

# Scilab in the context of Software Heritage and Stories

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What is Scilab?

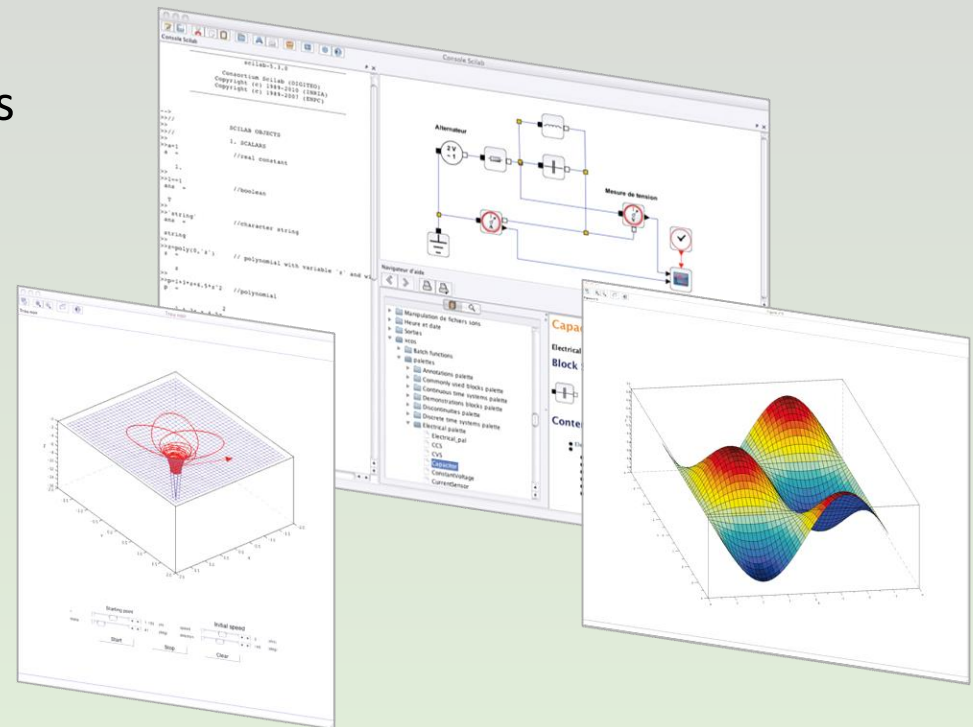


# Scilab: a Free Software for Numerical Computation

## More than 2,000 functions:

- Mathematical functions
- Matrix computation, sparse matrices
- Polynomials and rational functions
- Simulation: ODE and DAE
- Classic and robust control, LMI optimization
- Differentiable and non differentiable optimization
- Interpolation, approximation
- Signal processing
- Statistics

- 2D / 3D graphics



# Ergonomic Software

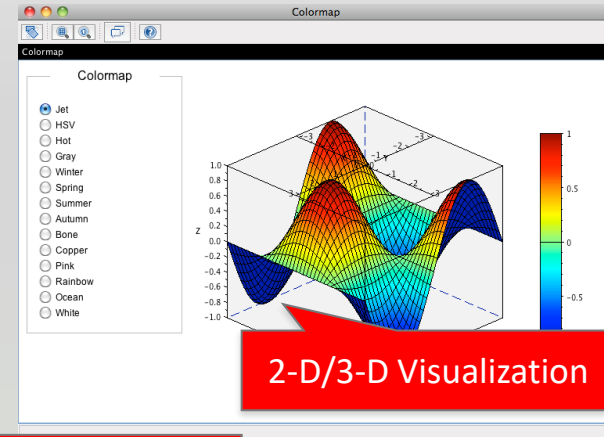
```

1 //Définition directe de la transformée de Fourier discrète
2 //-----
3 function xf=DFT(x, flag);
4 n=size(x, 'l');
5 //Calcul de la matrice de Fourier (n by n l)
6 if flag==1 then, //transformation inverse
7 am=exp(2*pi*i*(0:n-1)*(0:n-1)/n);
8 else //transformation directe
9 am=exp(-2*pi*i*(0:n-1)*(0:n-1)/n);
10 end
11 xf=am*matrix(x,n,1); //dft
12 xf=matrix(xf,size(x)); //mise en formz
13 if flag==1 then,xf=xf/n;end
14 endfunction
15
16 //-----
17 //-----
18 //-----
19 //-----
20 //-----
21 //-----
22 timer();fft(a,-1);timer()
    
```

Editor

Nom	Dimension	Type	Visibilité
subdemolist	8x2	Chaîne local	
b	3x3	Double local	
a	4x4	Double local	
home			
PWD			
%tk			
%F			
%T			
%nan			
%inf			
SCI			
SCIHOME			
TIAPDR			
%qui			
%ftw			
%t			
%f			
%eps			
%io			
%e			
%pi	1x1	Double local	
%modaWarning	1x1	Booleen global	
%driverName	1x1	Chaîne global	
%exportFileName	1x1	Double global	

Variable Editor



External Modules Manager

Embedded Help

Navigateur d'aide

Equations Differentielles >> Equations Differentielles > ode\_discrete

**ode\_discrete**

ordinary differential equation solver, discrete time simulation

**Calling Sequence**

y=ode('discrete',y0,k0,kvect,f)

**Arguments**

y0 real vector or matrix (initial conditions).  
 k0 real scalar (initial time).  
 f external i.e. function or character string or list.  
 k0 integer (initial time).  
 kvect integer vector.

**Description**

With this syntax (first argument equal to 'discrete') ode computes recursively  $y(k+1)=f(k,y(k))$  from an initial state  $y(k_0)$  and returns  $y(k)$  for  $k$  in kvect. kvect(1) must be greater than or equal to k0.

Other arguments and other options are the same as for ode, see the ode help.

**Examples**

```

y1=[];
for k=1:10
    y1=[y1; ode('discrete',y0,k0,kvect,f)];
end
// Now y evaluation at [y1,y2,y3]
y2=ode('discrete',y1,1,10,f_function)
    
```

**See Also**

- ode -- solveur d'equations differentielles ordinaires

Aerospace - ATOMS

Aerospace - ATOMS

Tous les modules

- Aerospace
- Data Acquisition
- Data Analysis And Statistics
- Data Handling
- Education
- GUI
- Graphics
- Linear algebra
- Modeling and Control Tools
- Number theory
- Optimization
- Physics
- SciLab development
- Signal Processing
- Technical

**CelestLab**

Version: 2.1.1-1  
 Auteur(s):  
 Description:  
 CelestLab is a library of space flight dynamics functions written in SciLab. This library has been developed by CNES (Centre National d'Etudes Spatiales) for mission analysis purposes. It is used for trajectory analysis and orbit design for various types of missions (around Earth, interplanetary...).

CelestLab includes about 200 functions that allow mission designers to perform various tasks such as: orbit propagation, manoeuvre computation, change of reference frames and coordinates, etc...

You may leave comments below (any remark, suggestions...). But if you would like to report bugs, please go to: <http://forge.sciab.org>

Voir aussi:  
<http://atoms.sciab.org/forums/celestlab/2.1.1>

Date de sortie: 2011-01-06  
 Taille de téléchargement: 2 Mo

Installer

Works on Windows, Linux, Mac Os

Where does Scilab  
come from?



1990 – 2002: Open Source Scilab (INRIA, ENPC)  
1994: Scilab freely distributed on the Net

2003 – 2008: Scilab Consortium phase 1 (INRIA)

2008 – 2012: Scilab Consortium phase 2 (DIGITEO)

2012 – 2016: Scilab Enterprises

About 100,000 monthly downloads from  
150 countries from [www.scilab.org](http://www.scilab.org) in 2014

2017 – 2022: ESI Group

August 2022 – ... : Dassault Systèmes with Scilab development team

# Interesting data

- Scilab big source code:
  - Fortran, C, C++ = more than 1 million lines
- From Scilab 1.1 to Scilab 6.1.1:
  - 43 versions in 28 years
- Many developers and 5 organizations were in charge of Scilab
- Scilab is still used everywhere in the world

Scilab is a good candidate for Software Heritage and  
Software Stories

# The story

- Talk with Roberto in March 2019
- First try with HAL-Inria in April 2019
- Beginning with SWHAP in April 2020



COVID




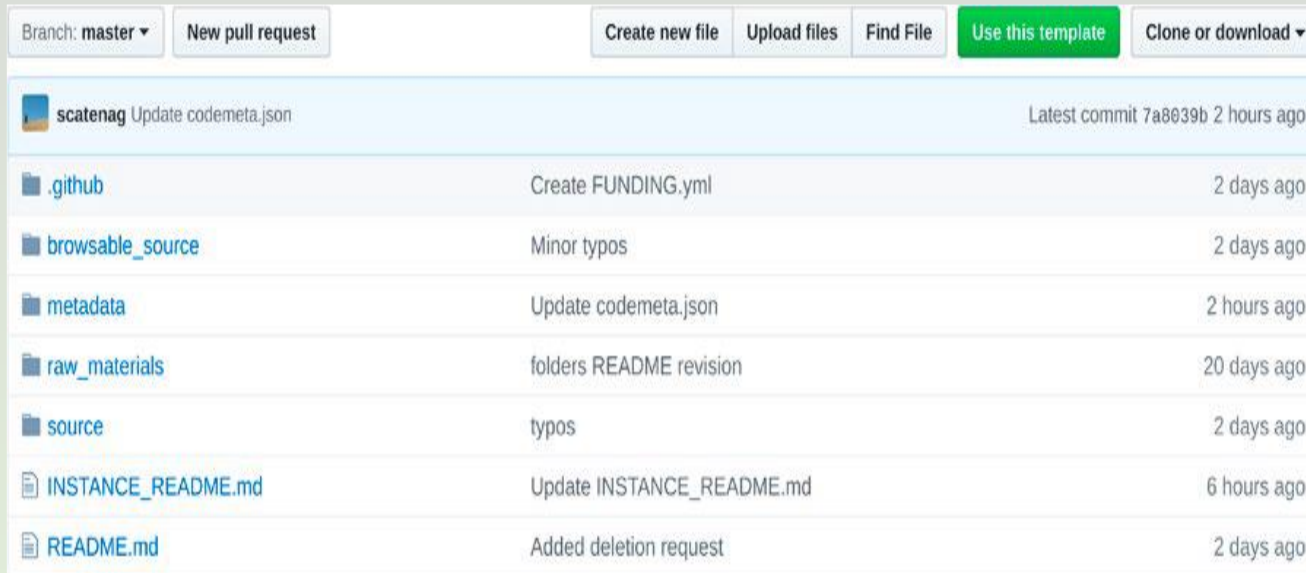
June 2022: Here we go again!

Work: Scilab Source code + Scilab Story



# SWH Source Code

- Easy work to get all the Scilab source code versions
- Read the SWHAP and try to understand
  - ⇒ GitHub 
  - ⇒ Fortunately, copy the template from Unipisa



Branch: master ▾ New pull request Create new file Upload files Find File Use this template Clone or download ▾

File/Folder	Commit Message	Time Ago
scatenag	Update codemeta.json	Latest commit 7a8039b 2 hours ago
.github	Create FUNDING.yml	2 days ago
browsable_source	Minor typos	2 days ago
metadata	Update codemeta.json	2 hours ago
raw_materials	folders README revision	20 days ago
source	typos	2 days ago
INSTANCE_README.md	Update INSTANCE_README.md	6 hours ago
README.md	Added deletion request	2 days ago

Work in progress

# SWH Stories

- Huge work to go through all Scilab versions to see the evolution: source code, functionalities and organizations in charge
- Get documentation, screenshots, pictures
- Interviews about Scilab Story
- More work to do: bibliography, manuals, demos, etc..

But...

<https://swh.stories.k2.services/inria/Q828742>

The INRIA Collection

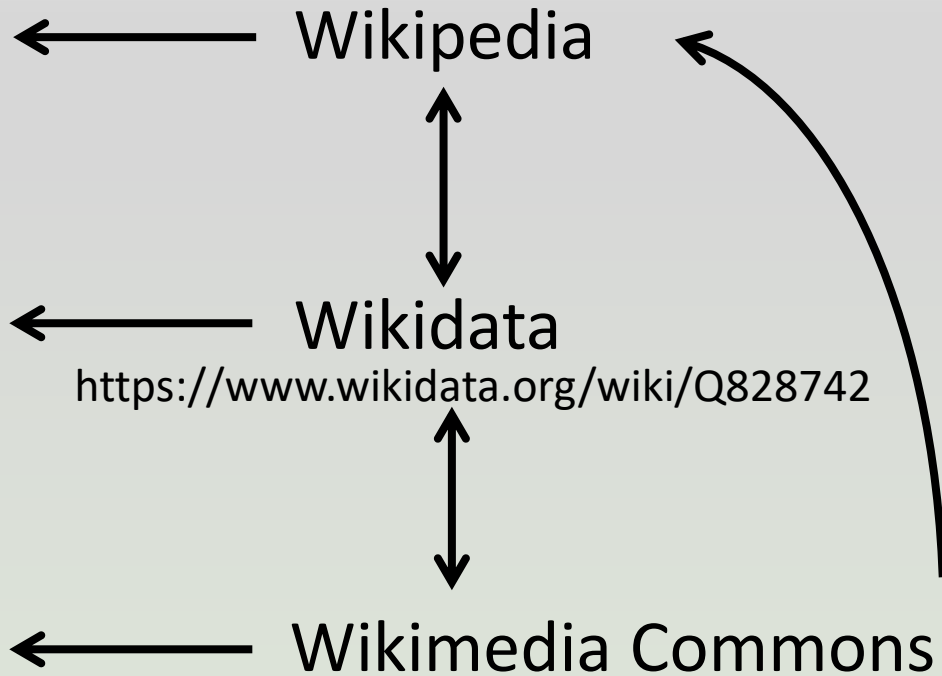
1 STORY IN THIS COLLECTION

Scilab

FREE AND OPEN SOURCE SOFTWARE FOR  
NUMERICAL COMPUTATION

LEARN MORE Q828742

POWERED BY THE STORIES SERVICE



GitHub: source code

<https://github.com/clg55/Scilab>

# Conclusion

## SWHAP

- Thorough and robust process for source code and stories
- But, if possible, it would need more explanations for a normal human being

I am very happy to be part of this adventure

