

BIG DATA ANALYSES FOR INTELLIGENT MANAGEMENT OF WATER DISTRIBUTION

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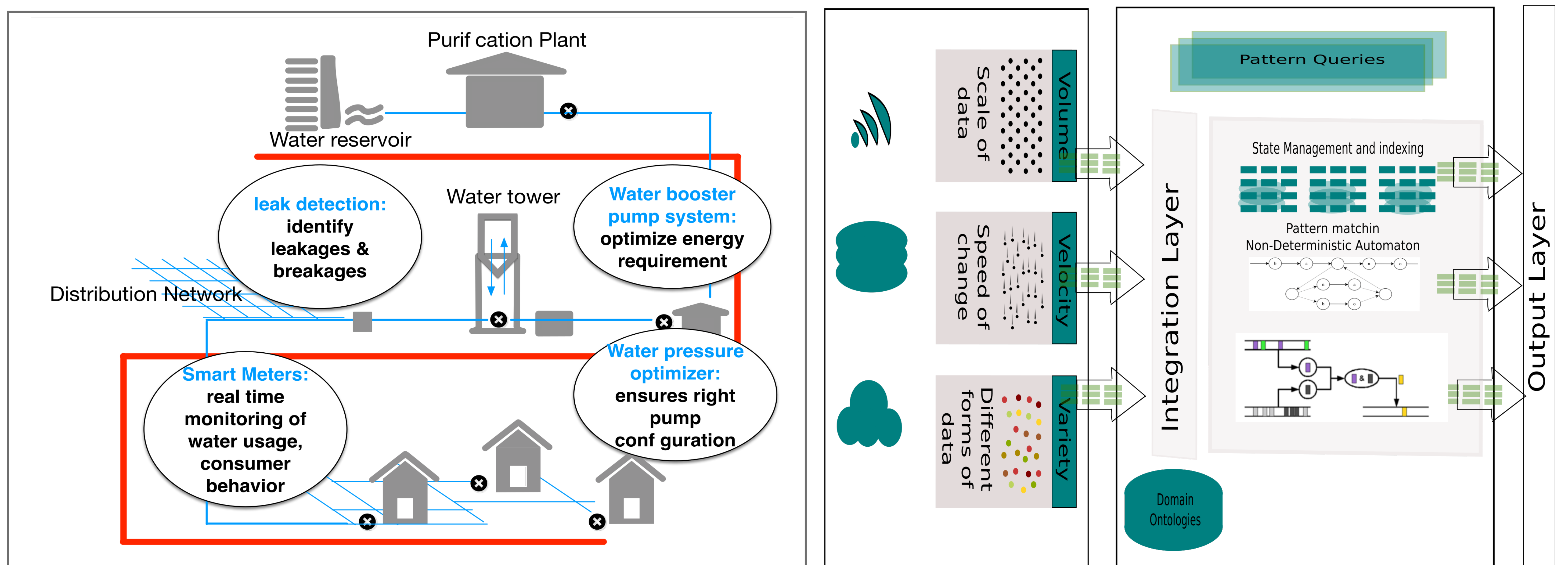
MOTIVATION & OBJECTIVES

- Intelligent water management is modernisation of the water distribution and offers smart monitoring, control and advanced analytic.
- Water conservation is one of the major social and economic challenges of the coming decades.
- We need to deal with the interoperability of massive heterogeneous data in real-time for an efficient solution towards a *Smart Water Network*.
- The objective is to design a real-time acquisition and event stream processing platform for efficient management of the smart water network.

EVENT STREAM PROCESSING ARCHITECTURE

- An architecture is needed to provide real-time knowledge extraction and processing capabilities.
- Extreme processing middle-ware capable of handling millions of events with real time response.
- CEP (Complex Event Processing) engine with the capacity to detect patterns in the huge flow of events and to generate Alarms.
- While regular expression matching is a well studied computer science problem, pattern matching over streams with complex structure poses certain challenges.
- For high performance, we need to optimize the overall architecture and find efficient algorithms for pattern matching over real time streams.

WATER MANAGEMENT OVERVIEW



CONCLUSION

- Integration and reasoning on multiple data sources that produces high volume of data.
- Improve the pattern matching algorithms in terms of CPU and memory consumption.
- Reuse of detected events and existing matches to detect more complex event.
- Distribute and parallelize pattern matching over stream processing.