# The ELASTIC software architecture

ELASTIC has designed a novel software architecture to address the challenge of efficiently distributing extreme-scale big-data analytics workflows across the compute continuum, from edge to cloud, while providing guarantees on the non-functional requirements of real-time, energy, communications and security, spanning from the smart mobility domain.

The ELASTIC Compute Continuum

The ELASTIC Software Architecture
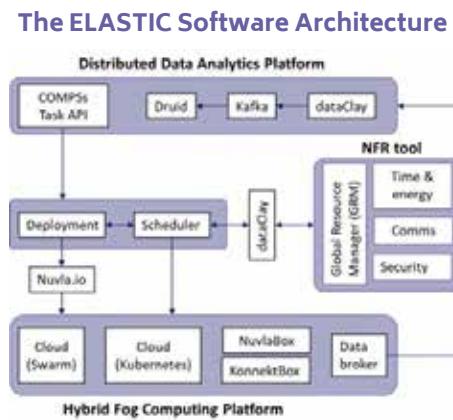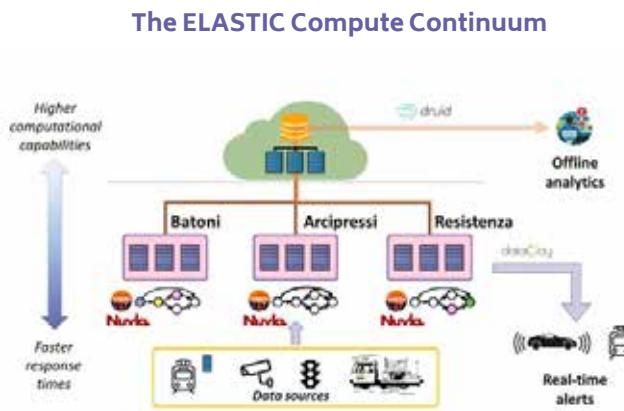
Key elements

- A **distributed data analytics platform** that allows the data-analytics methods to access to data in a unified way, independently of the compute continuum location at which analitycs are being executed

- A **non-functional Requirement Analysis layer**, for the continuous monitoring of the compute continuum and analytics execution, informing the Orchestrator about the operational requirements across the dimensions of time, energy, communication quality and security.

- An **orchestration layer**, responsible for deploying and distributing extreme-scale big-data analytics workflows across the compute continuum, while guaranteeing their non-functional requirements.

- An edge-to-cloud **computing platform,** containing all the software components required to efficiently implement the compute continuum concep, including cloud, edge, distributed data, monitoring and communications infrastructure.

Achievements

Up to 50%

reduction in software development costs, bringing down the development time for the smart city use case from 2 months to 2 weeks.

Integration and optimization

of advanced data analytics methods into a complex workflow for both real-time and offline analytics, executed across the edge/cloud continuum and collecting extreme data from multiple sources from both the tramway network and the city infrastructure.

Up to 38%

reduction of the analytics response time through advanced scheduling for distributed execution, taking into account data dependencies, the quality of communication links and real-time requirements.

Partners