

WNRVR

W^ND^RV^R

Chris Lanier

Vice President Global Solution Sales
and Automotive Solutions



The research included...

200+ Organizations

Audi USA Chevrolet Chrysler Ford Motor Company Freightliner GMC
American Honda Motor Company Hyundai USA Jaguar USA Karma
Automotive Kia America Lucid Motors Mazda North American Operations
Mitsubishi Motors North America
Nissan USA Oshkosh Corporation
Rivian Subaru of America Jeep
Peterbilt Motors Company Fisker
VLF Automotive Toyota Motor Sales USA
Volkswagen Group of America



Forbes

WINDRVR

Where Is The Focus For The New Software Centric Automotive Industry

— Design — Development — Manufacturing — Deployment — Operations —

Peering into the Future

You have heard of the idea behind software-centric business models and it would not be appealing to your organization.

You have heard of the idea behind software-centric business models but have not really investigated it extensively to have an opinion.

There have been some minor conversations about software-centric business models in your organization but no real plans or experiments yet.

You have had planning and strategy conversations about software-centric business models as you intend to run experiments or further explore the opportunities.

Some core changes in the organization's business practices have occurred to transition to a software-centric business model for your products and services.

A software-centric business model is becoming **mainstream** in the organization's business practices.

Software-centric business models could be the most **predominant business practices** for your organization going forward based on what you have learned already from experiments and use cases.

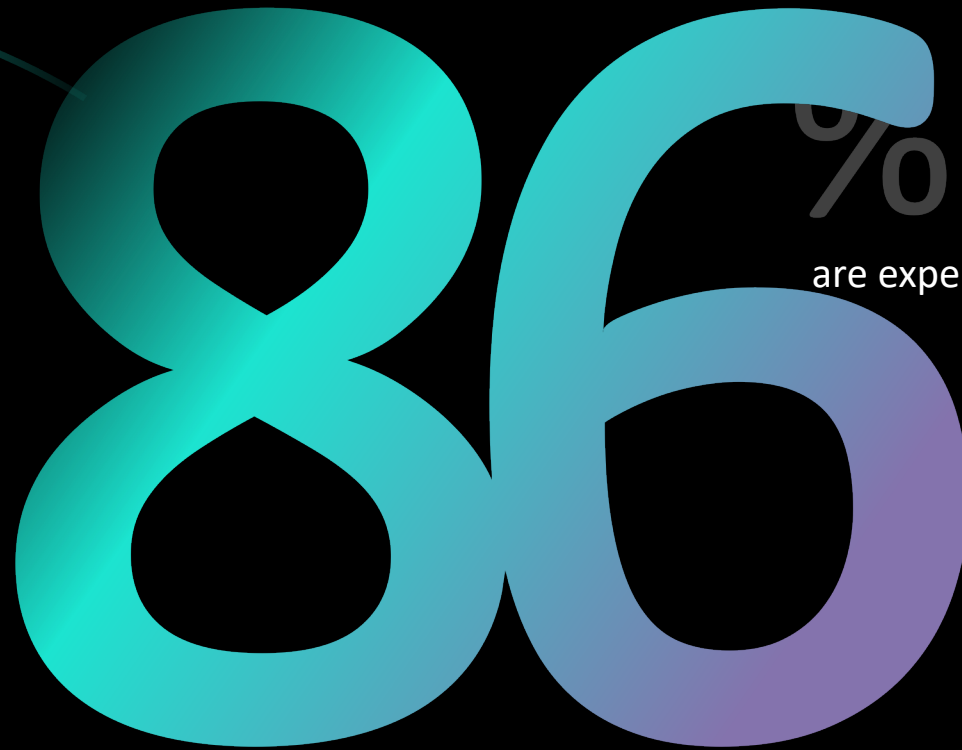
Your organization has fully adopted a software-centric business model.

Today's	5+ Years From Now
0%	0%
4%	0%
24%	2%
33%	14%
30%	23%
9%	33%
1%	22%
0%	7%

TOP FINDINGS

Challenges felt with the complexity of innovation: we are collectively aware of the pain

The bell curve for believing that complexity is a challenge is evenly shaped.



are experiencing some challenges.

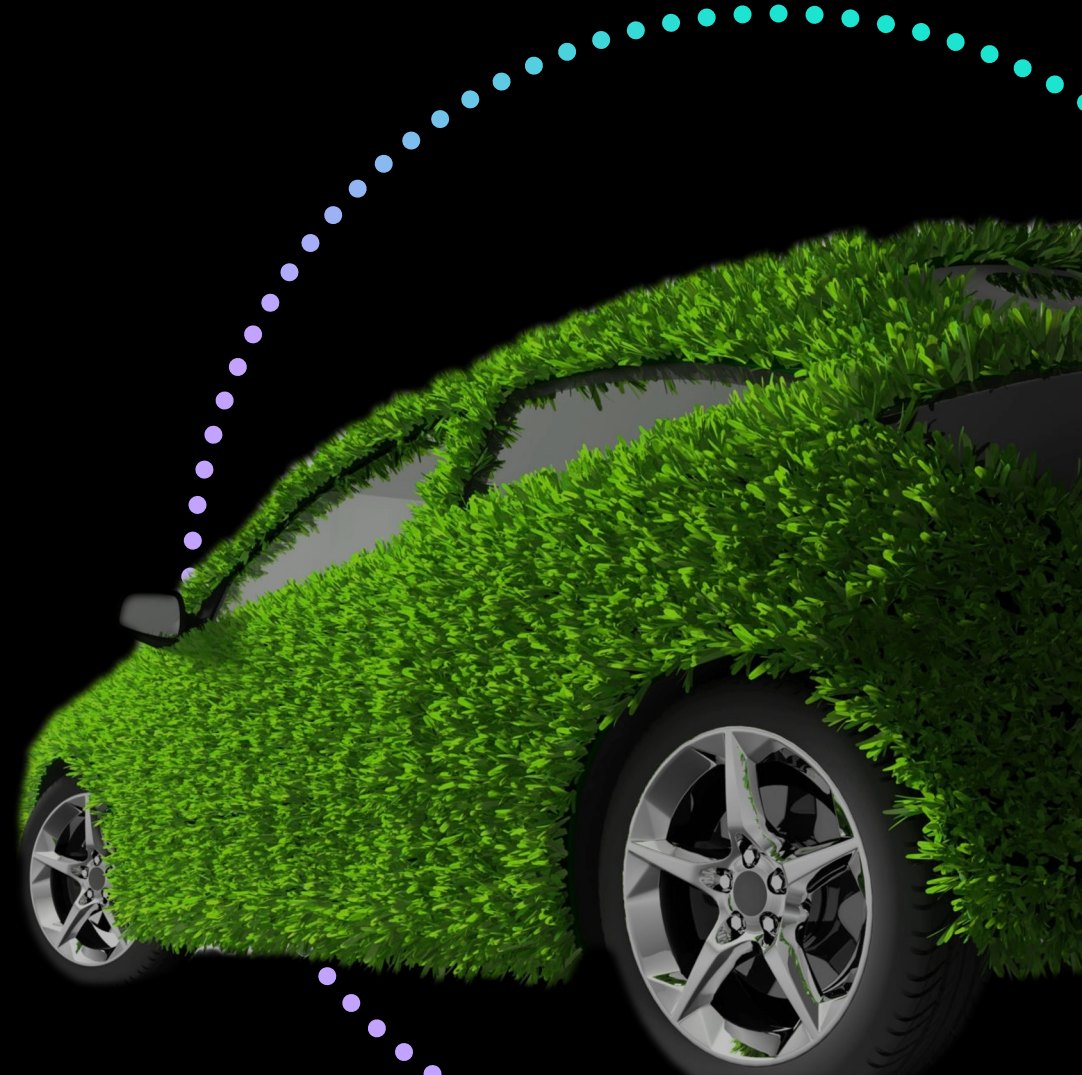
Where in that lifecycle is the current and future focus?

The shift from the need to get speed-to-win (no) to more operational metrics success is the core journey

	Rank Order Within the Next 5 Years	5+ Years from Now
Get to market faster	1	8
Enable a competitive advantage	2	11
Create greater profit margins	3	10
Improve OpEx	4	1
Improve internal team skill set	5	4
Increase revenue	6	2
Increase capacity to innovate	7	3
Increase ability to attract and retain talent	8	5
Improve resource agility	9	6
Lower manufacturing costs	10	7
Reduce CapEx	11	9

Sustainability:
We got some very insightful views

WNRVVR



Sustainability: We got some very insightful views

The top nine (based on a 130+ index score of “matters” and “will shift sustainable impact”):

138

Deploy

Use analytics and AI/ML tools to determine vehicle build configurations and options to be distributed to geographies where a specific vehicle build will sell most quickly

140

Operations

Configuring intelligent data filters and AI/ML at the edge with the ability to target specific vehicles to support business goals and optimize for high costs

159

Deploy

Allowing vehicle customizations as late as possible to improve customer delivery time on customized vehicles and reduce manufactured inventory

185

Manufacturing

Creating a sensor network and coordinating operations using private 5G solutions that can provide enhanced broadband high reliability low latency and large-scale communication capabilities

Sustainability: We got some very insightful views

The top nine (based on a 130+ index score of “matters” and “will shift sustainable impact”):

130

Develop

Planning for the monetization of vehicle data through improved efficiency cost reduction and optimizations

131

Design

Focusing on investments in cross-org collaboration especially across software teams to increase cooperation reuse of code and reduce redundant efforts

133

Operations

Supporting education and training for software-driven vehicle architecture including the support of a low-tech user base

135

Operations

Continuously optimizing vehicles to provide an improved driving efficiency and ownership experience based on analytics collected from vehicle

138

Manufacturing

Deploying AI/ML manufacturing solutions to improve defect detection optimization and correction in real time vs. post processing

We asked about AI/ML right now...

Allowing vehicle customizations as late as possible to improve customer delivery time on customized vehicles and to reduce manufactured inventory.



Using analytics and AI/ML tools to determine vehicle build configurations and options to be distributed to geographies where a specific vehicle build will sell most quickly.



Providing a more transparent purchasing experience for buyers by removing the ability for dealerships to add markups to the MSRP



Deploying AI/ML manufacturing solutions to improve defect detection optimization and correction in real-time vs. post-processing



And we asked about AI/ML 5-10 years from now

Deploying infrastructure that can be customized to efficiently filter gather and store vehicle feedback



Deploying software update infrastructure across legacy and proprietary platforms (e.g. dealing with ECU complexity)



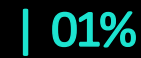
Implementing a direct sales and delivery model (OEM to consumer)



Building the data science back end to configure process and analyze the incoming vehicle data to develop meaningful insights



Ensuring reliable and consistent network connectivity from the vehicle to cloud for dynamic and “near-time” configuration



Here are the big bets

Automotive cybersecurity

Digital feedback loop and digital twin capabilities for ADAS testing and predictive maintenance

Adopting cellular V2X communications

New industry standards around vehicle data payloads

Commercial professional and fleet management capabilities

Wireless CarPlay/Android Auto as primary navigation and streaming media platforms

Cloud-native development and operations

Relying entirely on automated testing prior to vehicle validation

AI/ML for driver and passenger monitoring

Android Automotive for cockpit / infotainment

What's next?

See us at tonight's
Showcase!

Deep dive webinar:

November 1, 1:00PM EDT



Personal briefings:

Chris Lanier

Global VP Auto Solutions

+1 317 223 5096

chris.lanier@windriver.com

Thank You

WNRVR