TuitusCI

Project Management Meeting

Date and Venue:

- January 19, 2023, 3 PM - 4 PM, ECJ, UT Austin.

Members:

- Joe Stubbs, TACC, UT Austin
- Nathan Freeman, TACC, UT Austin
- Krishna Kumar, PI - Tuitus, UT Austin
- Chahak Mehta, Graduate Student (MS) - GRA, Oden Institute, UT Austin

Agenda:

1. Discuss goals and requirements for CI/CD pipeline
2. Choose technologies and architecture
3. Create project plan and timeline

Notes:

- Main goal is to enable automated building, testing, and deployment of CI/CD for HPC Applications with CB-Geo MPM code as a proof of concept
- Must integrate with existing HPC infrastructure of TACC and DesignSafe. We choose to build the CI/CD pipeline using TAPIS v3 and integrate with TAPIS API.
- Should enable easy reproducibility and sharing of CB-Geo MPM experiments and benchmark files.
- Proposed tech stack: Create a new CI/CD pipeline for TAPIS to support Docker and Singularity for containers, pytest and benchmark tests for testing
- Milestones:
  - Build Tapis CI/CD pipeline (6 weeks)

- - Containerize application (1 weeks)
    - Implement testing suite (2 weeks)
    - Set up CD to HPC cluster (2 weeks)
- Nathan Freeman will continue leading code development of TAPIS CI/CD
- Developers will focus on building out the CI/CD pipeline with TAPIS working with Dr. Kumar
- Project manager, Dr. Kumar and Dr. Stubbs will coordinate efforts and track progress

Action Items:

- Set up weekly integration meeting with TAPIS and HPC team with CB-Geo MPM

CB-Geo MPM CI/CD Project Plan Overview:

The goal of this project is to implement a CI/CD pipeline for the CB-Geo MPM code to enable automated building, testing, and deployment of the application. This will improve reproducibility of experiments and make it easier to share with collaborators.

Scope:

- GitHub repository for source code
- Automated build pipeline using GitHub Actions
- Docker and Singularity containers
- Automated testing including unit tests and benchmark experiments
- Continuous Delivery to HPC cluster

Milestones:

1. Set up GitHub repository for CB-Geo MPM and configure for workflow (1 week)
2. Build TAPIS CI workflow pipeline (2 weeks)
3. Containerize CB-Geo MPM application with Docker and Singularity (2 weeks)
4. Implement testing suite with benchmarks (1 weeks)
5. Set up Continuous Delivery to HPC cluster (2 weeks)

Resources:

- Dr. Joe Stubbs - Lead developer
- 2 Software developers, main developer is Nathan Freeman
- TAPIS and TACC cluster access and admin

Risks:

- Integrating pipelines with HPC cluster could be challenging
- Testing suite may be difficult to implement for a complex scientific application
- Pipeline maintenance will require continued effort

Mitigations:

- Work closely with TAPIS admin early in process and CB-Geo MPM team
- Focus testing on critical components and workflows
- Developer training on CI/CD technologies
- Schedule regular reviews of pipelines and tests