Why I like Quarto

Extraordinary data club meeting

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What is quarto?

Quarto is an app for writing scientific and technical documents.

Quarto is inspired by Rmarkdown: it works nicely with documents that contain Python, R or Julia code.

I used quarto to make this presentation!

General idea

Write Markdown, use quarto to generate:

- → Document (`.pdf`, `.doc`, `.tex`, `.epub`)
- → Presentation (beamer, `.ppt`, revealjs)
- → Jupyter notebook
- → Website
- → Book

Command line workflow

1. Create `my_document.qmd`
2. Run `quarto preview my_document.qmd` (and leave it running).
3. Edit document, see live-updated output.
4. Run `quarto render my_document.qmd` to put document in a range of formats.

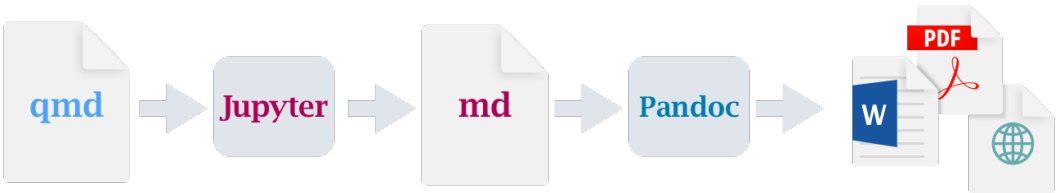
Here is a detailed guide.

You can also go through these steps without leaving your editing environment. Here are guides for doing this using VS code, JupyterLab, R Studio and neovim.

How to install quarto

1. Download the app.
2. Set up editor integration if desired.
3. Make sure you have Jupyter (for Python/Julia) and/or knitr (for R).

How quarto Works



Things I like about quarto

Convenience

→ Editor integration is good.

→ Defaults look OK.

→ One tool that does a lot of things.

Collaboration

→ Works on everyone's setup

→ Easy to send round HMTL, `.doc` etc.

Pandoc markdown

→ Markdown is easy and popular.

→ LaTeXcan be used where needed.

→ Footnotes[a], citations [1] etc work.

Plain text

→ Git works.

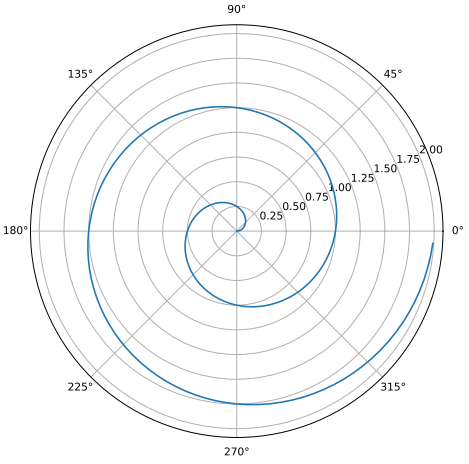
→ Easy to copy.

→ Can use editor/language server etc.

[a] Like this one.

Code example

```
import numpy as np
import matplotlib.pyplot as plt
r = np.arange(0, 2, 0.01)
theta = 2 * np.pi * r
ax = plt.subplot(projection="polar")
ax.plot(theta, r)
```



Limitations

- → Doesn't support non Python/R/Julia code execution.
- → Runs locally: everyone can't edit the same document at once.
- → Bring your own spelling/grammar checker.
- → REPL integration requires separate setup.
- → Relatively new.

Alternatives

Latex/overleaf

→ Latex is fiddly.

→ What if a `.doc` is needed?

→ Code is a pain.

Word/Google doc

→ Bad for equations and figures.

→ Code is a pain.

→ A different window.

Jupyter + nbconvert

→ Doesn't work with all editors.

→ Citations, footnotes etc.

→ Hard to version control.

Plain Pandoc

→ Have to write Makefiles and filters.

Org mode

→ Everyone has to use Emacs.

→ Working with code is fiddly and slow.

References

[1] M. de Leeuw, M. R. A. Matos, and L. K. Nielsen, "Omics data for sampling thermodynamically feasible kinetic models," *Metabolic Engineering*, vol. 78, pp. 41–47, Jul. 2023, doi: 10.1016/j.ymben.2023.05.002.