

# The merit of data processing application elasticity

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IO optimizations along with the vertical and horizontal elasticity of an application are essential to achieve data processing performance linear scalability. However to deploy these three critical concepts in a unified software environment presents a challenge and as a result most of the existing data processing frameworks rely on external solutions to address them. For example in a multicore environment we run multiple copies of an application to attain “synthetic” vertical scalability. We rely on complex batch processing systems (with tons of overhead) to imitate so-called horizontal scaling. IO optimizations are not addressed most of the time, because entire effort is spent to perform data processing algorithmic optimizations. Note that IO and algorithmic optimizations by nature are very different and are difficult to address them simultaneously in a tightly coupled software environment.

In this paper we present CLAS12 reconstruction and analyses (CLARA) framework based data processing application design experiences and results.

CLARA is a real-time data stream-processing framework, that implements service-oriented architecture (SOA) in a flow based programming (FBP) paradigm. The choice of a paradigm with conjunction of a publish-subscribe message-passing middleware (MPM) allows integrating above-mentioned critical requirements in a unified software framework. CLARA presents an environment for developing agile, elastic, multilingual data processing applications, presenting solutions, capable of processing large volumes of distributed data interactively.

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## Secondary Keyword (Optional)

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## Primary Keyword (Mandatory)

Software development process and tools

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