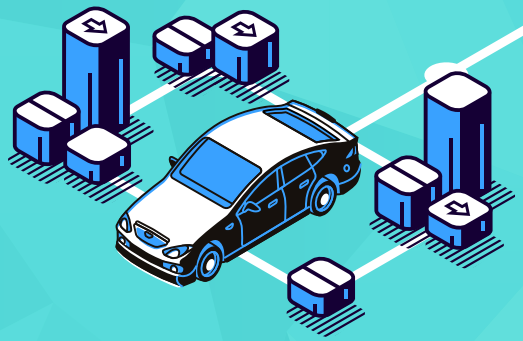
Sodalite

Software defined application infrastructures
management and engineering

USE CASE:
Vehicle IoT

What is the functionality of the Vehicle IoT ?

The Vehicle IoT use case builds on ADTP's KnowGo Car data management and services platform for connected vehicles. KnowGo Car deals primarily with providing a blending of automotive and personal data to data-driven vehicle services on a basis of driver consent (enabled by the GDPR), while aiding the data service provider in managing their end-to-end regulatory compliance, including in cross-border service delivery.



What is the actual problem to solve?

The future of automotive is data. To support and realise new data services arising from autonomous vehicles, connected car and ride sharing, enormous amounts of data must be collected, curated, aggregated, analysed, monitored and controlled.

Furthermore, there is the growing expectation of drivers to have on-demand services that flow seamlessly between countries and providers, and respect a person's right to privacy and security.

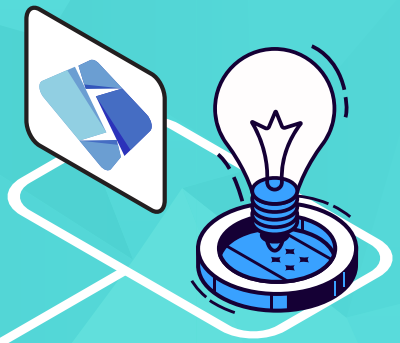
From industry's side, there is a growing demand to be able to provision such services quickly, reliably and efficiently across multiple countries, infrastructures and legal environments

SODALITE brings a solution

The application of SODALITE technologies benefit KnowGo Car in a number of ways:

(1) Run-time monitoring and refactoring allow for infrastructure-level reconfiguration to match the needs of the deployed service in response to environmental triggers (e.g. a change in legal jurisdiction), increasing the ability to provide service continuity without sacrificing compliance;

(2) Providing high-level tooling and abstraction that simplify the development, deployment, and monitoring of vehicular services for service providers. This enables service providers to focus on their own value-added components, while leaving much of the heavy lifting concerning operational compliance to the underlying platform, facilitated by SODALITE



Empowering tech innovation

SODALITE vehicle IoT use case, supports the development of tools that enable the deployment and orchestration of real-time dynamic service adaptations and non-repudiable audit logging in a simple and fast way. Together with the KnowGo Car platform, this means that players in the automotive industry can competitively roll out data services that are both data ethical and legally compliant across regulatory and country borders

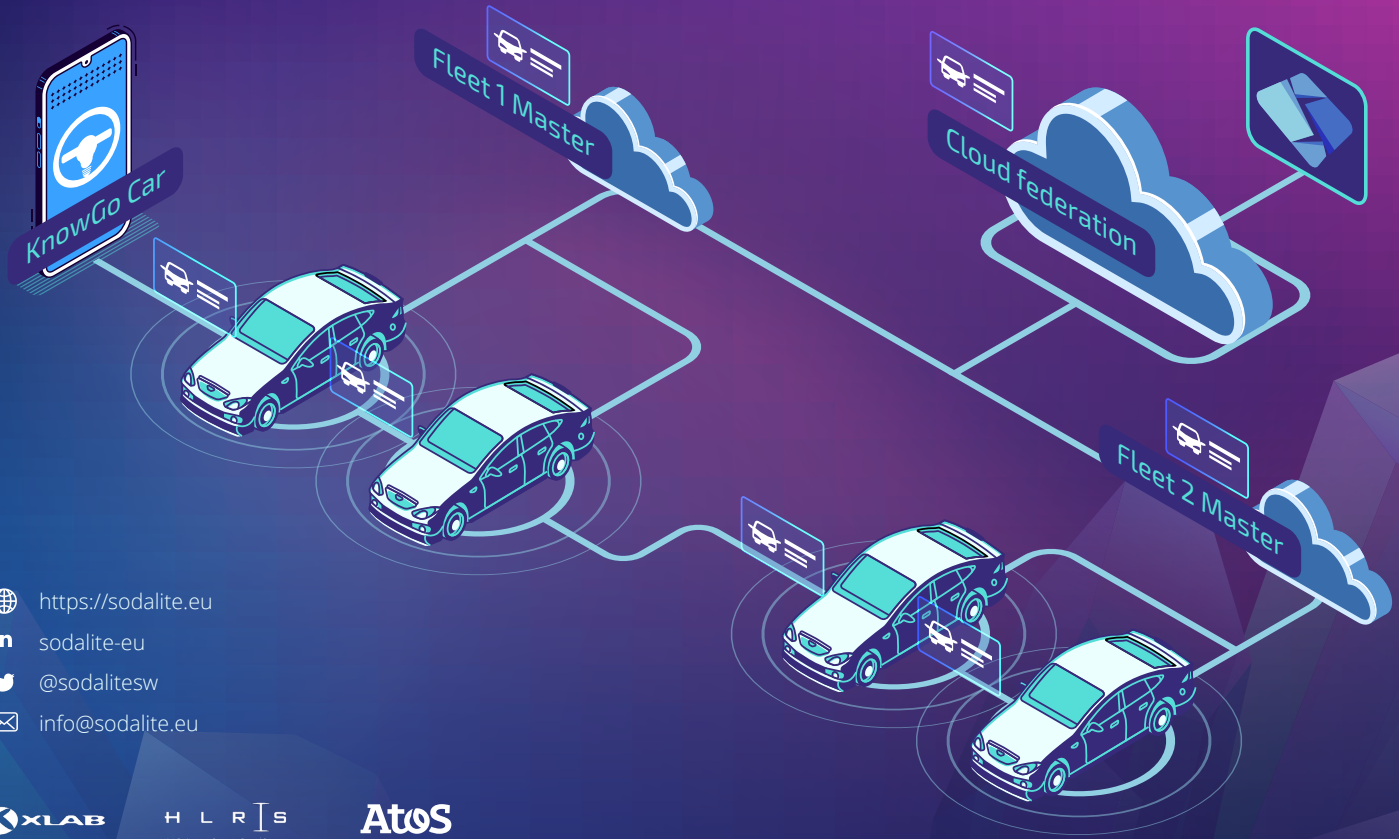
End user benefits & Society Wellness

Users: connected car and self-driving car service providers

Solution: K8s components enable the discovery of node resources and capabilities from which the SODALITE refactorer can infer possible reconfiguration strategies. The SODALITE monitoring components ensure that deployments can be monitored across a range of hardware configurations, while alerting rules can be defined generally and fine-tuned for their specific configuration. The refactorer uses these alerting rules together with an updated snapshot of the system state in order to make reconfiguration and redeployment suggestions, carried out by the orchestrator and applied directly to the Kubernetes cluster.

Problem: Changes in resource availability combined with limited computational capacity at the network Edge require applications to make effective use of available compute resources at the Edge, Cloud, and HPC levels. Edge-based resource changes and operating constraints (e.g. thermal limits) similarly require deployed applications to find next-best-fit deployment strategies that allow QoS parameters to be met across a variety of real-world usage scenarios in a dynamic multi-user system.

Differentiator: There are many solutions for workload monitoring in Kubernetes clusters, but most are concerned with availability and load balancing, and are geared more specifically at in-Cloud monitoring. There are no existing market solutions that specifically allow for Edge resources to be independently monitored and responded to. As many Edge-based heterogeneous accelerators have narrow thermal operating limits and are deployed in passively cooled enclosures, this kind of rule-based alerting and adaptation will become critical in order to maximize utility while reducing difficult to debug software faults (e.g. inference failures).



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