

Automotive digital transformation in uncertain times

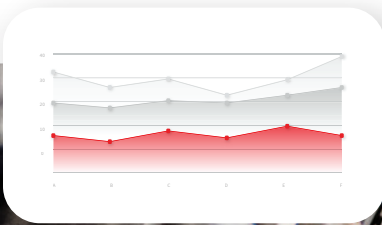


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Executive summary

The automotive industry is experiencing a profound CASE (Connected, Autonomous, Shared, and Electrified) driven transformation, leading to changes in virtually every aspect of the business. In addition to this CASE-related disruption, several macro factors add to the overall uncertainty, requiring a rethinking of traditional strategies to survive and thrive during this transition.



Developing an agile, resilient organization with a focus on people, processes, and technology is key to addressing uncertainty and mitigating risk. From a people perspective, as the industry becomes more technology-centric, the demand—and competition—for digital talent will only intensify.

OEMs and suppliers must become employers of choice, competing with Silicon Valley for the cream of the hi-tech talent pool.

From a process perspective, winning companies must develop the ability to anticipate and respond to an increasingly complex and disrupted ‘normal’ and, more so than ever, place the customer experience at the center of their strategies, look beyond their four walls for operational excellence, and respond to opportunities with laser-like precision and speed.

Finally, organizations must implement an information technology architecture centered on a data-driven, cloud-based digital operating platform capable of providing scalability, agility, resilience, and actionable insights to achieve competitive advantage.

It may be cliché to say that the auto industry stands at a historic crossroads—but this reality also brings an unparalleled opportunity for exponential growth while building a foundation for the next 100 years.



Developing an agile, resilient organization with a focus on people, processes, and technology is key to addressing uncertainty and mitigating risk.

The world is changing—uncertainty is here to stay

Given the dramatic changes within the automotive industry and the broader world, making predictions is an inherently perilous endeavor. Consider this, for example: did any of us, in our wildest scenario planning simulations, even consider the possibility that a global pandemic like COVID-19 would impact the world economy so profoundly? While we are all now painfully familiar with the fallout from this event, most notably the impact on supply chains, the broader effects of this watershed event will continue for decades to come.

The world continues to be awash with change. Consider just a few examples as of this writing:

the Middle East conflict, the ongoing Russia-Ukraine war, diplomatic and trade tensions with China, the real possibility of further monetary tightening by the US Federal Reserve along with talk of a possible recession, and ongoing concerns regarding the explosive growth and impacts of Artificial Intelligence (AI).

Stir in a healthy dose of CASE-driven industry transformation, escalating demand for battery minerals, EV adoption challenges, political turbulence, and changing consumer expectations, and it becomes clear that today's automotive industry is facing unprecedented change and uncertainty.

Five categories of uncertainty impacting the automotive industry

With so many factors impacting the automotive industry in so many areas, it becomes helpful to characterize the drivers of uncertainty more clearly. These can be grouped into five broad categories, as depicted in Figure 1.

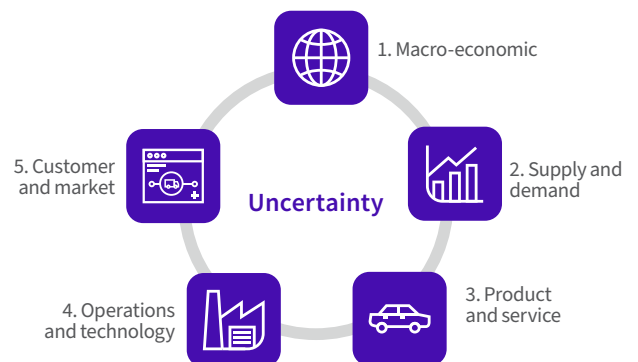


Figure 1: Sources of Uncertainty

The following sections examine each of these sources of uncertainty in greater detail:



1. Macro-economic uncertainty

One of the most prolific types of uncertainty involves macroeconomic uncertainty. Broadly defined, this type of uncertainty involves fiscal, natural, or geopolitical events that broadly affect a regional or national economy. Recent examples of macro factor uncertainty include the following:

Post-pandemic economic uncertainty:

Countries worldwide are trying to reestablish pre-pandemic economic equilibrium, with mixed results. Inflation, economic growth, and consumer spending differ widely across countries and regions, posing challenges to automakers' production and investment decisions.

Geopolitical tensions and trade uncertainty:

Despite the march to an ever-more-global world economy, several threats loom on the horizon, adding a new layer of uncertainty. Both ongoing and potentially impending wars threaten to disrupt fragile supply chains, while trade tensions across

countries are reaching a fever pitch, with increasing calls for tariffs and other protectionist actions.

Regulatory and legislative uncertainty:

Country and region-specific legislative initiatives create new uncertainties with ever-changing regulatory requirements. Recent examples in the United States include the CHIPS and Science and Inflation Reduction Acts, aimed at promoting domestic manufacturing of semiconductors, battery electric vehicles, and supply chain re-shoring incentives.

In the European Union, proposed regulations will ban new non-CO2 neutral ICE vehicle sales from 2035 in all member states. Finally, new United Nations Economic Commission for Europe (UNECE) regulations R155 and R156, governing cybersecurity and software, respectively, will hold OEMs responsible for all vehicle software, regardless of source, from July 2024 onwards.



2. Supply and demand uncertainty

While balancing supply and demand uncertainty has long represented a challenge within the global automotive industry, this has recently reached new heights. Consider the following:

Forecasting BEV versus ICE demand: While the industry continues to invest in electrification, the actual rate of EV adoption is a point of considerable ongoing debate. BEV optimists are predicting mass adoption within a few years, and BEV pessimists vehemently disagree. While the EV market share has grown from a relatively small base, global market dynamics indicate slowing EV sales and continuing demand for internal combustion engine (ICE) vehicles. For legacy ICE automakers, in particular, this uncertainty

requires highly consequential and risky investment decisions on precisely where to focus future production and product development resources.

Globally constrained supply chains: The electric vehicle revolution similarly stresses global supply chains like never before, creating supply-related uncertainty not seen in decades. Automakers must develop new supply networks, often encompassing new technologies with globally constrained battery mineral supplies and long lead times for new mine development. At the same time, perhaps as a painful lesson learned during the COVID-19 pandemic, automakers are reexamining and de-risking supply chains (e.g., microchip supply) for resilience in the face of uncertainty.



3. Product and service uncertainty

The very nature of the automobile, and automotive transportation in general, is transforming today at a greater rate than ever before, arguably more so than the shift from the horse and buggy to the horseless carriage itself. The sheer scope of this change is dizzying, resulting in newly emerging product and service offerings difficult to imagine only a few years earlier.

Automakers must weigh these potential offerings carefully and place high-stakes bets on products and services that, in many cases, have never existed before; these bets will determine their pathway to sustainable future growth and profitability. Given the pace and scope of change, success is not guaranteed. To understand the stakes at hand, consider the significant automotive transformations underway:

From ICE to NEV: Few would disagree that the automotive industry is undergoing a major disruption, transitioning from exclusively internal combustion engine (ICE) powertrains to a mix of ICE as well as new energy vehicles (NEVs), including battery electric vehicles (BEVs), hybrid vehicles, hydrogen-powered vehicles, and even synthetic fuel-powered vehicles. However, while there is broad consensus that this is occurring, the projected rate of NEV penetration into the marketplace is anything but predictable.

A debate is occurring concerning the recent growth in the BEV segment—will they achieve mass adoption, and if so, when? This resulting demand uncertainty is particularly relevant to traditional OEMs, who have responded mainly by hedging their bets by flexibly altering the ICE and BEV production mix wherever possible.

From hardware- to software-defined vehicles:

A software-defined vehicle (SDV) is a vehicle in which new features or capabilities can be added

or removed based on software capabilities rather than altering physical hardware, giving automakers great flexibility in personalizing vehicles based on individual customer requirements.

This provides a more personalized customer experience and huge new opportunities for automakers to monetize new subscription revenues over the entire customer journey. Importantly, these software-derived revenue opportunities will likely provide higher profit margins than those from the physical vehicle sale, making the efficient identification and development of these offerings a highly strategic endeavor.

Moving toward autonomy: Much like the shift toward alternative powertrains, there is general agreement that vehicle technology will transition from Advanced Driver Assistance Systems (ADAS) towards increasing levels of autonomy. Once again, the real debate in this area is timing, with autonomous vehicle optimists predicting the technology is imminent and pessimists disagreeing. For automakers and suppliers, this provides a high degree of uncertainty in planning product and service offerings, not to mention significant legal and regulatory considerations.

From vehicle ownership to transportation as a service: If and when autonomous vehicles reach fruition, they may usher in the next logical question for the industry: if cars can drive themselves and do so continuously, then why not leverage a fleet of vehicles that can be optimally utilized?

The answer to this question almost inevitably leads to fleet-based, transportation-as-a-service (TaaS) providers (i.e., Cruise, Waymo) using robotaxis. Once again, introducing and mass adopting such services are still being determined, posing further forecasting and product planning challenges to automakers.



4. Operational and technology uncertainty

Automakers face dual challenges from external technological changes and internal digitalization, a global trend sweeping across industries. Ignoring this transformation isn't an option, as competitors embracing these technologies gain substantial competitive advantages. Consider the impact of just a few of these developments:

Artificial Intelligence and Machine Learning (AI/ML): This critical capability opens endless possibilities for business process improvements, from advanced robots and collaborative robots to robotic process automation, automated quality

inspections, and advanced simulations with digital twins of physical assets.

Industry 4.0/smart manufacturing: The adoption of Internet of Things (IoT) sensor-based technologies in manufacturing enhances efficiency, quality, and flexibility. Amidst challenges like rising costs and increasing vehicle complexity, gains in manufacturing efficiencies are crucial. Industry 4.0 also offers opportunities in asset optimization, condition-based maintenance, and Overall Equipment Effectiveness (OEE).



5. Customer and Market Uncertainty

Ultimately, the changes previously outlined would only be meaningful if driven by demand. However, the challenge of providing these new offerings also coincides with an increasingly disrupted market environment. Consider the following:

Increasingly complex consumers: Amidst global competition and a plethora of consumer preferences, beliefs, and values, modern consumers' dynamic choices pose challenges for automakers. The demand for a seamless, personalized end-to-end purchase and ownership experience intensifies the struggle for customer loyalty.

Evolving distribution models: How vehicles are sold and delivered to customers is also in question. While direct-to-consumer sales models are being introduced by newer OEMs such as Tesla and Rivian, some new entrants are also experimenting with "hybrid" models (e.g., VinFast), incorporating both direct-to-consumer channels as well as to-be-constructed brick-and-mortar stores.

Ultimately, a mix of models may prevail, adding to distribution model uncertainty.

Movement toward build-to-order: Current trends favor potential movement toward more of a build-to-order (BTO) model. As new vehicle demand outstrips supply, consumers have been increasingly willing to wait for a vehicle to be built and delivered according to their specifications. As legacy automakers build more flexibility into their manufacturing lines to facilitate mixed ICE/BEV production, they will likely be better able to fulfill various consumer orders more efficiently.

These factors individually and collectively affect automotive companies, resulting in volatility, uncertainty, complexity, and ambiguity (VUCA). This complexity makes it challenging to formulate effective strategies for capital allocation, capacity optimization, balancing volume and profitability, attracting and retaining top talent, and navigating the accelerating pace of the ongoing historic industry transition.

Strategies for uncertain times

Given the wide-ranging automotive industry uncertainties described in the previous section, what business strategies should OEMs and suppliers pursue to thrive in these challenging times? While the answer to these questions can

be far-reaching, the following recommendations are broadly relevant and should be considered within a comprehensive strategy for change. These recommendations can be grouped under the pillars of process, technology, and people.

Process-related strategies

Since change is unavoidable, those who thrive will both anticipate it and respond quickly to it. Winners will embrace the fact that uncertainty is a given and develop agile organizations and processes responsive to market dynamics. Several process strategies can be employed, as outlined in Figure 2.

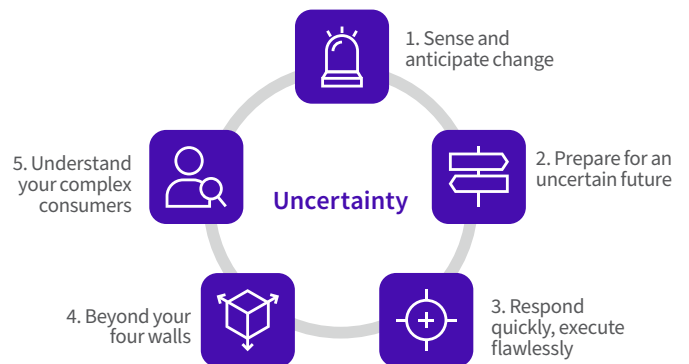


Figure 2: Process strategies for thriving in an uncertain world

Key takeaways:

- Accept endemic uncertainty and develop enhanced sense-and-respond capabilities to stay ahead of unprecedented change and disruption
- Proactively anticipate key trends and developments to further mitigate risk and gain competitive advantage
- Place customer-centricity and operational excellence at the center of the organization's strategy
- Think beyond organizational boundaries—and embrace an operating paradigm that includes the entire automotive ecosystem
- Develop a holistic understanding of customer needs, motivations, and expectations across the entire value chain

Each of these strategies is explored in greater detail below:



1. Sense and anticipate change

It is easier to respond effectively to change if it is recognized in the first place. An effective change strategy must exhibit the following key characteristics:

Accept uncertainty: Although many aspects of the automotive industry are returning to pre-pandemic normalcy, too much has changed for former assumptions and norms to be taken for granted. Shifting global competition and geopolitical factors, financial riptides, consumer expectations, and rapid new technology disruptions remain, creating a complex, multi-variable environment that defiantly resists all attempts to precisely define and control it.

To thrive, industry-leading organizations must accept uncertainty as the new normal and realign their corporate DNAs to derive competitive advantage in uncertain times.

Sense your environment: Given the constant disruption in the industry, automotive companies must develop a new “sixth sense” to rapidly detect changes and identify trends. These include shifts in global or regional macro factors (economic, political, environmental), technology advancements, consumer preferences, or changes within the value chain (supply and distribution networks). Companies that actively sense and respond to these developments most effectively will outmaneuver their less proactive competitors.



2. Prepare for an uncertain future

While sensing change is important, it is of limited value if it is not accompanied by action; effective organizations act proactively. While the abovementioned ability to better sense the current business environment is foundational for addressing uncertainty, the ability to anticipate the future provides even greater benefits.

Leading organizations have already begun implementing these capabilities to hedge commodity prices, minimize supply chain risk (by strategically diversifying suppliers and supplier locations), and optimize operations.



3. Respond quickly and execute flawlessly

The challenge of overcoming enterprise inertia should be considered, especially for large organizations. Companies can outpace their competition by embracing the following key principles:

The need for speed: New technologies and business models threaten to disrupt long-established industry norms. Consequently, companies must not only

constantly expect change but execute that change quickly and effectively as well.

As illustrated by the recent mega-trend toward electrification, leaders’ ability to define a new market and rapidly scale operations is essential to success. Interestingly, this need for speed may upend an organization’s traditional cultural norms, prioritizing speed over stability.

Across all operations: To achieve the agility required for today's rate of change, organizations must transform into a series of fast and agile operations impacting all business functions within the enterprise. From constantly understanding customer needs to quickly

developing and efficiently manufacturing products through hyper-responsive customer experience operations (marketing, sales, and aftermarket service), no aspect of the value chain can escape the need for speed.



4. Beyond your four walls

Historically, automotive manufacturing has been defined by a linear model involving two primary stakeholder groups: the OEMs and the tier suppliers. However, CASE has expanded the frontiers of the industry to include a wide variety of additional, non-traditional participants and services, such as navigation, telecom providers, retail, restaurants, municipalities, financial and concierge services, and digital content providers, to name a few. The new paradigm is the networked enterprise, with several characteristics emerging:

Evolving business models: Automakers are reimagining their strategies to keep up with industry developments, both to adopt critical new technologies (e.g., electrification, software-defined capabilities, smart manufacturing) and new

customer experiences (e.g., EV charging, hyper-personalization, virtual assistants, in-vehicle services). This is a trend that will continue as the industry evolves.

Increased inter- and intra-organizational communication: As a result of these new relationships, organizations must also evolve. There is an increased need for inter- and intra-organizational communication and connectivity between OEMs, suppliers, distribution channels, and other ecosystem participants. This ubiquitous connectivity and system-to-system information-sharing within and across an organization's boundaries is a modern digital business network hallmark.



5. Understand complex consumers

Think holistically: OEMs and suppliers must strive to learn more about their customers' lifestyles and values, the way they use their vehicles, and how they spend their time on the road to defend existing revenue and anticipate new value streams in, for example, infotainment, software upgrades, and new features.

Look across the value chain: To fully understand customers, we recommend taking an end-to-end view of the automotive value chain to identify all opportunities to improve the customer

experience. Some of these may take some time to be obvious. For example, consider that quality problems—extremely detrimental to customer satisfaction—can arise from machine calibration errors on the shop floor. Likewise, supply chain inefficiencies can adversely impact customer satisfaction by limiting the availability of specific vehicle options or causing delays to promised vehicle delivery dates. Looking through a customer-focused lens can unearth many such areas for competitive advantage.

Technology-related strategies

A foundational enabler for addressing uncertainty and developing these capabilities is the cloud. As the industry finds its way through the disruption, agility, scalability, and resilience will be critical to weather unexpected challenges, quickly pivot toward new opportunities, and turn capacity on or off as needed to meet business demands. Cloud-based systems are uniquely architected to address these needs. Figure 3 (right) presents a recommended technology strategy.

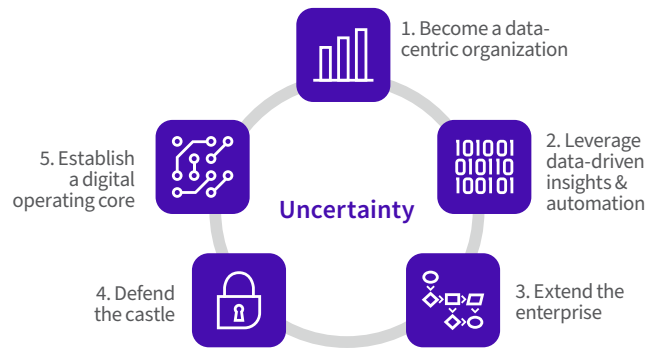


Figure 3: Technology strategy for thriving in an uncertain world

Key takeaways:

- Develop a data-centric worldview and implement an ecosystem-spanning data strategy
- Leverage data analytics and AI/ML for actionable insights, risk mitigation, and improved customer experience
- Prioritize agility, scalability, and collaboration within and across organizational boundaries
- Establish a future-ready digital operating core and guard against cyber threats by moving to a cloud-centric IT strategy

Each of these strategies is explored in greater detail below:



1. Become a data-centric organization

The world is awash with data. Vast new streams of IoT data are available from connected vehicles and smart factories, and a staggering variety of structured and unstructured consumer data can be collected from web clickstreams, social media, and other channels. Add in traditional data from enterprise systems (ERP, CRM, PLM, Supply Chain, WMS, and the like.), and it quickly becomes clear that automakers can now access a wealth of information never before available. In this data-rich ecosystem, competitors best able to utilize data for analytics and modernizing business processes will obtain a first-mover advantage in exploiting new opportunities and reducing risks.

The following points are crucial to becoming a more data-centric organization:

Establish a data strategy: Becoming a truly data-centric organization requires a deliberate strategy to maximize the value of data assets. In its most minimal form, a data strategy may outline narrowly targeted objectives. However, such strategies must be broader and tightly aligned to longer-term corporate objectives and performance metrics for a truly data-centric enterprise.

As with any other strategic resource, investments in data-centricity should be made using a portfolio approach, prioritizing the highest potential ROI opportunities. In addition, the strategy should also provide a necessary framework to constantly monitor the actual ROI and business value of data assets.

Use all data: As many organizations have learned, collecting, storing, and integrating the huge volumes of disparate data generated today can be a daunting endeavor. However, while the challenges are great, the rewards are considerable, providing modern data-hungry advanced analytics and AI/ML applications with the fuel necessary for next-generation business insights and process automation.

Two approaches aid in furthering this data collection and integration goal:

First, enterprise data lakes provide the ability to land data of varying formats, such as structured data (from enterprise transaction systems), semi-structured data (such as IoT-related data from connected vehicles and manufacturing sensors), and unstructured data (i.e., images, video, audio) into a single location, for consumption by various applications.

Second, migrating siloed legacy transaction systems to more modern and integrated enterprise platforms wherever possible provides near real-time access to data required for effective cross-functional collaboration and extraction of actionable insights.

Both of these should be provisioned in the cloud, which is ideally suited to securely handling massive data volumes and enabling easier connectivity and access.

Focus on data stewardship: Since comprehensive, high-quality data is the coin of the realm, data stewards must fully define data requirements and rigorously scrutinize the originating source systems for data quality at the grassroots level. In addition, as a direct consequence of increasing governmental regulations, automakers should not take this task lightly.

For example, the exponential growth in connected vehicle data is drawing the attention of lawmakers seeking to strengthen privacy and liability regulations. For automakers, who have historically sought to leverage connected vehicle data for competitive advantage, these new regulations come with new obligations and potential legal risks.

Consider the fact that the aforementioned UNECE regulations R155 and R156 make it compulsory for all OEMs selling vehicles within the EU to assume full ownership of vehicle data exchanged with external sources, in addition to assuming full liability for all on-board software (regardless of who developed that software). Automakers cannot manage this responsibility casually, underscoring the need for proactive data stewardship and compliance.



Advanced technologies are reshaping the automotive value chain in many ways, arming automakers with opportunities for new revenue streams, cost reductions, and risk mitigation. However, enterprises must adopt a comprehensive technology strategy to achieve such results.



2. Leverage data-driven insights and automation

Data fluency and mastery will separate industry leaders from laggards in today's profoundly uncertain and competitive business environment. The reason for this is clear—a data-driven approach is essential for all the process improvements suggested in the previous section. Data is also the foundation for AI/ML, driving next-level advancements to actionable insights and automation. The following sections outline a few examples.

Sensing the environment: In the pursuit of more clearly sensing change within an uncertain business environment, modern technologies provide critical new capabilities, including social media monitoring, web clickstream and web crawling analytics, Internet of Things (IoT) product usage insights, and ML-based pattern recognition. Companies leveraging such capabilities can “hear” news first, better sense their business environments, and act quickly to gain the upper hand.

Minimizing risk: Several technologies can assist organizations in evaluating the business risk associated with uncertainty. Chief among them are the tremendous recent advances in computing power, enabling powerful scenario modeling capabilities for decision-making. By leveraging high-performance computing in the cloud, one can evaluate thousands of scenarios, considering economic indicators,

geographic trends, consumer behavior, demand and labor rate changes, etc.

Leading organizations are already implementing these capabilities to reduce revenue variance in their product portfolios, anticipate and prepare for various outcomes, de-risk supply chains by strategically diversifying suppliers and supplier locations, and hedge commodity prices, among other strategies.

From reporting to insights: Historically, IT departments have focused on a reporting paradigm, delivering backward-looking reports to business users on a predetermined schedule. In contrast, modern data-driven organizations focus on delivering actionable insights based on current data and developing trends.

Robotic Process Automation (RPA) can automate many operational decisions. At the same time, AI/ML-enabled tools can provide capabilities one step beyond, learning from historical data, outcomes, and trends to make prescriptive, next-best-action recommendations. For example, the quality inspection process can be automated by using camera image data to train ML algorithms to distinguish “good” versus “bad” quality outcomes. Similarly, ML customer service recommendations can be automated based on learning from previous actions to successfully address similar situations.

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Improving the customer experience: Once again, technology plays a critical role in all touchpoints along the customer journey. For example, automakers can leverage digital twin design simulations to bring innovative products to market more quickly, improve manufacturing quality by leveraging Industry 4.0 smart manufacturing

technologies, and take the pulse of current customers via cross-channel sentiment analytics and connected vehicle product usage insights. Across the product lifecycle and the customer journey, advanced data analytics and AI/ML hold the keys to enthusiastic and loyal customers.



3. Extend the enterprise

Research into today's extended enterprises indicates that up to 80% of the data needed for key business decisions resides outside an organization's four walls. Despite this, an important lesson learned during the COVID-19 pandemic was that effective collaboration and communication are possible, even with people and resources spread across the globe.

Several technologies can help in removing cross-value chain data silos and barriers to communication. These technologies will be

most effective if deployed in the cloud, which can provide the ideal foundation for secure communication and collaboration. Examples include:

Real-time collaboration tools: Such as shared workspaces, video conferencing, and augmented reality workspaces.

Collaborative enterprise systems: Modern enterprise operating systems with vendor portals for transactional collaboration and reporting.



4. Defend the castle

An unfortunate byproduct of ubiquitous connectivity is the constant threat of cyberattacks, encompassing both individuals and organizations. This threat will continue to grow over time in direct proportion to the exponential growth in connected devices and systems.

This represents a potentially existential risk, with several highly publicized examples of extremely damaging data breaches occurring in the not-so-distant past. For example, in separate incidents across two continents, ransomware attacks recently brought the operations at two tier-1 suppliers to a complete standstill, to the extent that even their backup systems were compromised. This caused massive financial damage not only to the suppliers but to their

customers as well, whose production was also affected.

As a result of such breaches, and to "defend the castle" in these perilous times, organizations are renewing efforts to develop robust cybersecurity strategies. Two points should be considered:

Ensure tight cybersecurity and privacy controls: This is critical, as a single incident can compromise the integrity of operational data sets and expose the organization to potentially devastating liability-related costs and risks. Further, in the face of such occurrences, it is not unusual for companies to overreact and introduce onerous new barriers to communication and collaboration. To guard against such situations, organizations should

implement processes and protocols such as role-based security and multi-factor authentication in an expedited manner.

Focus on technical infrastructure: In the data breaches described above, both companies ran

their enterprise applications on on-premises systems (i.e., in their data centers). Had these systems been running on a highly secure cloud platform, such as Amazon Web Services or Microsoft Azure, the likelihood of these destructive breaches would have been far lower.



5. Establish a digital operating core

A comprehensive digital operating core is essential to achieve transformation at scale—but what exactly is a digital operating core? Simply put, it consists of two critical capabilities. First, it must provide an operating core capable of supporting the global automotive enterprise. Second, it must provide a digital backbone that can serve the data required by various applications. Each of these is further explained below:

The digital operating core: This contains the transactional applications (ERP, CRM, SCM, etc.) and associated analytics required to run the core operations of an automaker. Importantly, the legacy operating cores currently in use are straining against the needs of today's automotive companies. As many of these systems have been developed and modified over decades, they often lack more modern applications' flexibility, functionality, and security.

Common application shortcomings include difficulty adapting to changing business processes

and organizational structures, data quality and accessibility, inability to securely collaborate with external partners, and high cost of ownership due to extensive customization and constant maintenance and upgrades. As new cloud-based operating cores have emerged, application capabilities have improved markedly.

The digital backbone: As previously established, digital-native applications such as advanced analytics and AI/ML require large datasets from multiple sources to perform their functions. Consequently, a digital backbone should facilitate access to the various data types described earlier.

This should result from a tight integration between the digital operating core and an enterprise data lake that can store and serve large amounts of varying data types. For more information, reference the data-centricity section of this whitepaper.



People-related strategies

As the automotive industry digitally transforms, it is evolving from an old-school manufacturing paradigm into a modern, technology-intensive one. Despite this fact, however, it has an image problem, as many potential employees still consider it a less dynamic sector of the economy.

In a practical sense, this has hindered the industry’s ability to be seen as an employer of choice and access the best of the talent pool, for which automotive companies now must compete with digital native organizations like Apple and Google. In poll after poll, industry executives say that finding and retaining top talent is a key strategic priority. In the words of one automaker’s CEO, it’s a “global talent war.”

Automakers must develop a talent strategy closely aligned with business objectives and employee

expectations to better compete. Additionally, culture change is a key requirement for the workplace of the future and should go hand-in-glove with an active change management program. Figure 3 depicts key elements of a people strategy for the modern automotive industry.

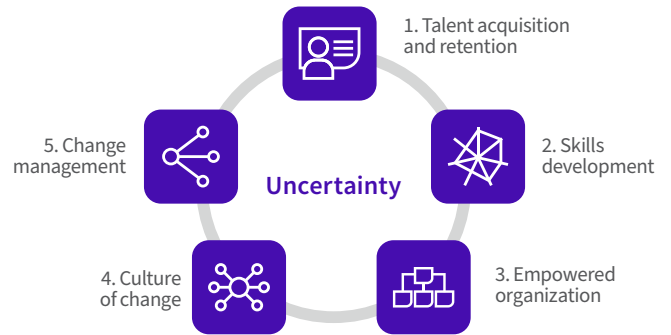


Figure 4: People strategy for automotive transformation

Key takeaways:

- As the auto industry becomes more technology-driven, finding and retaining top digital talent is mission-critical
- Companies must adopt a ‘whole person’ talent development strategy, which accounts for a generational shift in employee expectations
- Decision rights should be pushed down to facilitate employee empowerment, organizational agility, and responsiveness
- Senior management must drive and manage culture change to eliminate outdated stereotypes of the industry and become employers of choice

Each of these strategies is explored in greater detail below:



1. Talent acquisition and retention

The modern digital workforce, primarily Millennials and older Gen Z, is motivated by more than just financial incentives. Accordingly, companies need a ‘whole person’ strategy, which provides employees with meaningful and impactful work, growth opportunities, a collaborative,

flexible work environment, alignment with their values, and opportunities for self-actualization through participation in personally consequential causes.



2. Skills development

It can fairly be said that every automotive company today is a technology company—or needs to become one to survive and thrive. As the line between software companies and automakers blurs, maintaining and growing an employee's technical capabilities in all areas of the value chain, but especially in product development, engineering, validation, manufacturing, and customer experience, is no longer optional.

No matter their role, every employee, regardless of level, now needs a significantly higher degree of technical expertise than what was necessary less than a decade ago. The pace of this change will only continue to accelerate, underscoring the need for role-specific training delivered just in time, utilizing various learning methods.



3. Empowered organization

Even the best-trained and most motivated workforce will be constrained without an agile and empowering organizational structure. Open communication, democratization of decision

rights, and a merit-based reward system are essential for organizational responsiveness and individual accountability.



4. Culture of change

Culture is the glue that creates a cohesive organization. It is important to recognize that in today's rapidly transforming industry, cultural attributes that were appropriate in the past may no longer be sufficient. In particular, three cultural attributes are essential for the digital enterprise:

Culture of innovation: An innovation-driven culture with a bias for action, complemented by an environment encouraging experimentation, knowledge sharing, stewardship, and trust.

Culture of openness: As organizational boundaries morph to ever-more-extended enterprises

encompassing a diverse mix of ecosystem partners, a culture of openness, trust, and sharing is essential for success.

Culture of data-centricity: A culture of data-centricity begins with executive sponsorship at the top of the organization. This will help break through organizational silos and drive cross-functional collaboration on data-related initiatives. The companies that have been most successful in digital transformation have essentially rewritten their corporate DNA to metamorphose into data-driven organizations. Such organizations prioritize experimentation and agility over routine and structure.



5. Change management

The importance of change management is widely recognized, and yet, in many cases it remains an afterthought. To successfully embrace change, employees need to understand how it will personally benefit them. To maximize the benefits of a transformation, it is crucial to include a change

management strategy and change execution plan as integral parts of the transformation program. Importantly, these should align with key program milestones and metrics and should be actively sponsored by executive management.

A call to action

In the preceding paragraphs, we have made the case that the automotive industry must adapt to a new reality of endemic uncertainty resulting from global macro factors and the ongoing CASE revolution. We have also discussed process, technology, and people strategies for addressing these changes.

There are five specific recommendations to realize the benefits of these strategies:



Listen to the environment: Organizations need to always have their proverbial antennae up to read how the winds are blowing within the global automotive industry as well as in adjacent industries and the economy as a whole. A variety of internal and external inputs should be considered when evaluating these developments and trends.



Prioritize speed over stability: In the digital era, success will belong to those who can best sense—and ideally anticipate—challenges and opportunities and respond fastest to them. The traditional approach of seeking certainty before acting is inherently risky in a business environment as dynamic and fluid as today.



Leverage technology: While technology for its own sake should not be an end, it is foundational for mitigating risk and achieving competitive advantage. When properly aligned with business objectives, technology can be the secret weapon in a company's arsenal to combat uncertainty and emerge stronger from the transition.



Align the organization and the culture: Change does not come easily in an industry often challenged by excessive bureaucracy, silos, and a lack of open communication and trust. These issues can be addressed by redesigning the organization for greater agility and transparency and fostering a culture of trust and collaboration. Of course, changing this scope and scale is not easy, bringing us to the fifth recommendation.



Actively manage the change: This is a dimension which, if overlooked or treated halfheartedly, can seriously undermine, or even negate, the benefits achieved by the other actions. A key requirement for a successful change program is executive sponsorship, which is then cascaded down through the various levels of the organization.

Conclusion

Human nature often resists change, finding it threatening or, at the very least, uncomfortable. Nevertheless, change is inevitable, and nowhere is it more apparent than today's automotive industry.

Today's vehicles are a far cry from those of even five years ago—and five years hence, they may make today's vehicles look antediluvian in

comparison. The new normal is anything but normal, and it is here to stay, for better or worse. Companies that run toward this new normal and reinvent themselves to capitalize on the opportunities that lie behind the veil of uncertainty are the ones that will still be successful decades from now.

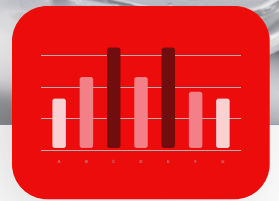
About the authors

The Center for Automotive Research is an independent non-profit that produces industry-driven research and fosters dialogue on critical issues facing the automotive industry and its impact on the U.S. economy and society. CAR researchers closely track current and future global automotive industry and technology trends and assess their impacts. CAR researchers also study international collaborations and stay abreast of changes in international trade and regulatory environments, the development of technology standards, and the deployment of new vehicle technologies.

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