

THE TECHNOLOGIES MAKING TRANSPORTATION SMARTER AND FASTER



Smart cities projects, IoT-connected sensors and edge computing have the potential to accelerate the reinvention of transportation in the 2020s. How will these trends shake out? In this Q&A, **Kevin Tunks**, chief architect and national technical advisor at Red Hat, discusses the role of containers, DevOps, APIs and process automation in personalizing the transportation experience.

How is the evolution of transportation affecting governments' technology needs?

There's an explosion in the need for personalized experiences for consumers and employees. Younger employees are typically not as comfortable using legacy technologies and approaches. This is driving a change toward something that is much more visual, web-based and fast-moving.

How does containerization help agencies accelerate the adoption of next-generation transportation initiatives?

Large legacy systems have been slow to adapt to the changing needs of business, consumers and employees. Containerization breaks down the components of systems into smaller and more nimble services or microservices. These smaller components allow for much faster changes to be made without risking the stability of the overall system. Immutable containerized applications enable the secure management of technologies resting on the network edge. This allows government agencies to quickly evolve, adapt and innovate when it comes to initiatives like smart cities or technologies like connected autonomous vehicles.

The data that can now be ingested via multiple sensors becomes a valuable asset only once it has been processed and actioned. When vehicles are talking to roadways and sharing updates on issues like potholes, personalization to location becomes a powerful

thing. Insights from the data must be relevant, meaningful and responsive to evolving consumer experiences.

Why are DevOps methodologies so helpful to government agencies planning to revitalize transportation?

Containers need a pipeline for continuous integration and deployment. DevOps makes that possible because you're doing left-to-right development. When you deploy something, you build it, test it and secure it. You know what something is before you ever move it to a production environment (whether that's in a data center or at the edge), and you replace whatever was there before. So updates and changes aren't creating vulnerabilities from potential hygiene leaks. You can replace those components knowing you have a good state every time you push out a new capability.

How can APIs help government agencies take advantage of opportunities in 5G, edge computing and IoT sensors?

APIs let all these individual components talk to each other in a highly secure and performant way. They enable an architecture that lets you align technology with business use cases in a really fast, really secure, really smart way. When you're trying to do things like 5G, edge computing, IoT sensors and CAV [connected autonomous vehicle] initiatives, APIs give you a distributed architecture that allows those individual pieces to do smart things in different

locations. APIs can also connect to old systems and make that data relevant.

How can process automation help transportation leaders grapple with some of their most pressing challenges?

Process automation means bringing automation to things that had previously been manual — allowing us to encapsulate business logic at the edge and run smarter decision-making tools that are tailored to the problem we're trying to solve. And now we have platforms where we can run these automations safely and consistently. This means we can really focus on solving business problems as opposed to solving low-level technology problems. That's going to be a really big play.



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