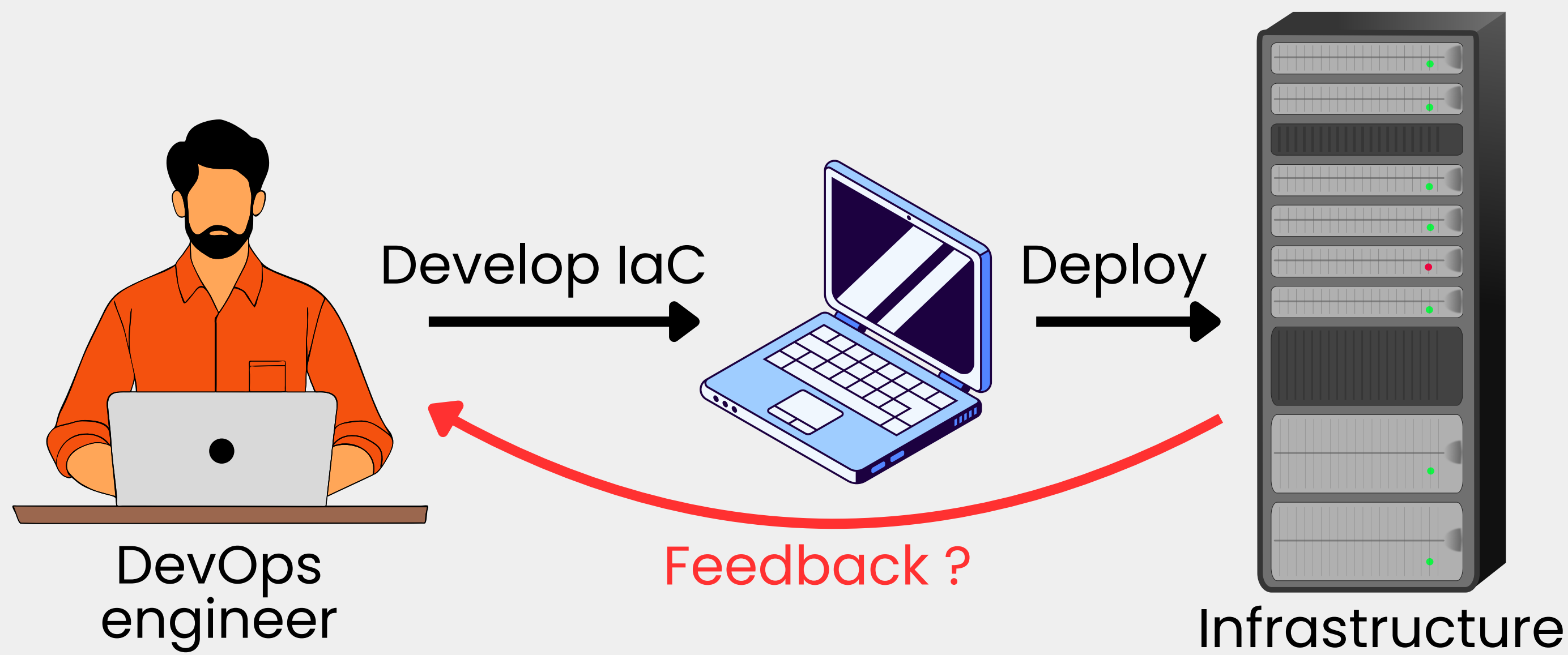


Extending Infrastructure as Code (IaC) languages by leveraging operational data to provide advanced DevOps support for infrastructure code development

Haitam El Hayani, Jolan Philippe, Stéphanie Challita, Olivier Barais, Benoit Combemale

Context



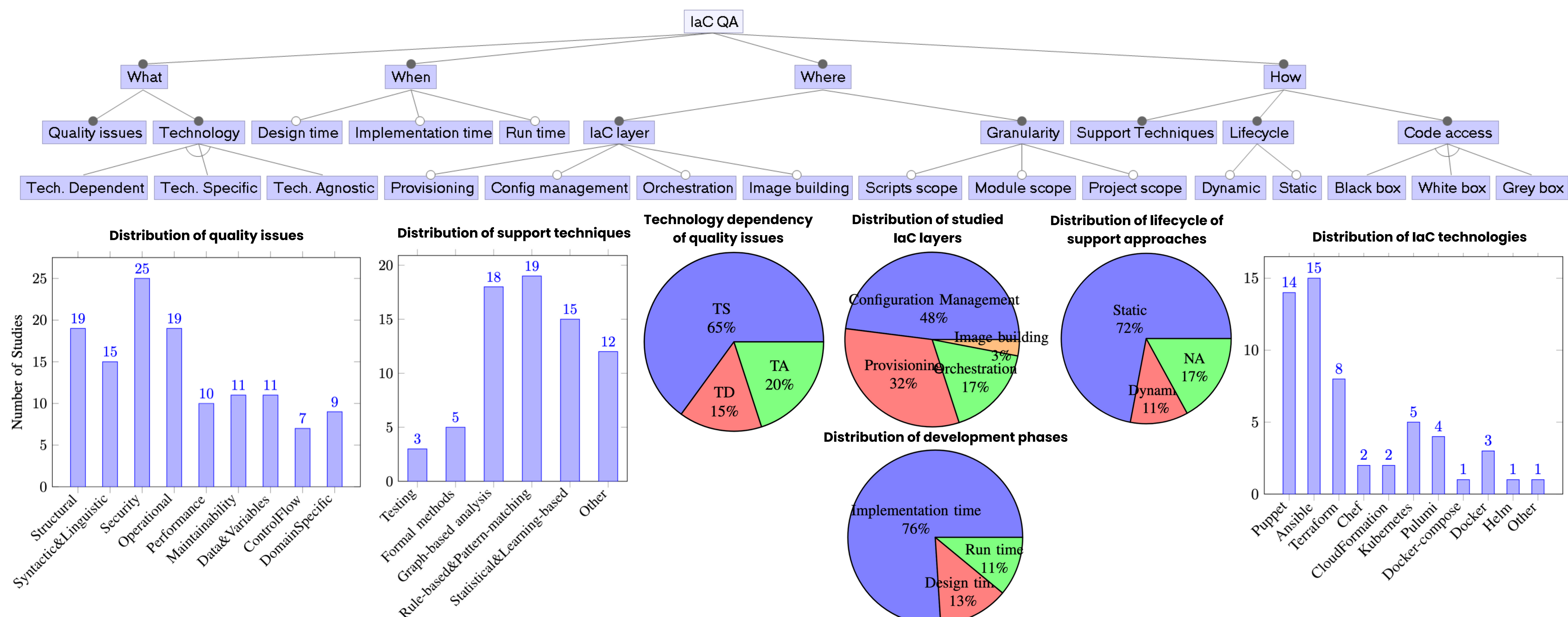
- **Infrastructure** refers to the software, platform, or hardware that delivers or deploys applications to production
- **Infrastructure as Code (IaC)** is the approach for automating infrastructure management through machine-readable **source code**

Challenges

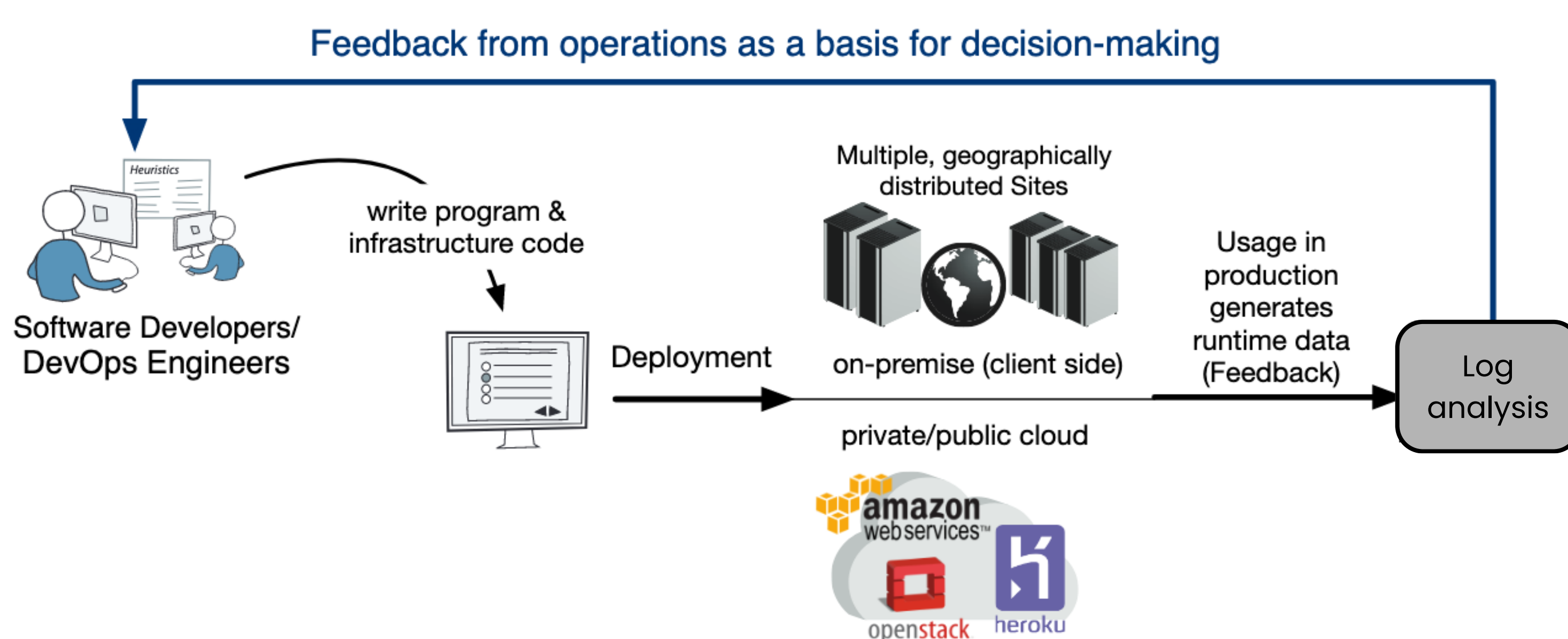
- Performance of deployed applications:
 - Under/Over-provisioning of infrastructure resources
 - Inconsistent configurations over infrastructure resources
- Inconsistent configurations across infrastructure layers:
 - Misalignment of configuration values over
 - Application
 - Application Runtime Platforms
 - Infrastructure Platform
- IaC quality assurance:
 - Limited evaluation and understanding of IaC quality issues

Systematic Literature Review (SLR) – Quality Assurance in Infrastructure as Code: Issues, Approaches, and Open Challenges

- **RQ1.** What quality issues have been investigated in IaC research, and what are their characteristics?
- **RQ2.** What support approaches have been proposed in the literature, and what are their properties?



Performance optimization



We want to investigate:

- Leveraging runtime metrics to optimize resource allocation and performance.
- Integrating log analysis into developer tools to enhance IaC quality during development.

Configuration consistency

