

Cognitive Computing - Driving the Connected Car Experience Forward

There are many opportunities that smart, connected cars provide to the vehicle owner or driver. Yet, the benefits aren't limited to the person behind the wheel. The [Internet of Things](#) (IoT) can collect valuable insights for a far broader ecosystem, including:

- Automotive manufacturers
- Car dealers, fleet managers, and repair facilities
- Government agencies at the federal, state, and local levels
- Financial services companies
- Retailers
- Media and entertainment organizations
- Utilities, oil, and gas companies

Some of these benefits will emerge over time; others will grow from their current state. The IoT provides the foundation for the collection and transmission of vast amounts of smart/connected car data. Traditional data mining tools don't have the capacity to process all this information and enable these organizations to generate valuable insights from the petabytes of data transmitted by smart, connected vehicles.

This sort of data demands the kind of data ingestion, classification, and reasoning only a cognitive computing platform like IBM Watson can provide.

Cognitive Computing under the Hood

You're driving across the country with your family in your sedan. An amber "Service Engine Soon" warning appears on your dashboard. You had your oil changed not long ago and regularly maintain your car. The warning light could signal anything from an untorqued gas cap to a failed airflow sensor or something more serious.

For most cars, the service engine light meant taking your vehicle to a repair facility, having it hooked up to a diagnostic scope, and having the technician troubleshoot the issue based on a set of codes. Electronic Control Modules in

many of today's vehicles pale compared to the sort of diagnostic capabilities that cognitive technology improves drastically. Vehicles that self-diagnose and help car owners to adhere to a realistic [maintenance schedule](#) provide more peace of mind than a generic Service Engine Soon light.

Beyond alerting the driver, connected cars can attempt to diagnose the issue locally while "reaching out" to the manufacturer's systems. The diagnostic system can check for recalls to dealer repair logs to check the vehicle's repair history for a possible mechanical remedy, related recall, or a government record of a vehicle accident that could be causing a malfunction. Public and private sector organizations will have to evolve to cognitive information hubs and [open data ecosystems](#) and platforms to enable data democratization to those who need it.

Car manufacturers and dealers will benefit by building engagement with their customers. Otherwise, their relationship may end once a car is sold, and possibly [supporting the customer](#) through a lease or warranty coverage term

Enriching the Driving Experience

Self-driving cars with navigation capabilities are one way to enhance the time you spend behind the windshield. In-car multimedia expands beyond terrestrial and satellite radio or MP3 players for drivers and DVD displays for passengers. [Automotive infotainment](#) and mobile device integration are some of the hottest technologies showcased at events like CES.

What is now wasted time in the car during mid-week rush hour gridlock or midnight drives home from conferences can often be more productive, or at least more fun. Cognitive technology has the potential to deliver personalized music, news, weather, and other content to drivers and passengers based on preferences. Remember how innovative it seemed when your car remembered the position you liked your seat positioned? Imagine how cool it would be when you rent a car for your preferences to be preconfigured into a vehicle you've never sat in before. Or if you could confirm your air travel seating while you drive to the airport.

Enhancing the Vehicle Buying Experience

In a 2015 research report, Gartner predicted 250 million connected cars on the road by 2020. Even at half that many cars, [cognitive technology](#) makes far better use of those connections than the core functions of the IoT. That said,

for all of those cars to get on the road, many of them will need to be purchased by consumers in dealerships around the world.

The way you buy a car that fits your lifestyle is changing along with technology. Customer relationship management systems have been tracking customer preferences for purchase financing requirements and option/trim level preferences for several years now.

Buying a smart, connected car streamlines many of the processes when you take delivery of your vehicle and insure it. Car dealers for brands like [BMW](#) can offer contract services like infotainment, and software upgrades for advanced features like Watson-enhanced [OnStar navigation](#). Imagine paying for your chai latte before you get to the drive-through window, prepaying for gas without your wallet, or finding available parking near the ballpark if you're late for the game.

First Responders and Government

IoT-connected cars offer more safeguards against vehicle theft and for recovery. Thieves that have historically targeted smart cars have used Denial of Service attacks on endpoints and hacking portal/mobile apps.

The Watson IoT platform offers additional [security safeguards](#) and [blockchain](#) encryption for data transmission. Messages between a vehicle and a manufacturer or financial services provider are sure to be authentic, trustworthy, and safe from hackers. Police will be able to find stolen vehicles faster, collect accident data with more accuracy, and many dangerous high-speed chases can be avoided by tracking vehicles driven by suspects.

Government organizations will benefit from better data on emissions, get access to more data on traffic volumes, and according to a US [Department of Transportation](#) report, drivers will be able to find alternate routes to their destinations, reducing congestion. Other benefits they cite include:

- Fewer accidents caused by speeding through red lights, around curves in the roadway and in winter weather
- Interfaces with traffic signals and road condition tracking systems can help drivers avoid obstacles such as road construction, low-emissions zones, and drive in sync with traffic signal cadence
- Emergency responders can transmit messages to surrounding vehicles to yield the roadway. The same is true for trains and public transit vehicles to allow for faster movement of priority vehicles

"Smart cars" on television and movies have been portrayed as AI-empowered cars like K.I.T.T. on Knight Rider, or robots in disguise like Bumblebee from the Transformers. Connected cars, enhanced by cognitive technology ecosystems and platforms like Watson won't morph into a robot, or make you look as cool as "The Hoff". Yet for the lifestyles, transportation requirements, and driving experiences which most of us need, Watson Cognitive technology provides a scalable, future-proof solution for companies, people, and processes associated with automotive experiences.

Do you work with an [application development firm](#) looking to create innovation in the automotive industry leveraging cognitive technology? Or are you an [automotive manufacturer](#) or service provider looking to improve customer experiences with the IoT, Watson and/or blockchain? Contact the IBM Partner or Sales team in your country for further assistance.

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