CEP-ML: META-LANGUAGE TO SUPPORT INTEROPERABILITY BETWEEN HETEROGENEOUS COMPLEX EVENT PROCESSING SYSTEMS

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DECLARATION

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W.D. Amila Iroshani Paranawithana Date

The above candidate has carried out research for the Master of Science thesis under my supervision.

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Dr. Surangika Ranathunga Date

ABSTRACT

Distributed complex event processing systems give many benefits over centralized systems mainly in terms of scalability and extendibility. There are many types of CEP engines with different characteristics and query languages specialized to each domain. When it comes to deploying these distributed CEP systems in an industrial context, supporting interoperability between these heterogeneous event processing systems has become a major problem.

Not having a generally accepted definition language is a prime problem when integrating different CEP engines to achieve one goal in a distributed environment. There have been introduced new systems and languages to be operated efficiently in a distributed environment but, they have not addressed the problem of not having a generally accepted language when communicating between different CEP engines. There has been little quantitative analysis done on developing a meta-language and a language conversion parser. The absence of a language parser to convert between any available meta-language and other existing CEP languages is another noticeable shortage when migrating between different CEP systems.

This research presents a generally accepted definition meta-language for complex event processing to support interoperability between CEP systems along with a language parser to convert between this meta-language and existing languages. It acts as an intermediate language format in language conversion. The meta-language supports the main common language functions to reach the industrial level. CEP ML language parser supports three popular languages SiddhiQL, EPL and Stream that have dominated the field for years. Further, we have developed a web-based try-out tool which users can easily use to convert between these languages.

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LIST OF ABBREVIATIONS

Abbreviation	Description
API	Application Programming Interface
BPM	Business Process Management
CEP	Complex Event Processing
CPU	Central Processing Unit
CQL	Continuous Query Language
EPL	Event Processing Language
JAXB	Java Architecture for XML Binding
REST	Representational State Transfer
SQL	Structured Query Language
SiddhiQL	Siddhi Query Language
UI	User Interface
WAR	Web application Archive
XML	eXtensible Markup Language