**Data Management**

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# An update on workflow languages

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## WDL

Licensed by the Broad Institute, WDL is a rather new open source project that uses an execution engine called Cromwell, which is required to be set up priorly [1] [2]. Since Cromwell is primarily Java-based and also developed at Broad Institute, we assume that the WDL project is mostly, if not entirely, Java-based as well. According to the homepage of WDL, the project is currently 'incomplete and out of date' and the team is 'in the process of rewriting it from scratch' [3]. It further did not show any advantages over the other two workflow languages. We could not find any projects or companies using WDL. Having all these aspects in mind, we decided to drop WDL quickly, even though it features Docker support.

## SNAKEMAKE

As the name already implies, this project is Python-based, and appears to be privately developed by a small group. Published under the MIT-license, SNAKEMAKE is hosted on bitbucket and also open source [4]. Projects that apply SNAKEMAKE are usually academic institutions. *TissueMiner*, *MATE-CLEVER*, and *WhatsHap* are just some example projects that apply SNAKEMAKE [5]. Unfortunately, we could not find whether there is any Docker support or not, which lead us to the conclusion that there probably is none.

**Nextflow**

Nextflow is developed at the Center for Genomic Regulation, Barcelona, and licensed under the GPL3 license [6]. The project is primarily Java-based and, like SNAKEMAKE, mostly applied in academic projects. It states on its' homepage that it's 'Dead easy to install', which was indeed the case for us [7]. As open source project, it is completely hosted on GitHub. Very early, we also noticed the ability to use Docker with Nextflow. A GitHub repository called 'Awesome Nextflow' lists all kinds of projects, among those some of the Sanger Institute and SciLifeLab [8]. Even though workflows take some time to run, we find Nextflow the most conveniant to use and therefore decided to pick it as workflow language of our project. Further, it features all necessary requirements.

# References

[1] `https://software.broadinstitute.org/wdl/`. Accessed: 2017-06-06.

[2] `https://software.broadinstitute.org/wdl/documentation/`. Accessed: 2017-06-06.

[3] `https://software.broadinstitute.org/wdl/documentation/topic?name=wdl-spec`. Accessed: 2017-06-06.

[4] `https://snakemake.readthedocs.io/en/stable/project_info/license.html`. Accessed: 2017-06-06.

[5] `https://snakemake.readthedocs.io/en/stable/index.html`. Accessed: 2017-06-06.

[6] `https://www.nextflow.io/about-us.html`. Accessed: 2017-06-06.

[7] `https://www.nextflow.io/index.html#GetStarted`. Accessed: 2017-06-06.

[8] `https://github.com/nextflow-io/awesome-nextflow`. Accessed: 2017-06-06.