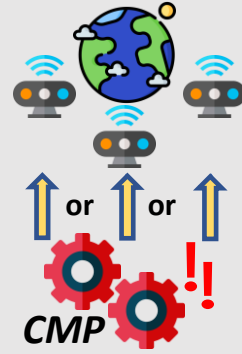


## The Problem

Pervasive computing environments may contain various contextual data Providers, producing the same context with varying quality and cost. Such cases lead the Context Management Platforms (CMPs) into a dilemma: 'Which provider to select?'



## Proposed Solution

A framework (conCQeng) that assesses the expected quality and cost of context from context providers; and performs quality and cost-aware service selection for the CMPs.

## Contributed methods

- 1 Creating quality and cost awareness at ConCQeng

An SLA template using which a context provider negotiates their cost and quality levels with CMP.

- 2 Quality assessment and aware selection
- 3 Cost assessment and aware selection

Performed by components: RR Processor, RR Repository and QoC Measurement

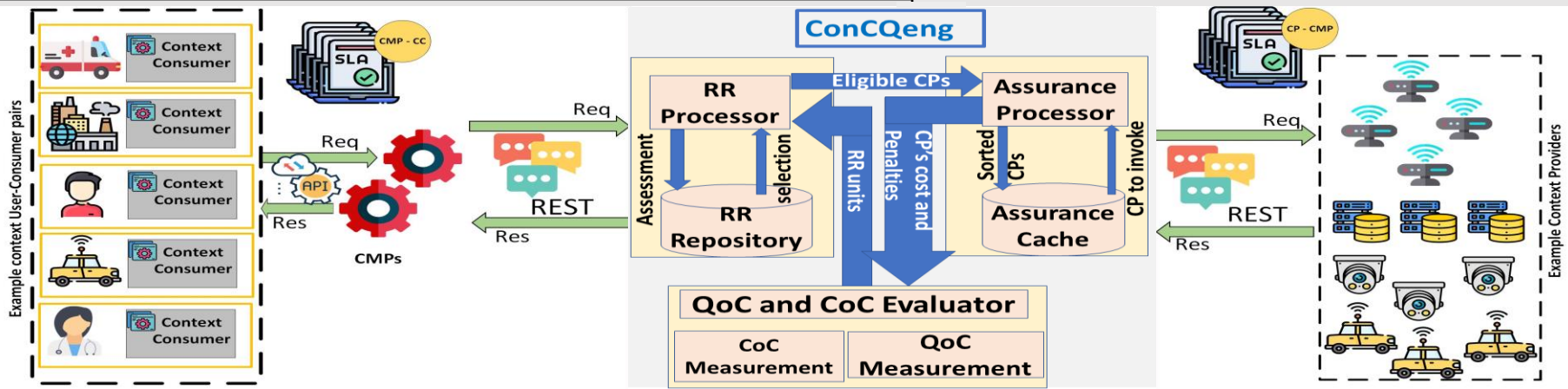
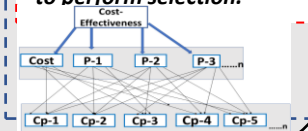
Performed by components: Assurance Processor, Assurance Cache and CoC Measurement

The conCQeng measures the metrics: **Timeliness, Completeness, Correctness and Representation** in context response and determine its quality satisfaction and cost.



Selects the context providers that potentially fulfill the quality requirements of the consumer type; using a novel approach called 'Relative Reputation'.

Using a novel approach called 'Assurance', selects the context provider with low-cost and high penalties from the providers from RR. Assurance uses Analytical Hierarchy Process (AHP) to perform selection.

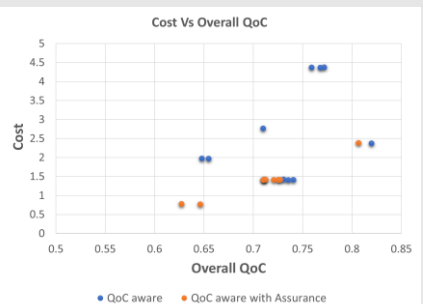
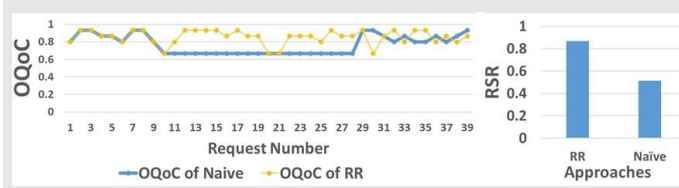


## Implementation

UI:   
ConCQeng:   
Storage:   
Data: IOT-DATA-SIMULATOR

## Results

Comparing QoC outcomes and context request success rate of Relative Reputation (RR) and Naive approaches



Cost-effectiveness while implementing RR with and without Assurance

## Impact

CMPs obtain quality aligned and cost-effective context  
Quality and cost assured context access from 3<sup>rd</sup> party IoT-data providers  
Fulfilment of quality requirements subjective to the context consumer type