



INSTITUTE
Building Extraordinary IP Assets

Episode 05: Data Monetization in
Autonomous Vehicles

Data Monetization Webinar Series

6–Episode Webinar Series



Episode 01 – Introduction: Why Data is so Valuable and how Data Monetization has Become Big Business
Thursday, October 8, 2020 at 12:00 PM CT

Episode 02 – Data Monetization in Medical Device, Healthcare and Insurance
Thursday, October 22, 2020 at 12:00 PM CT

Episode 03 – Data Monetization in Manufacturing, Industrial & B2B Markets
Thursday, November 5, 2020 at 12:00 PM CT

Episode 04 – Data Monetization in Retail and Consumer
Thursday, November 19, 2020 at 12:00 PM CT

Episode 05 – Data Monetization in Autonomous Vehicles
Thursday, December 3, 2020 at 12:00 PM CT

Episode 06 – Data Monetization in Financial Services
Thursday, December 17, 2020 at 12:00 PM CT

Before We Get Started...



Recording

A link to the recording and slides will be emailed to all registrants.



Questions

Type in the question box and we will answer in real time or during the Q&A.



Social

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Today's Presenters...



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Principal
Schwegman Lundberg & Woessner
Former Senior Engineer at Cardiac
Pacemakers (Guidant Corp.)



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Kaivan Karimi

Analytics Chair
IoT, AV/MaaS, Cloud and 5G Senior
Technologist at intersection of
semiconductor and SW technologies
related to
IoT/Autonomy/Intelligence
Transportation, Networking
Former Senior VP at BlackBerry,
Atmel, Freescale Semiconductor

What you will learn today

- Growth of Autonomous Vehicles
- Examples of AV Data Monetization
- Why Companies Monetize their Data
- Future of Autonomous Vehicle Ecosystem and Data Monetization

Autonomous Car

The six levels of autonomous driving:

- Level 0: No automation
- Level 1: Driver Assistance
- Level 2: Partial Automation
- Level 3: Conditional Automation
- Level 4: High Automation
- Level 5: Full Automation



RADAR:
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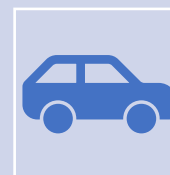
SONAR:
~10-100 KB
per second

GPS:
~50 KB
per second

CAMERAS:
~20-40 KB
per second

LIDAR:
~10-70 KB
per second

AUTONOMOUS VEHICLES GET
4,000 GB
DATA EACH DAY



Today's connected cars have sensors and cameras that monitor and track their surroundings, producing vast amounts of data that's incredibly valuable to automakers and third-parties.



A car can generate approximately 25 gigabytes of data every hour and as much as 4,000 gigabytes a day.



Global revenue from car data monetization will grow to be between \$450 - \$750 billion by 2030

How can car data be utilized?

- Currently, the most common use of car data is to improve the driving experience.
- Car sharing will become a preferred mobility option.
- Insurance Information Institute reports that there will be 3.5 million self-driving vehicles on U.S. roads by 2025, and 4.5 million by 2030.
- Car sharing will be on the rise: PWC's research reveals that 47 percent of European consumers would consider giving up their own car in favor of an autonomous taxi service

Self-driving vehicles in public transportation

- Waymo taxi service
- The self-driving vehicle technology unit of Google, has started offering rides in minivans with no human attendant on board.
- Passengers can ride within a 50-square mile area of Phoenix.



Self-driving vehicles in public transportation

- Self-driving buses will be operating in Gainesville, Florida in regular driving lanes (not designated lanes).
- Buses can accommodate 12 people, will cover a 4 square mile area, and run 24 hours a day.
- Similar self-driving bus services are being introduced in Singapore and parts of Germany.



Personalization-as-a-Service

- Carmakers are working with service providers to make cars personalized and intuitive through touch screen dashboards, voice activation, and in-car sensors.
- The Sony Vision-S concept car is embedded with 33 sensors. Enables each passenger to enjoy their favorite music in their seats with a personalized sound configuration.
- Sony Vision-S concept car comes with an accompanying app that enables a driver to summon their parked car to their present location.



In-car retail experiences

- Self-driving cars present retailers with an opportunity to promote their products on journeys.
- By combining location-based services with advertising capabilities, drivers can order and pay for items before they arrive at their destination.
- General Motors have unveiled *Marketplace*, industry's first commerce platform for on-demand reservations and purchases.
- The dashboard touchscreen retail platform leverages machine learning from real-time interaction data, such as location, time of day, and a driver's established digital relationship with third-party merchants.



Future of entertainment in autonomous vehicles

- Drivers will soon find themselves with free time in their cars, looking for ways to stay entertained.
- By 2030, we will consume more than 52 billion hours of media content in our cars, annually.
- In-car infotainment market is set to be worth \$54.8 billion by 2027.



- Immersive, Interactive Entertainment
 - Owners can connect and watch videos on their Netflix, Hulu and YouTube accounts via the center console (when the car is parked).
 - Holoride, creates a virtual experience combining virtual reality headsets with real-time physical feedback of the car in motion.

Car Meets Cloud: Future of Automotive & Intelligent Transportation Data Monetization

Car OEMs facing convergence many forces changing the industry driven by CASE:

Connected



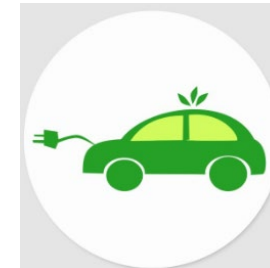
Autonomous



Shared/Subscription



Electrification



Resulting in the landscape changing with many **NEW** things for OEMs to consider

Automotive Business – Not Business As Usual

New Threats

- Shared economy lowering car ownership
- New more agile players entering the scene
- Cybersecurity issues due to connectivity and complexity
- Cybersecurity issues due to lines of code
- Changing safety and security landscape
- Chinese government tipping the scale in favor of Chinese players
- Sheer volume of strategic decisions to be made

New Advanced Technologies

- Electrification (Batteries, Hydrogen Fuel)
- New safety and autonomy systems
- Cloud connectivity everywhere
- Advanced connectivity technologies (4G/5G/V2X/Satellite)
- Pervasive AI/ML and contextual algorithms
- New sensors for the robot that ultimately will be driving the car
- New paints and surface material to aid in cars being “seen”

New Business Models

- Lease by hour, day, month, Multi-Modal Mobility-as-a-Service (MaaS)
- Ride sharing, Robo Taxis, Shuttles for the last mile
- On-Demand services from owned vehicles
- Contextual services (Apps) TBD
- Autonomous services
- Cars as a part of infrastructure for smart cities
- Predictive maintenance, on demand, etc.
- Activity, geo-location, driving behavior based insurance

New Driver Experiences

- Multiple (10-12) displays
- Self adjusting and contouring seats
- Personal virtual assistants - home to car
- Streaming audio and video services
- Premium audio
- Advanced augmented navigation
- Automatic feature updates via OTA systems
- Smart-Home automotive connected services
- Advanced biometric services

New Strategic Partnerships

- New sources of revenue, but many people at the table
- New ecosystem players drastically changing the supply chain landscape
- Car as an ecosystem on wheels requires simplifying the value chain (direct sourcing, etc.)
- Shared-risk business models with stakeholders
- Joint software development with other OEMs, Tier-1s, etc.
- Partnership with hyperscale cloud suppliers

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But Creating New Sources Of Revenue For All Stakeholders At The Table

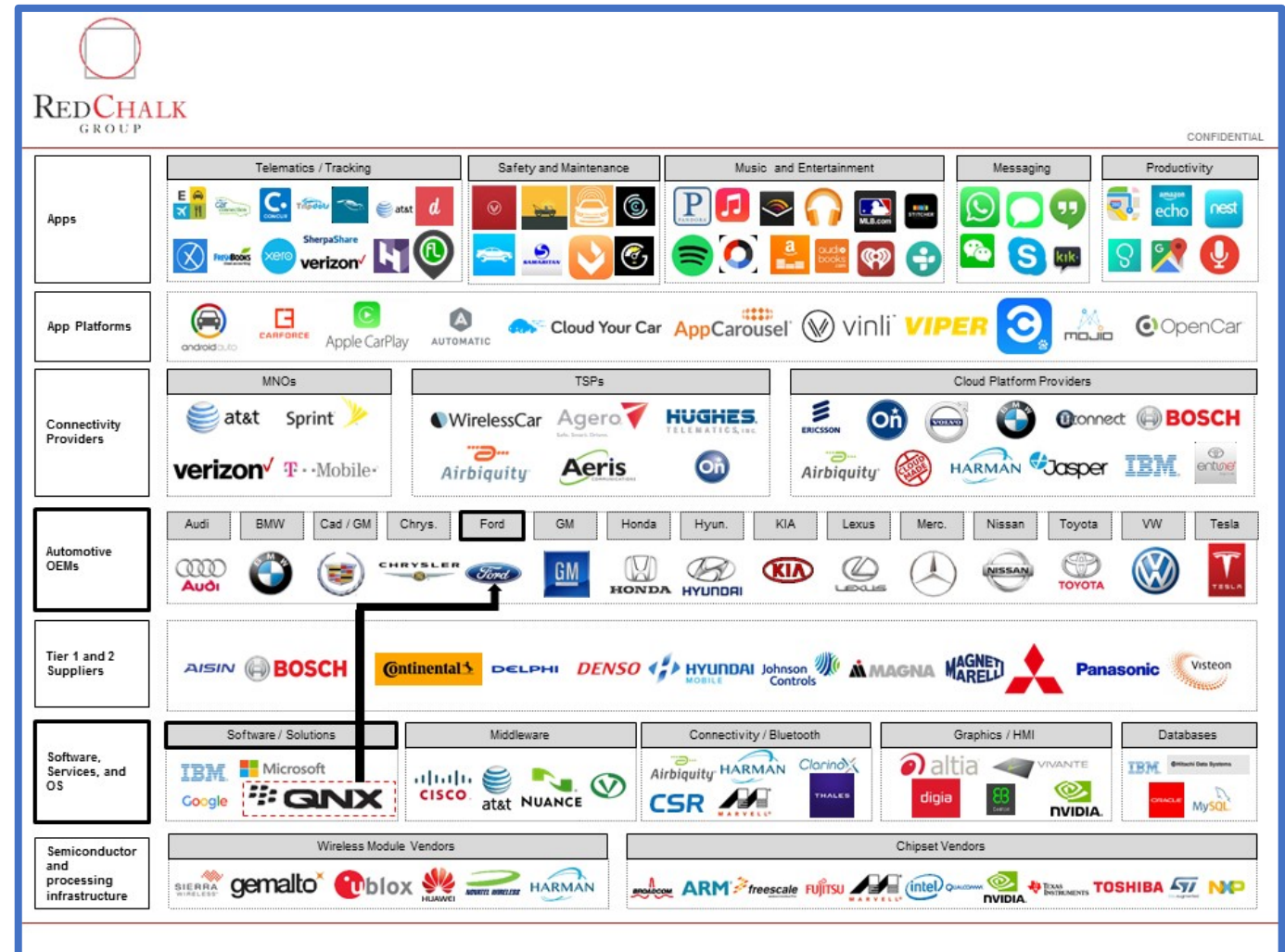
Large Ecosystem Of New Players At The Table

New sources of revenue, but many stakeholders at the table:

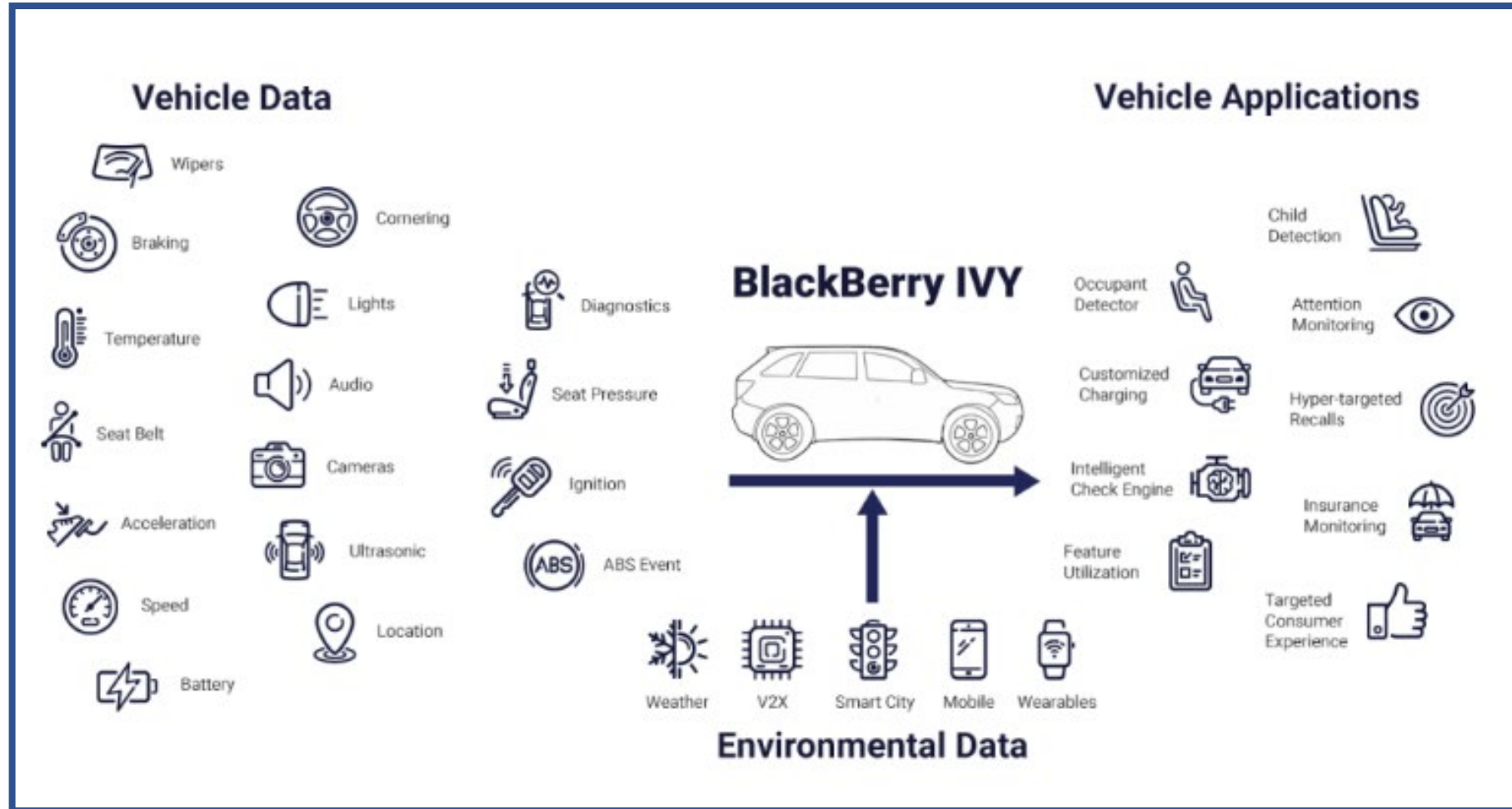
- **Traditional Stakeholders:** OEMs, car owner, aftermarket value add, dealers, insurance companies, emergency services, independent mechanic shops, fuel stations, cities and municipalities, etc.
- **New Stakeholders:** Cloud providers, new Apps and services, connectivity providers

For the model to work, we need:

- Technology maturity, and standard framework
- New governance & revenue sharing model
- New regional and global laws, including those related to ownership and liability laws
- **New safety, security, and privacy laws**
- New AI & ML (Ethical) standards
- New infrastructure within the context of smart cities

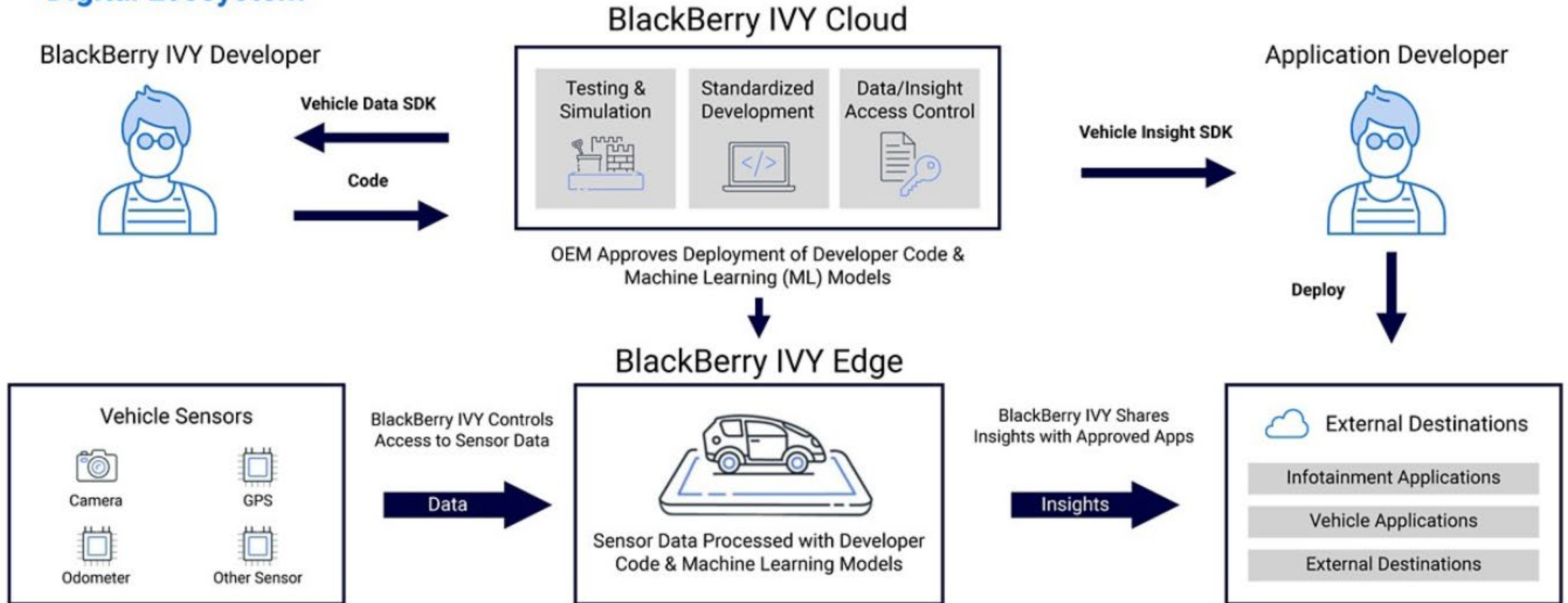


Car Meets Cloud: BlackBerry IVY Example



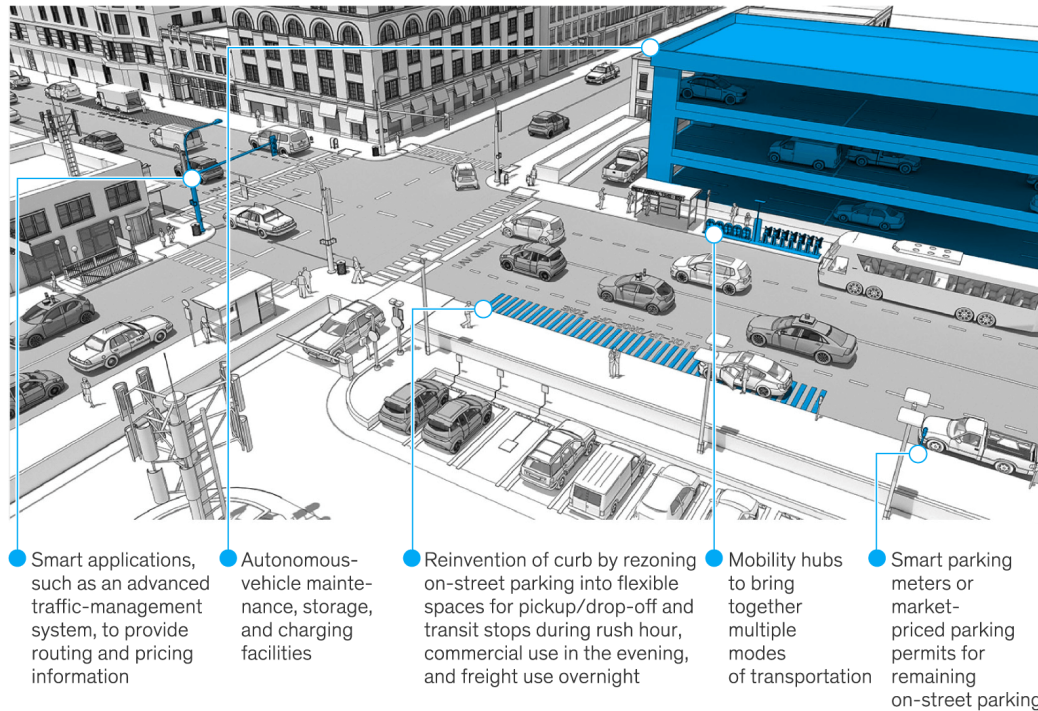
Car Meets Cloud: BlackBerry IVY Example

Digital Ecosystem



Example Services

There are several infrastructure options transit leaders could consider to promote shared ridership.



McKinsey
& Company

- In-field health checks to save trip to dealer
- Remote fixes via software over-the-air (OTA) updates, i.e. Tesla
- Changing suspension system in SUV via OTA for weekend trip to mountains
- Automatically finding and paying for an open parking spot in city
- Automatic service delivery to your car (car wash, window replacement)
- Same applies to Mobility-as-a-Service within the Future Intelligent Transportation System (ITS)

Industry Business Models Now Centered Around Data Acquisition



- Estimated that 98% of all new cars in 2020 will be connected = data acquisition
- Market size, opportunities and business models are centered around the data (at rest and in motion)
 - What data needs to be collected, it's criticality and why
 - What geographic constraints and specific privacy issues to deal with
 - Which collected data can be monetized
 - How often data collected and what variables determine frequency
 - How to handle huge volumes of data
 - How to collect, cleanse, enrich, protect, aggregate, analyze and store data
 - Infrastructure and policies for data at rest and data in motion
 - What data can be shared with whom and why with strict guidelines established for consent management and security
 - What infrastructure to use for cost-effective collection, aggregation, storage, computing, and transfer of data in both directions

**Thank You For Your Interest
Questions?**

These materials are for general informational purposes only. They are not intended to be legal advice, and should not be taken as legal advice. They do not establish an attorney-client relationship.