



Leveraging Conformance Checking Techniques for Multi-Cloud SLA Compliance

Journée des doctorants SAMOVAR Mars 2023

Creative tech for Better Change

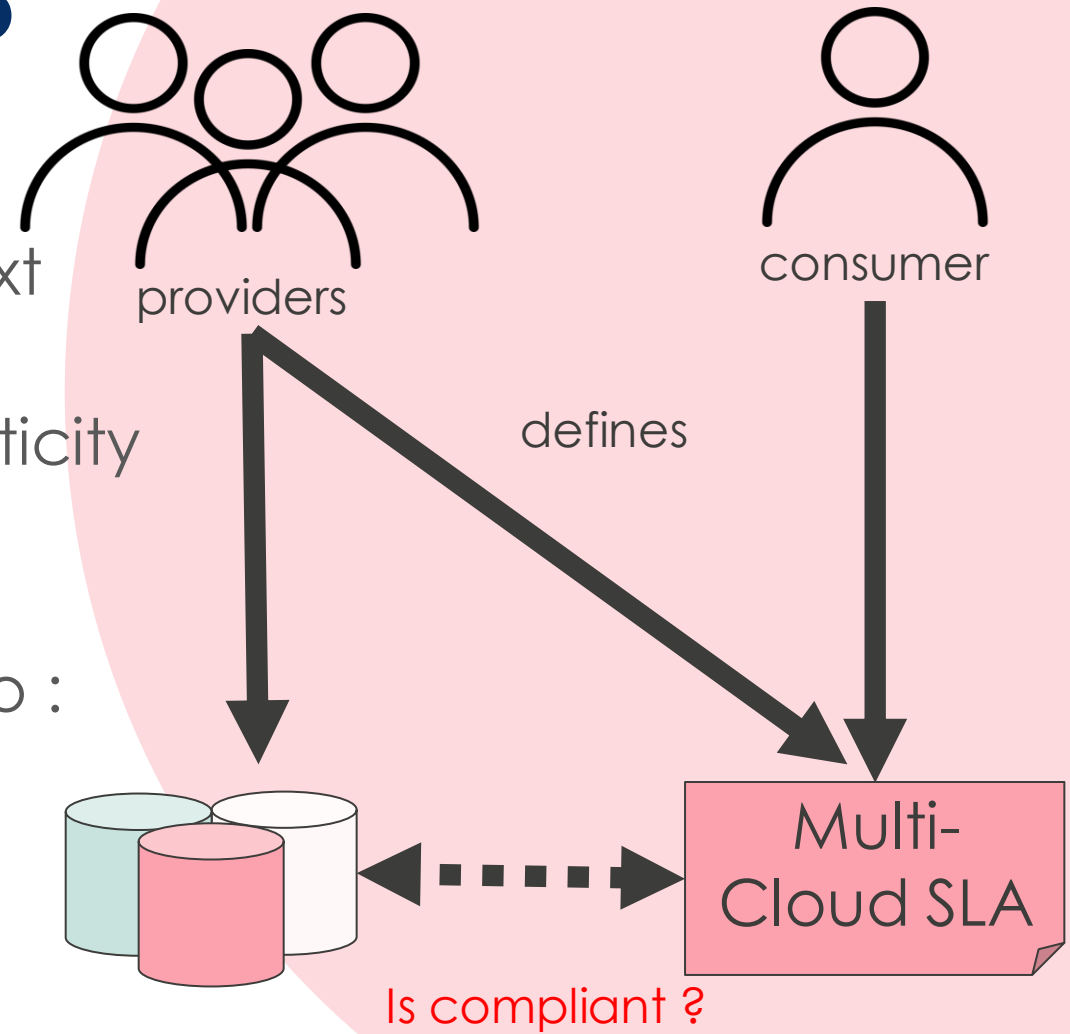
Jeremy MECHOUCHE, Roua Touihri, Mohamed SELLAMI, Walid GAALOUL



CONTEXT & PROBLEMS

ENRICHED MULTI-CLOUD SLA

- Managing SLAs in a Multi-Cloud Context
- Ensuring that SLOs and associated elasticity mechanisms are compliant
- Verifying compliance is complex due to :
 - Heterogeneous Providers/Services
 - Scattered event log data sources

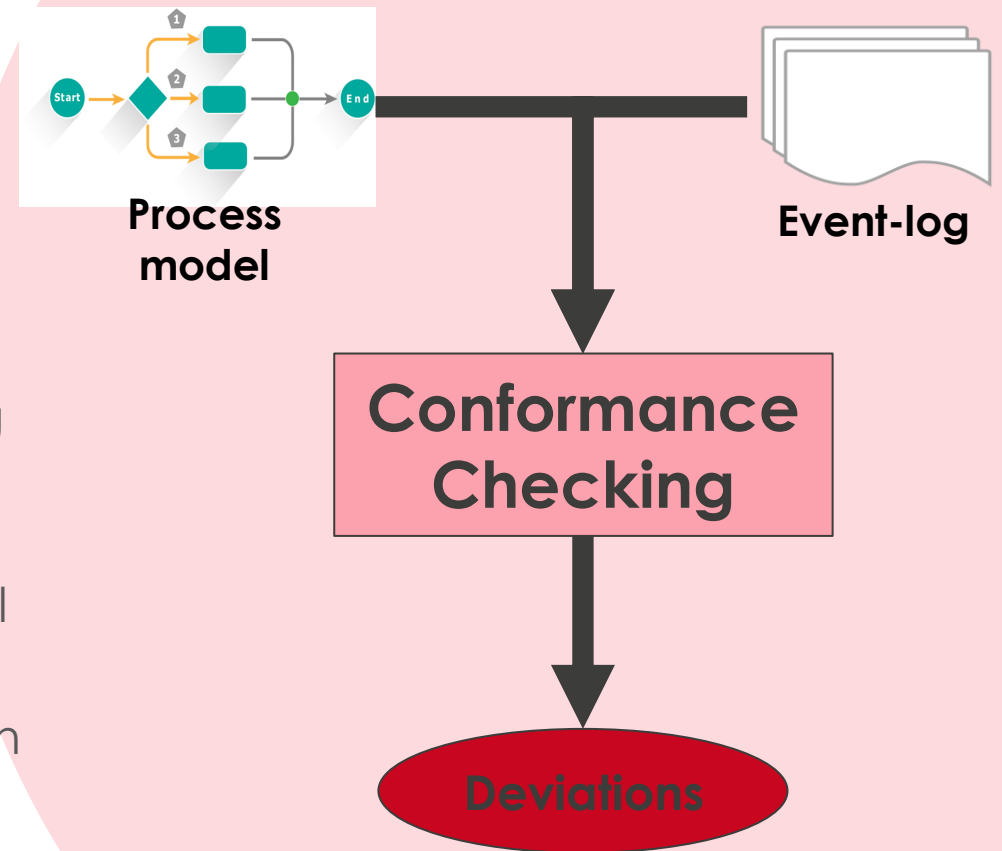


Creative tech for Better Change

PROPOSED METHOD

AN APPLICATION OF PROCESS MINING

- Proposing to use Conformance Checking process mining technique to compare process model and event logs
- Preprocessing event logs to create a comparable model
- Comparing and making event logs comparable for use in our context



Creative tech for Better Change

PROPOSED APPROACH

LOG PREPARATION

The approach consists of three elements:

1. Annotation :

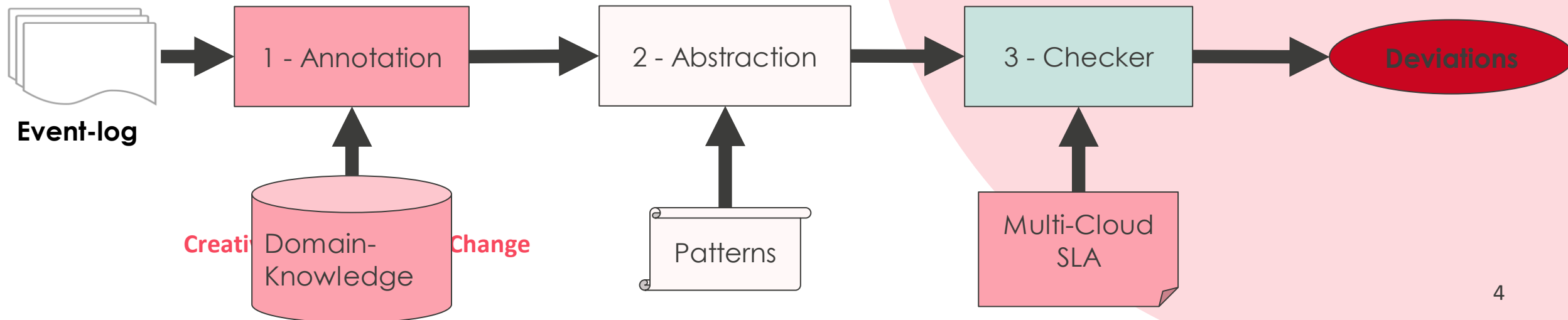
Annotate the **event-log** with model references using **Domain-Knowledge**

2. Abstraction :

Identify a model that describes the execution of a process depicted in an annotated event log based on **patterns** that we define

3. Checker :

Compare the identified model in annotated logs to the defined model for **Multi-Cloud SLA** based on a conformance checking technique to identify deviations.



DEVIATION EXAMPLE

- Deviation discovered such as 2 undefined instances deployed

Defined	Discovered
S1 {instances = 2}	S1 {instances = 2}
>>	T1 {E={cpu>=80%,60s}, A={scale-out,2}}
>>	S2 {instances = 4}

FUTURE WORKS

- Integrate process enhancement approach to propose correction to identified deviations
- Study the synchronization of elasticity mechanisms across multiple cloud providers
- Extend the conformance checking approach to real-time scenarios for operational support

Creative tech for Better Change