

Reproducibility: an old friend, the laboratory notebook

Better reproducibility with documented code



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1 The laboratory notebook

2 Notebook in bioinformatic



Laboratory notebook allow to :

- Day-to-day recording each step in a process, experiments...
- Report on the progress, and scientific experimentations from the idea to final conclusions
- Keep track of knowledge in a lab
- Useful drafting a patent
- Proof of anteriority

Paper version

This is a legal tool :

- Page numbered in each notebook
- Cover page with the owner of the results
- Each page contain a part to date, to sign for at least to people

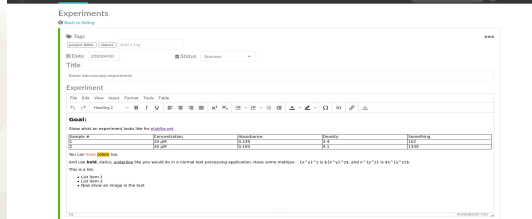
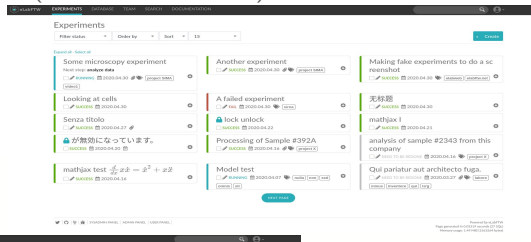
At each research level :

- Researchers
- Engineers
- Technicians
- Students...

End what's happen for bioinformatic ?

Electronic version

Electronic Laboratory Notebooks (ELN) Modern LN since 2009 (C.U.R.I.E. Network)



■ dematerialised

■ archivable

Electronic version

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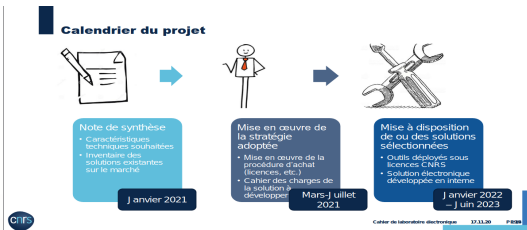
Ouvert la science ! LA SCIENCE OUVERTE NOS ACTIONS RESSOURCES ACTUALITÉS QUI SOMMES NOUS ?

Accueil > Bibliothèque de la science ouverte > Rapport du Groupe de travail sur les Cahiers de Laboratoire électroniques

Rapport du Groupe de travail sur les Cahiers de Laboratoire électroniques

2021 Ouvert la science !

Le rapport du groupe de travail « Cahier de laboratoire électronique » (ELN) présente une vision partagée sur la définition, le cadrage, les usages et le périmètre fonctionnel de l'ELN, qui doit pouvoir s'intégrer dans les environnements informatiques et institutionnels existants. Il émet un ensemble de recommandations sur les critères de choix d'un outil et intègre une liste comparative d'outils existants.



What is literate programming ?

*"Let us change our traditional attitude to the construction of programs :
Instead of imagining that our main task is to instruct a computer what to do, let us concentrate rather
on explaining to humans what we want the computer to do."*¹

*"Literate programming is a programming paradigm introduced by Donald Knuth in which a computer
program is given an explanation of its logic in a natural language, such as English, interspersed with
snippets of macros and traditional source code, from which compilable source code can be generated."*²

1. Donald E. Knuth, Literate Programming, 1984

2. https://en.wikipedia.org/wiki/Literate_programming#Workflow

Literate programming

Why using literate programming frameworks ?

- Labbook
- Day-to-day analysis
- Make automatic reports
- Write scientific article

Literate programming

example



[doi:10.3389/fphys.2018.00787](https://doi.org/10.3389/fphys.2018.00787)