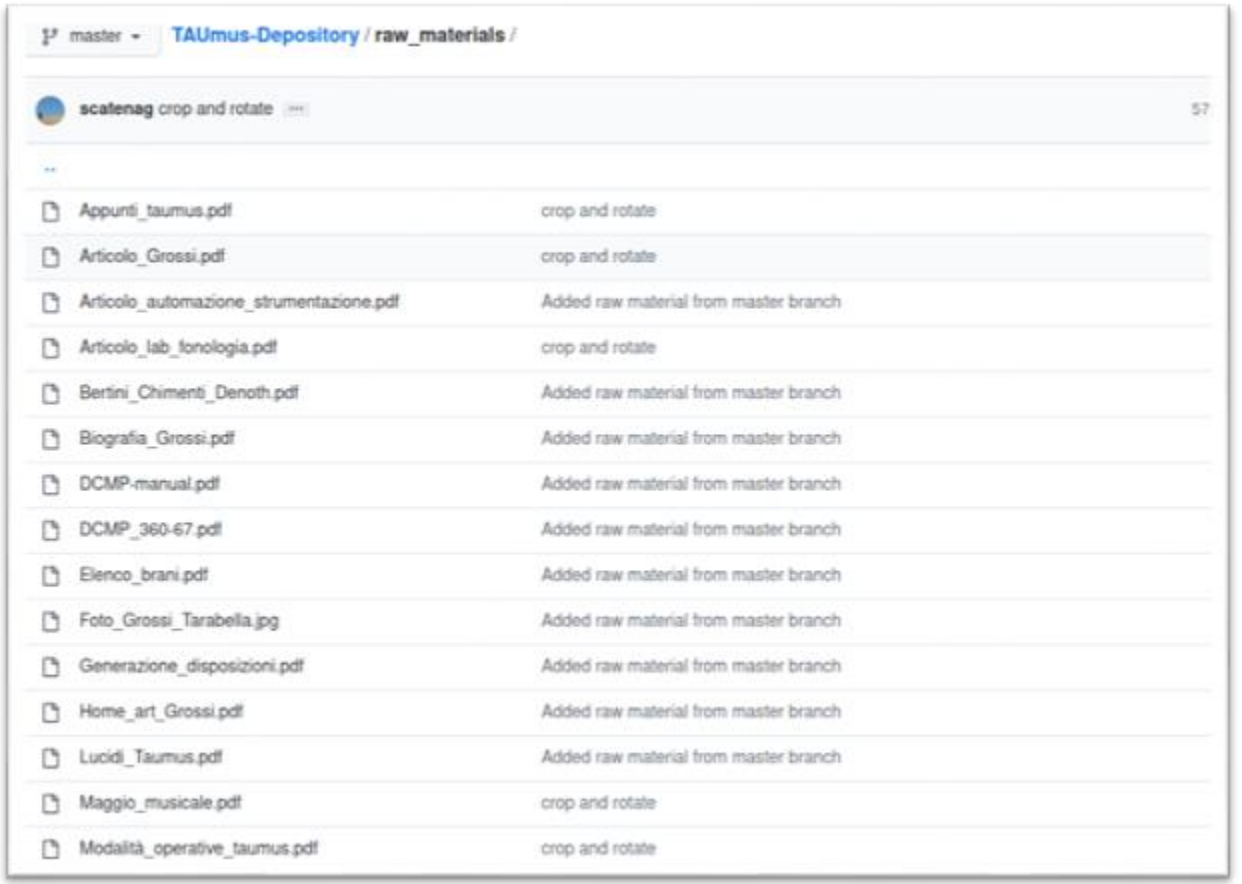
Spot the differences!

- TAUMus: few code (FORTRAN listings and TAUMus scripts)
  - Both on paper!
  - Some extra work needed in order to digitally archive it
- CMM: the complete source code of the memory manager, archived by the creator and well versioned
  - The software is a complete and potentially running C++ program

Spot the differences!



Spot the differences!



master ▾ TAUmus-Depository / raw_materials /

scatenag crop and rotate ··· 57

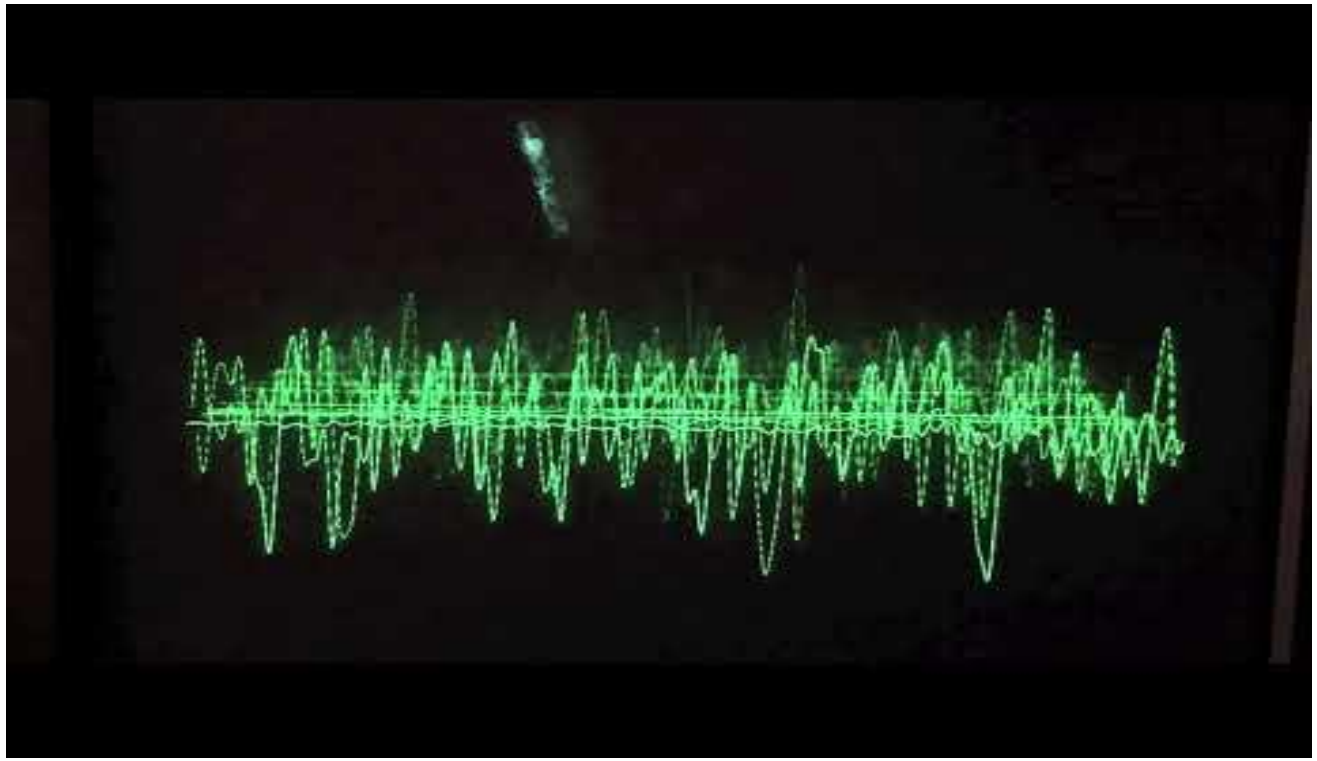
..

Appunti_taumus.pdf	crop and rotate
Articolo_Grossi.pdf	crop and rotate
Articolo_automazione_strumentazione.pdf	Added raw material from master branch
Articolo_lab_fonologia.pdf	crop and rotate
Bertini_Chimenti_Denoth.pdf	Added raw material from master branch
Biografia_Grossi.pdf	Added raw material from master branch
DCMP-manual.pdf	Added raw material from master branch
DCMP_360-67.pdf	Added raw material from master branch
Elenco_brani.pdf	Added raw material from master branch
Foto_Grossi_Tarabella.jpg	Added raw material from master branch
Generazione_disposizioni.pdf	Added raw material from master branch
Home_art_Grossi.pdf	Added raw material from master branch
Lucidi_Taumus.pdf	Added raw material from master branch
Maggio_musicale.pdf	crop and rotate
Modalità_operative_taumus.pdf	crop and rotate

Spot the differences!

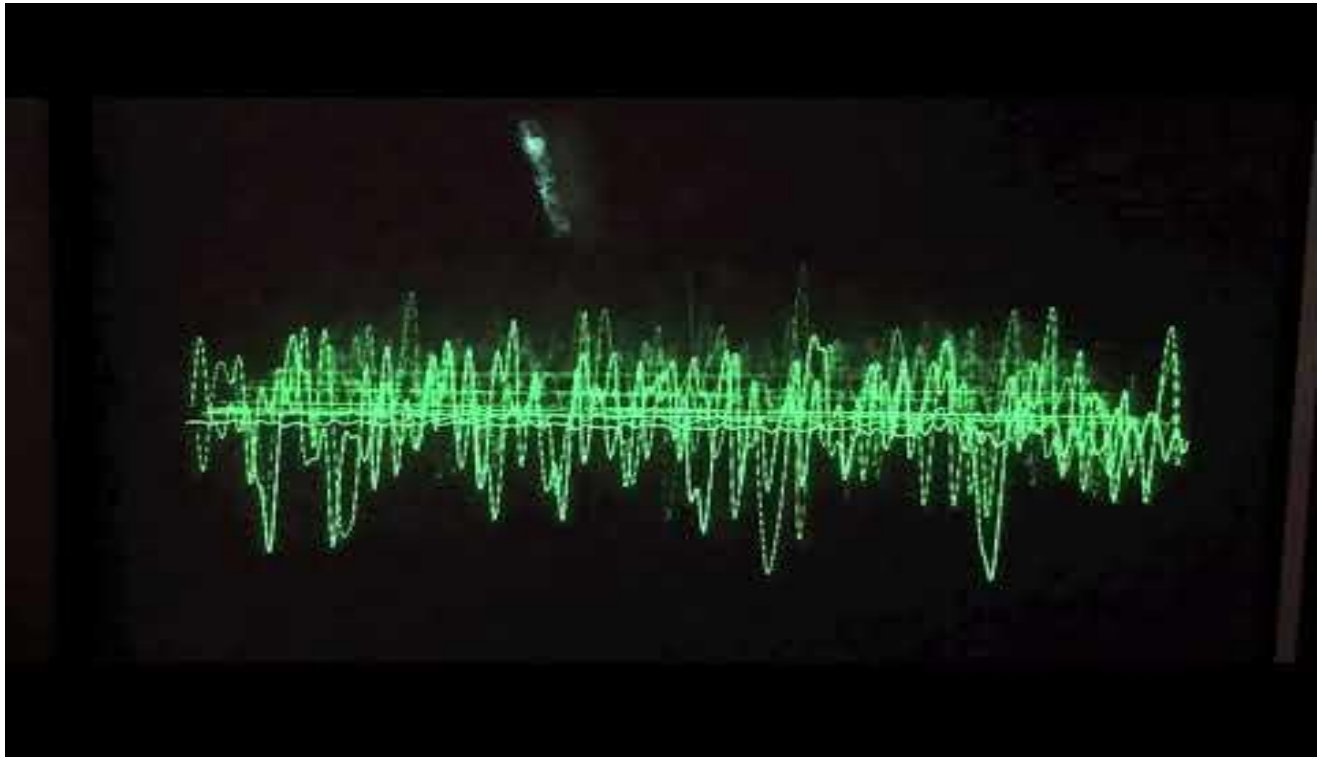
- TAUMus: a huge amount of rawmaterial
  - Photo, sketches…
  - All of it tells the story of the software
- CMM: few rawmaterial
  - The story of the software is narrated by the software itself

TAUmus lives back!



Thanks to Massimo Magrini, Signal and Image Laboratory, CNR

TAUmus lives back!



Thanks to Massimo Magrini, Signal and Image Laboratory, CNR

Thank you!