FreeFEM CI/CD and CMake support

FreeFEM days 2025 - 2025/12/18

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What is CI/CD?

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CD: Process that frequently delivers new versions of a software

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Common tools

- Jenkins
- Gitlab CI
- Github Actions
- ... many more

FreeFEM CI

Based on Github Actions.

Workflows located in `.github/workflows/`, triggered by:

- **push** on develop/master
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minimal.yml

```yaml
linux:
  strategy:
    matrix:
      version: [22.04, 24.04]
      cfg:
      - {opts: --enable-debug}
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...
  runs-on: ubuntu-${{ matrix.version }}
  steps:
    - name: Configure
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  - Full OpenMPI (external)
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		Minimal	Sequential	Full OpenMPI	Full MPICH	Full MS-MPI
Linux	22.04	✅	✅	✅	✅	N/A
	24.04	✅	✅	✅	✅	N/A
MacOS	14	✅	✅	×(broken OpenMPI in brew)	✅	N/A
	15	✅	✅	×(broken OpenMPI in brew)	✅	N/A
Windows	Server 2022	✅	✅	N/A	N/A	✅

FreeFEM CD

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Triggered by `v*.*` tags

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Currently:

- DEB packaging automated (Full MPICH) in PR
- EXE and DMG manually uploaded

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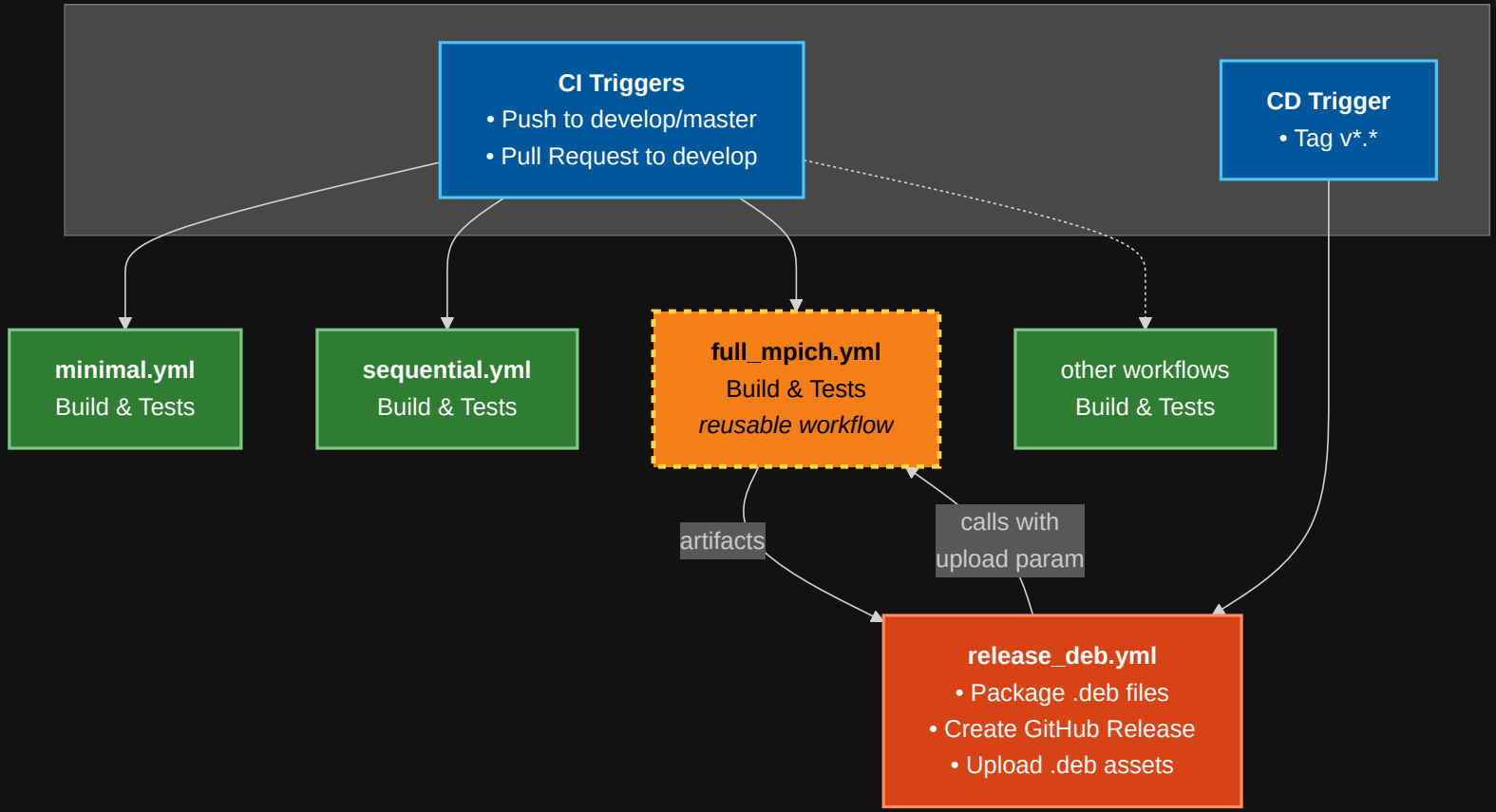
Goal is full automation BUT:

- Signing and permissions problems on MacOS
- I didn’t look at EXE yet.

FreeFEM CI/CD workflow graph



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- Used by: LLVM, Qt, KDE, OpenCV, …

CMake support

Also a refactoring opportunity.

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Users

No more

```
FreeFem++
FreeFem++-nw
FreeFem++-mpi
```

A single entry point

```
FreeFem++
```

linked with available dependencies.

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Developers

- PETSc as a single dependency
- Code deduplication (plugins seq/mpi)

Cmake support

Currently a work in progress

Working backbone:

```
configure → compile → package
                    \
                     \ → install
```

- No MPI
- No optional external dependency
- Packaging only in DEB and DMG (CLI)

Thank you for you attention

My fork on GitHub