

On the Temporal Behaviour of a Large-Scale Microservice Architecture

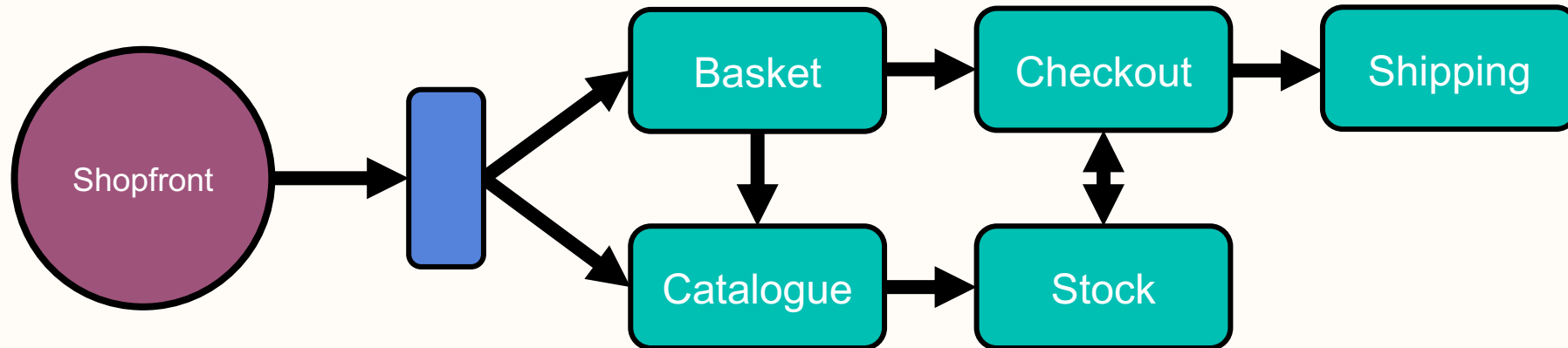
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UKNOF51, 3rd-4th April 2023



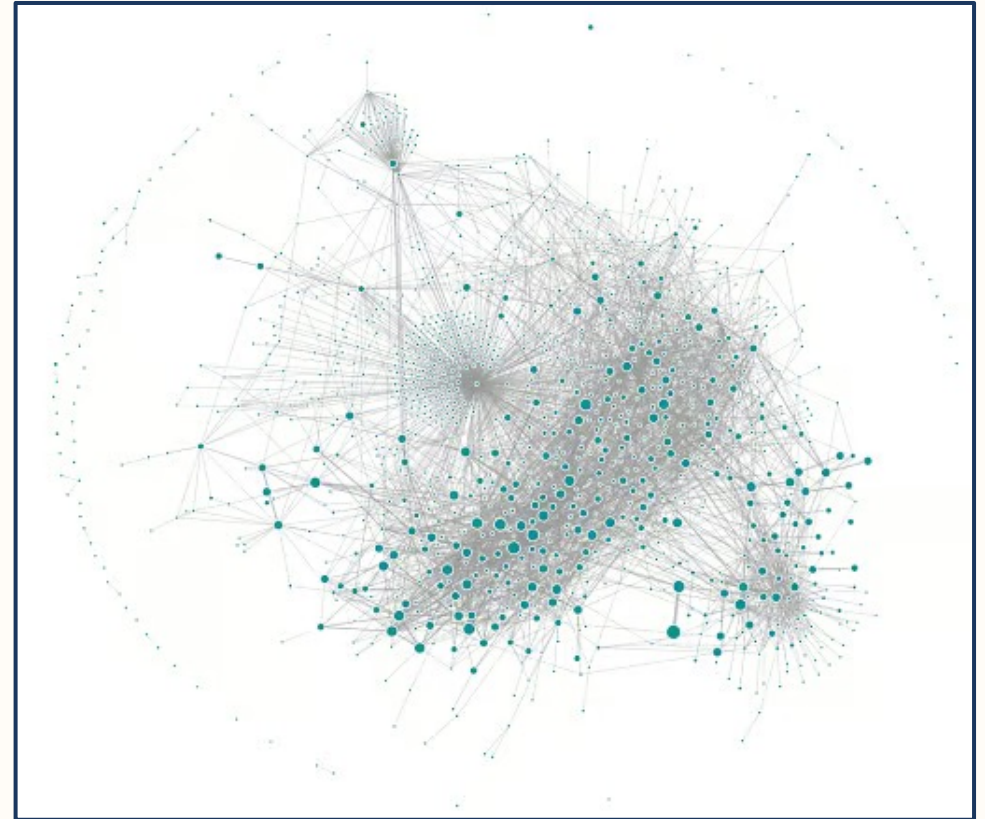
Microservices

- Architectural approach that composes an application as a collection of loosely coupled, fine-grained, services.



Microservice Complexity

- Evolutionary architectures
 - Evolve to provide new functionality.
 - Can grow complex.
 - Hard to understand on a system-wide scale.
- How complex is their behaviour?



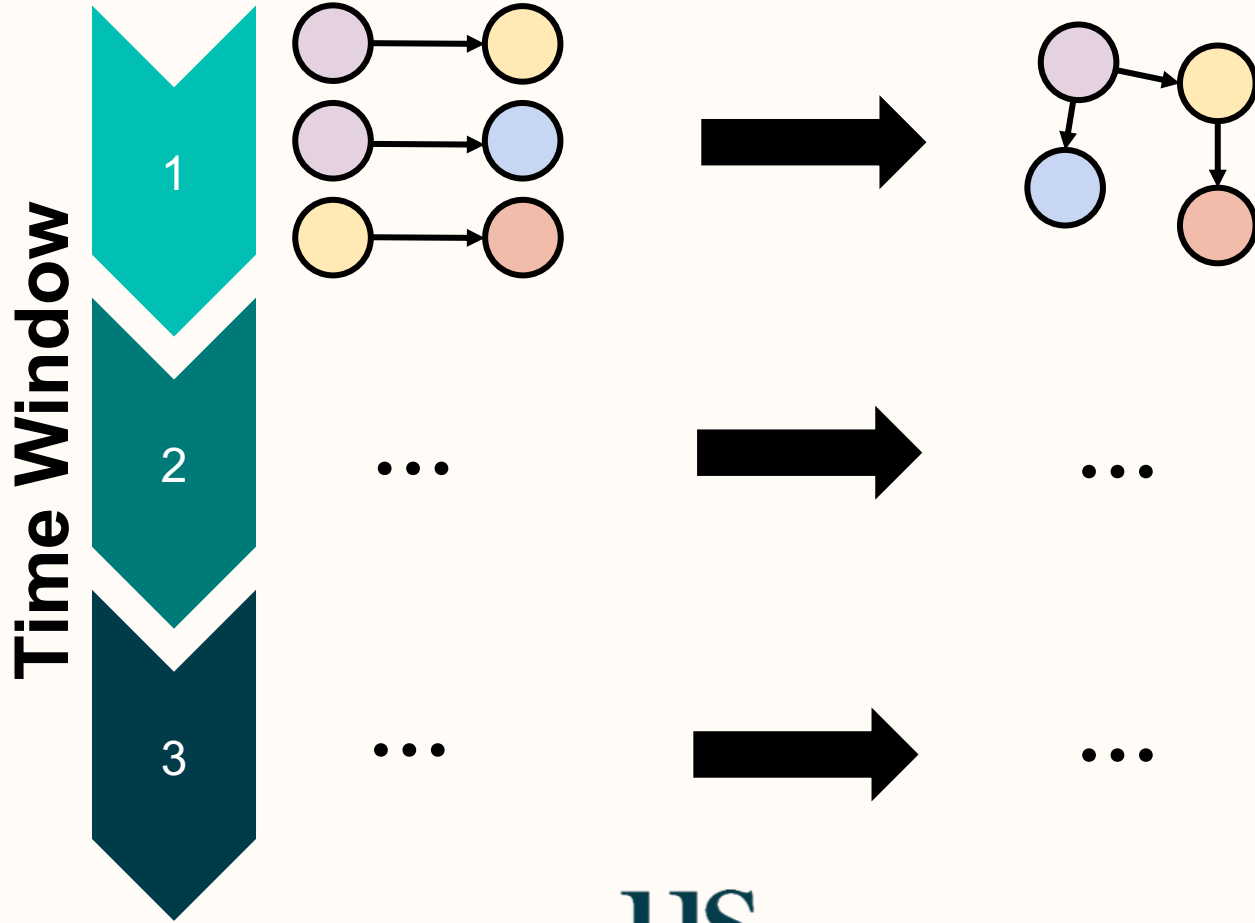
Microservice Dependencies

- **Static**
 - Aggregate view of all possible dependencies.
- **Runtime**
 - Who is actually communicating with who right now?
- How variable are the system-wide dependencies of a large-scale microservice architecture at runtime?

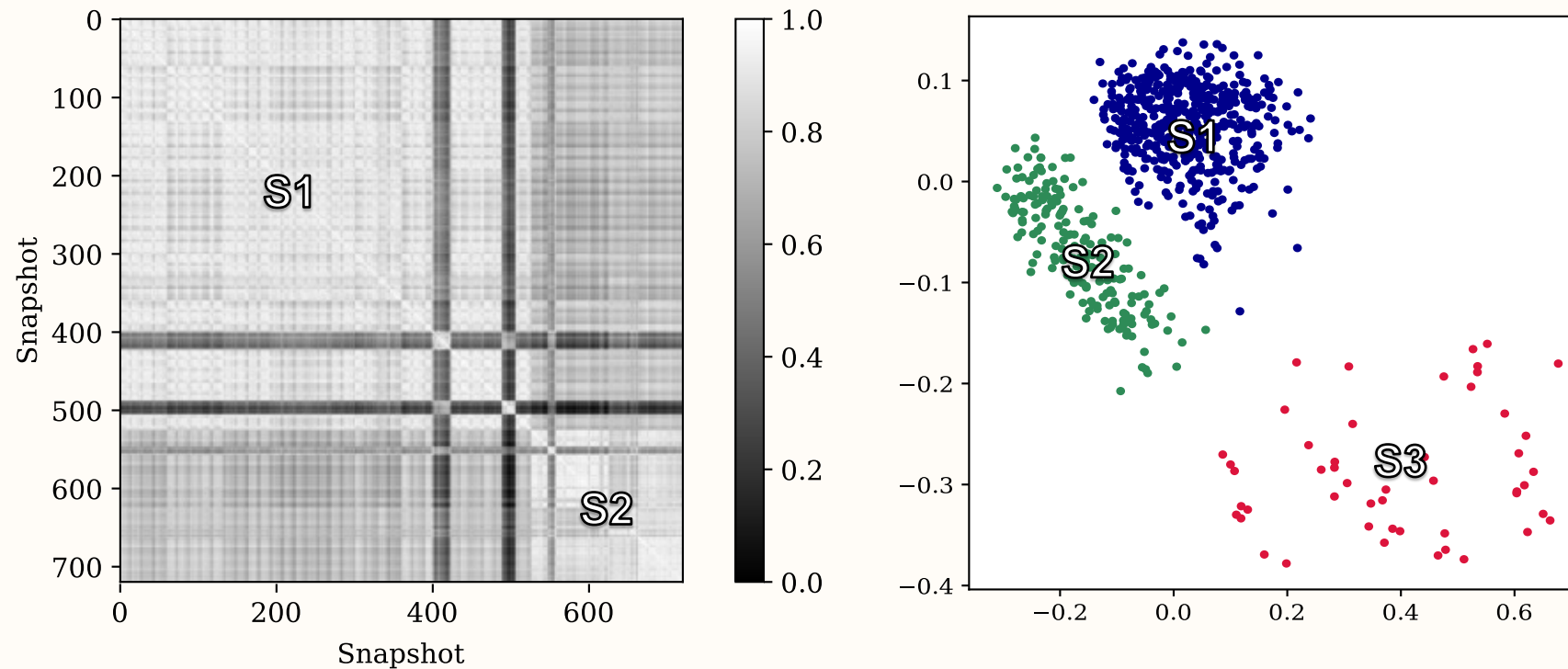
Alibaba Cluster Dataset

- Microservices running in a single production cluster
 - ~1,300 microservices and ~90,000 instances.
 - Running on ~13,000 bare-metal nodes.
- Metrics collected over 12 hrs of operation.
 - Call spans between microservices from front-end user requests!

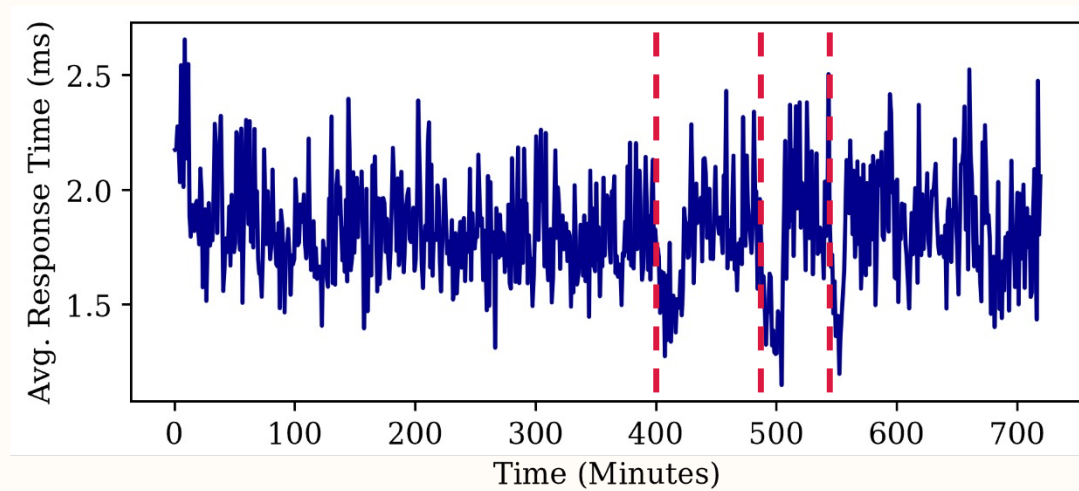
Method



Similarity Between Snapshots



Functional Implications?



More in depth findings to be published with NOMS 2023 proceedings!

Thank you for listening!

