BRANE status update

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BRANE in a nutshell

"Programmable orchestration of applications and networking"

- **Abstraction** over multiple domains (e.g., hospitals)
- Processes **workflows** of external function calls
- External functions are **containerized**
- Data- and network-level **policies** enforced at runtime
- **Separation of concerns**
    - System engineers
    - Software engineers
    - Policy makers
    - Scientists
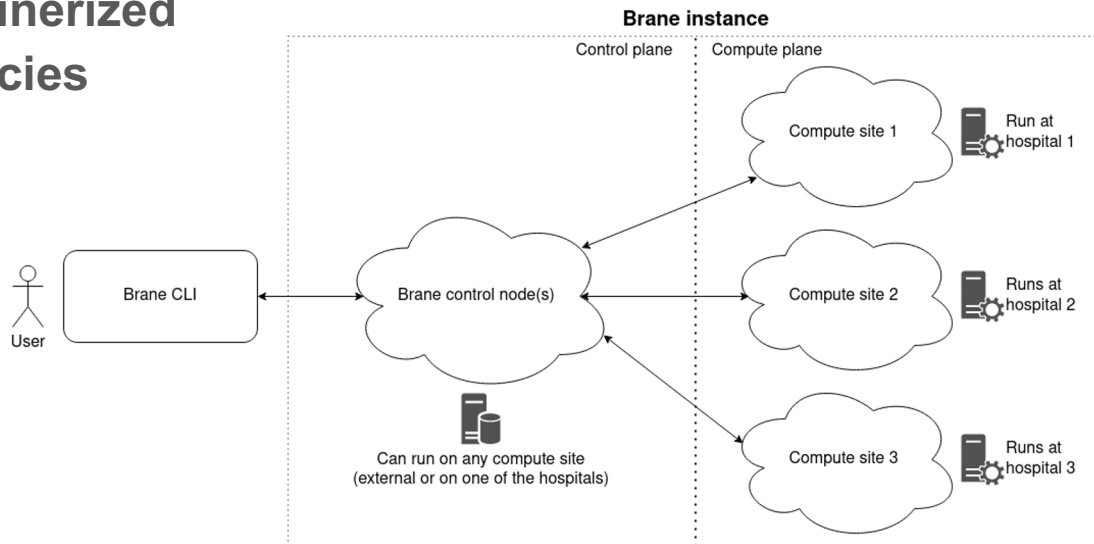
Current state

- **Abstraction**: Completed
    - Supports multiple infrastructures: Kubernetes, Slurm, Xenon and simply SSH
- **Workflows**: Completed
    - Supports both BraneScript and Bakery DSLs
- **Containerized**: Completed*
    - Building with Docker, using containerd for runtime
    - Adding Singularity as runtime alternative TBD
- **Separation of concerns**: 75%
    - Support for system engineers, software engineers and scientists (DSLs)
    - Support for policy makers TBD
- **Policies**: TBD

Future work

- Next focus: **policies**
- Data-level policies: integrate eFLINT[1]
    - Milen Kebede and Christopher Esterhuyse's work
- Network-level policies: integrate network bridging functions
    - Jamila Alsayed Kassem's work
- Testing with DIPG and St. Antonius use-cases

- Exploring options to reliable authenticate users in the background

[1] L. Thomas van Binsbergen, Lu-Chi Liu, Robert van Doesburg, and Tom van Engers. 2020. EFLINT: a domain-specific language for executable norm specifications. In *Proceedings of the 19th ACM SIGPLAN International Conference on Generative Programming: Concepts and Experiences* (*GPCE 2020*). Association for Computing Machinery, New York, NY, USA, 124–136. DOI:https://doi.org/10.1145/3425898.3426958

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enablingpersonalizedinterventions.nl

github.com/epi-project/brane

wiki.enablingpersonalizedinterventions.nl (WIP)