

HOW INFORMATION MANAGEMENT SUPPORTS THE DIGITAL TRANSFORMATION NEEDS OF TOMORROW'S AUTOMOTIVE INDUSTRY

Author:

Lorenzo Veronesi

May 2020

Sponsored by OpenText

opentext™

IDC #EUR146262120



How Information Management Supports the Digital Transformation Needs of Tomorrow's Automotive Industry

At a Glance

WHAT'S IMPORTANT

Information Management must be at the center of digital transformation because it encompasses the process of extracting and developing the value and utility of information relative to customers, markets, products, physical assets, and customers. This is at the center of optimizing human decision making to transform business processes.

Introduction

Digital transformation and developments in disruptive digital technologies — such as IoT, AI, and cloud platforms — at all levels in automotive companies is increasing the need for a central platform to manage data and content in the enterprise and across the value chain. Information management is poised to become a foundational element in the DX initiatives of tomorrow's automotive industry.

Situation Overview: An Industry in Transition

Powerful forces are shaping the automotive industry, leading to business transformation driven by digital technologies, creating an unprecedented volume of data that must be managed and analyzed.

The automotive industry is producing software-controlled and internet-connected vehicles, and it is dealing with the shift from traditional to electrical engines. At the same time, automakers are exploring new ways to enable mobility, moving away from concepts of private ownership. This creates four big shifts in vehicle development — connected, autonomous, shared, and electric (CASE). These are taking place in parallel and tend to merge.

IDC identifies several main implications:

- Solving the main issues raised by enabling vehicles with unprecedented amounts of software will require the dismantling of silos to manage predominately unstructured lifecycle data differently and reduce the length and complexity of innovation programs. Automakers will also have to learn new skills and interact with new suppliers, and ultimately learn how to monetize a vehicle's data.
- As more and more technology is embedded in each car component, the value added is shifting upwards in the value chain, and this is beginning to level the playing field. We see this as a restructure of the automotive supply chain, with tech companies becoming closely integrated in the OEM's strategies.

- Automakers need to move from a product focus to a service focus to enable new mobility-centered value propositions. This entails the need to establish autonomous and data-driven processes to enable pervasive visibility, predictive intervention and proactive servicing of vehicles.
- Automakers will depend heavily on the ecosystem and move outside their comfort zones to reap new opportunities. For example, market penetration for electric vehicles will be influenced by the availability of charging infrastructure and government incentives.
- Automakers will have to manage an evolutionary network of suppliers. They will need to bring in new suppliers and make critical decisions about the relationship with existing ones that might become less relevant in the ecosystem going forward.
- The need to have several typologies of products coexisting together will imply a diversification of operational structures, to embed the new partners and new solutions, as well as new regions and countries, and new entities (in the case of M&As with startups) while retaining heritage initiatives.
- Supply chain disruption caused by climate change, geopolitical friction, and public health concerns is biting hard, forcing companies to reconsider the fitness of their tightly-tuned processes in this new world, moving away from a focus on "mere" efficiency to the creation of fulfillment-driven value networks. These networks will operate more with a "just-in-case" approach rather than "just-in-time". This balancing act will require global value networks to operate differently, blending flexibility and efficiency and deploying new information systems.
- Factories will have to deploy smart manufacturing principles and create data-driven processes that leverage IIoT, AI, and information sharing technologies to increase their speed, efficiency, and flexibility. In this vision, people, materials, and machines integrate seamlessly in a data-heavy process

To sum up, the real challenge for automakers is how to manage business as usual while being drained of funds to invest in these new business models. Thriving in the extended ecosystem of automakers and suppliers, transport infrastructure providers, technology vendors, digital service providers, state regulators, and of course the drivers themselves, require a new approach. Tackling all these elements implies, in a nutshell, digital transformation.

IDC defines digital transformation (DX) as the continuous process by which enterprises adapt to or drive disruptive changes in their customers and markets (external ecosystem). DX facilitates the seamless blending of digital and physical business processes and customer experiences while improving operational efficiencies and organizational performance. For most automotive firms, this requires a brand-new thought process to enable a radical transformation in their business culture and organizational structure, and, of course, in their long-term strategy.

To succeed, automakers must look at ways of dismantling existing silos and transforming the tools and methodologies used to manage, distribute, archive, and leverage data and information from these new sources. This is the only way that companies can thrive in the digital era, where information will have to be handed over across departments and business networks.

New IT Architectures Enabling Innovation Opportunities

This is made possible by the emergence of new IT architectures. The industry is going through a massive revolution in the way IT functions and supports the business. For a decade, new technologies and delivery models leveraging 3rd Platform pillars (cloud, mobility, big data, and social) have revolutionized IT access and delivery. On top of that, Innovation Accelerators such as AI and IoT play a key role in enabling and accelerating digital transformation evolution.

IDC predicts that by 2023, with cloud native tools/platforms, agile methods, lots of code reuse and more developers, 500 million new apps will be created, equal to the number built over the past 40 years. Over the same time, 90% of all new apps will feature microservices architectures that improve the ability to design, debug, update, and leverage third-party code; 35% of all production apps will be cloud-native.

IDC also predicts that this opportunity to achieve information-driven multiplied innovation will be massively relevant in the automotive sector.

- By 2021, 50% of automotive OEMs will enable mobile edge computing in new vehicles as part of their connected vehicle platform to support enhanced applications, services, and operational efficiency.
- By 2021, 70% of OEMs will expand the reach of their data management and monetization partnerships to open new business opportunities and reduce the impact of external data market pressures.
- By 2022, 75% of OEMs will employ cross-industry digital innovation platforms to aid product development and supplier collaboration, and simplify big data strategies, resulting in a 10% opex improvement.
- By 2022, over 70% of automotive OEMs will integrate technologies such as AI and IoT in new vehicle models to integrate automation systems and in-vehicle infotainment more seamlessly.

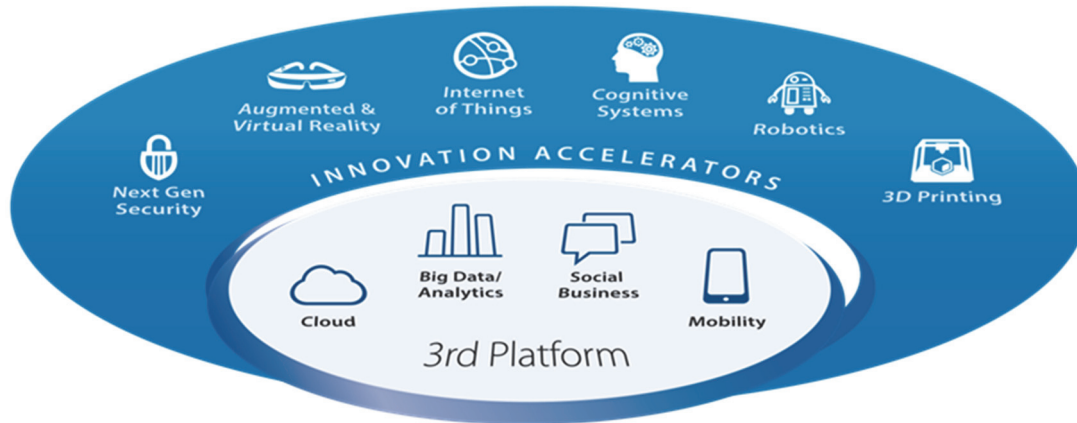
The Role of Cloud

As highlighted above, cloud computing and the 3rd platform are increasingly the chosen delivery mechanism for business applications and information platforms to support consistent processes and decision making along the ecosystem. One of the ways cloud can bring significant value to the business is by allowing automakers to make use of the data from sensors throughout the car life cycle more easily. The cloud can act as a central repository for data collected from connected products in operation, regardless of the customer/owner, or for data collected from specific vehicles.

Automakers have several cloud-based options to choose from, including infrastructure as a service (IaaS) and platform as a service (PaaS), as well as cloud-based business applications. Car makers' current priority is to establish a secure yet reliable and flexible data-sharing infrastructure, with initial implementations focusing primarily on pilot projects and validation activities driven by the needs of individual decision makers and teams. If successful, these projects will generate new business use cases for individual workgroups and departments and

will be the basis for the creation of scalable, repeatable implementations. Leveraging and reusing best practices and resources across multiple groups and departments will be central to the widespread use of cloud to support connected-vehicle strategies.

FIGURE 1
The 3rd Platform and Innovation Accelerators



Source: IDC, 2020

At the Core: Information Management

IDC has always advocated for information management to be at the center of digital transformation, because it encompasses the process of extracting and developing the value and utility of information relative to customers, markets, products, physical assets, and customers. This is at the center of optimizing human decision making to transform business processes.

- By enabling automakers to develop the vision for digital transformation of products, services, and experiences, leveraging key data from their businesses.
- By promoting superior customer experience through real-time information regarding driving behavior, car diagnostics, and personal user preferences, all mingled together to extract maximum value.
- By making business operations more responsive and effective as information management enables better decision-making and higher automation.
- By sourcing, deploying, and integrating internal (full-time and part-time) employees and external (contract, freelance, and partner) resources in new and more effective ways.

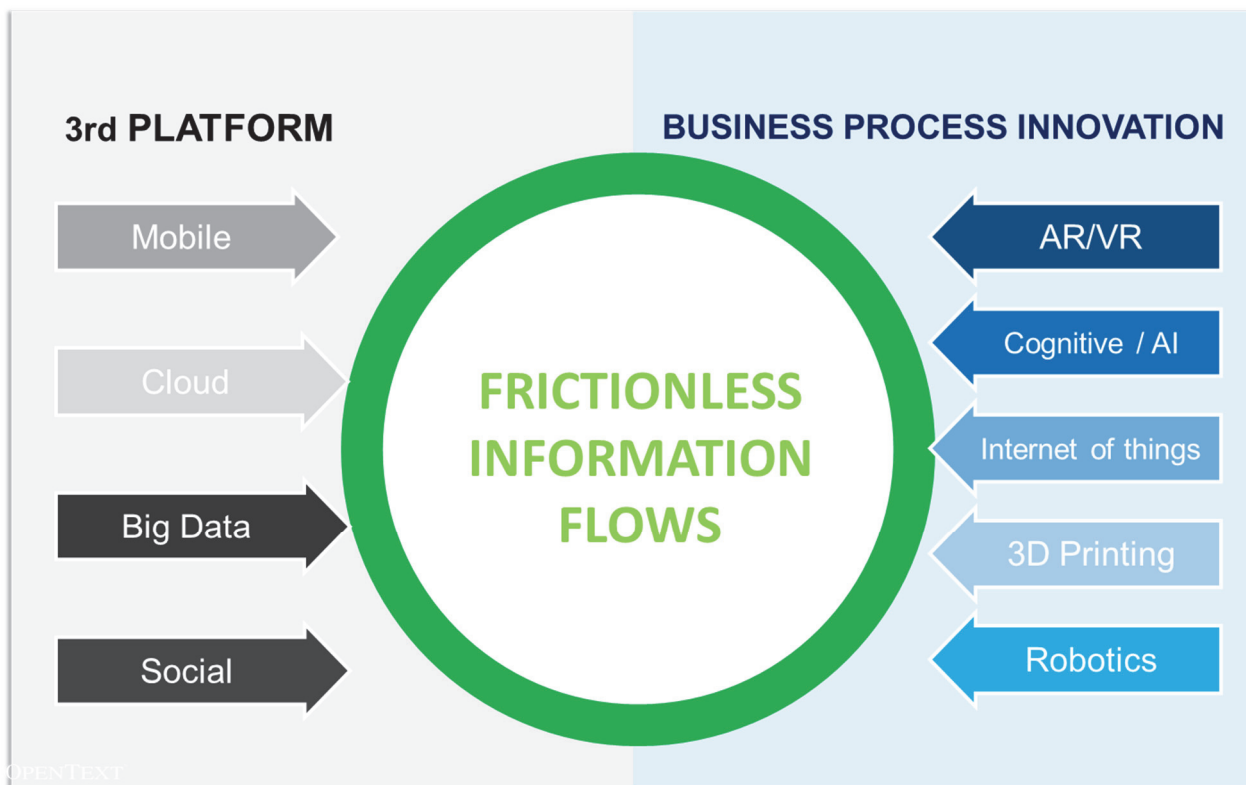
Benefits. New capabilities enabled by Information Management

It should be clear that the ability to securely orchestrate and exploit information effectively to drive business processes is central to digital transformation. Yet, to be effective, information must flow without any friction in many directions: top-down, bottom-up, from inside out and outside in, between employees, business departments and across the business network. To enable that, companies must integrate data analytics, transactional content and content-related activities, and provide strong reporting on activities, creating/receiving content and dashboards.

This is easier said than done. A major problem originates from the way most common business applications (such as ERP, MES, TMS, WMS, and CRM) are conceived. In fact, these applications are designed to manage silos of information, pertaining to and focusing on dedicated processes. Therefore, most of the time business applications cannot seamlessly transfer data and information to other business processes and applications. In order to effectively cover intra-enterprise processes, companies often need to rely on expensive and cumbersome custom applications or on error-prone manual processes.

To this end, using information in a coherent way will be central. Standardizing, integrating, and connecting are the key words here. Automakers will need to leverage their existing enterprise applications to create a "digital backbone" in the form of information management. This tool will support the way vehicles are designed, produced, delivered, and serviced in the digital space. Information management will be the norm to support and augment the delivery of existing and future business applications.

FIGURE 2
Information Management Model



Source: IDC, 2020

Future Outlook

Information-driven Customer Experience

Automobile digitalization offers an opportunity for carmakers to grow their revenue by offering digital services to customers through the whole ownership life cycle.

For example, automakers are now releasing "application store" platforms with their vehicles. As customers expect a similar experience to what they get on their phones, and little money can be generated by applications when sold on a one-off basis, automakers are trying to build the equivalent of the Apple or Google application store. In this concept, customers should be able to buy directly through the car or via their personal devices.

Another key step to enable consumption-based revenue models, higher levels of equipment availability, and eventually higher customer satisfaction involves allowing continuous connectivity and monitoring of equipment health including the ability to initiate and, in some cases, install corrective actions. To this end, SW tools should be more intelligent in helping the operator. This is what drives up the need for more connectivity, with the option to run AI-enabled, intelligent diagnostics on the cloud.

For all OEMs, "firmware over the air" is a new capability that is in preparation. However, this seems far from being accomplished due to the lack of "capable" network infrastructure (risk of missing data during transfer) and the obvious risk for security (and safety). Service will be 100% customer-centric; car companies have the car's data, so they will know when and what must be done on the car, and therefore provide better customer experience. Going forward, technologies such as 5G can enable more data and predictive maintenance. The key challenge will be to move from "reading only" to enabling a secure and safe two-way communication flow (e.g., for OTA updates).

The Role of AI and Machine Learning

The emergence and rapid deployment of AI technology is completely transforming the way information is created and handled within organizations. AI and machine learning technology play the key role of the "brain" that can process the information coming from the processes (and exponentially augmented by data produced by ubiquitous sensors) in high volumes, variety, and velocity. Automakers therefore have the unique opportunity to manage corporate information by enabling the following capabilities.

- Conditional decision automation (automating decision-making processes) — This automation provides rapid identification and response for well-known and slow-to-change conditions across a variety of processes, including IoT and production health monitoring.
- Algorithmic decision automation (creating decision support tools) — This automation provides business benefit by rapidly predicting upcoming problems or immediate opportunities to act where conditions change continuously and data is highly variable, including IoT use cases, real-time promotions, quality controls, and inventory outage predictions.
- Continuous planning and forecasting — This is the ability to use the most recent available data across the organization for ongoing forecasting processes.
- Situational awareness — This provides capabilities for instant access or notification of the current state of the

enterprise based on real-time internal and external data contextualized by human expertise.

- Key driver identification —
This provides decision support capabilities that not only identify what happened, but also provide information on why it happened and what can be done about it.
- Guided root cause analysis —
This provides decision support capabilities via automation to understand why something happened without requiring users to spend hours on manual data crunching activities.

ESSENTIAL GUIDANCE

To drive business success, innovative automakers are actively participating in the emerging connected car ecosystem that is transforming the automotive industry into a sector that will have customer-centric mobility services at the heart of its strategies.

To achieve this, the automotive industry is producing software-controlled and internet-connected vehicles and is striving to handle the shift from traditional to electrical engines. At the same time, automakers are exploring new ways of enabling mobility, moving away from concepts of private ownership.

Every company in the automotive business can achieve substantial gains from implementing platform-based applications and technologies in their business by enabling a digital thread that connects information across key business processes. This also entails the ability to manage the issues of data openness, privacy, security, application lifecycles, information standards, and compliance.

Therefore, IDC provides the following advice to automotive companies:

- Identify and prioritize key use cases: The worst thing you can do for the business is to start digital transformation with a misstep. Companies will need to create short-term wins to create internal and customer trust and confidence, and leverage that for bolder, wider scoped initiatives that build brand loyalty.
- Build API-based integrations to bridge gaps between business applications to enable cross functional DX initiatives: Users will request a continuous stream of data from disparate and often 3rd-party applications. To be relevant to the business, CIOs will need to find a way to carefully plan the transformation steps to avoid delays or the introduction of new risks. Before achieving seamless, real-time, and bidirectional data and information flows, there are many decisions and disruptions to many roles. Every single piece of information has to be delivered to multiple audiences, but with the right permissions and context to enable actionable insights.

Make sure your company stays relevant in new business ecosystems: Don't just talk about trust, deliver it seamlessly. This will be the most sought- after currency in the future partner and customer ecosystem economy. Companies will need to make sure they establish a secure and trusted communication and information exchange platform to foster effortless yet continuous and secure interactions.

MESSAGE FROM THE SPONSOR

Information Management (IM) allows organizations to capture, govern, exchange and enhance information while keeping it secure. IM brings together key technologies to enrich information and processes from end-to-end. Both unstructured and structured information flow across the extended enterprise. Through IM, businesses can consolidate and integrate information so it can be managed transparently throughout its entire lifecycle. The most complete IM technology portfolios deliver ways to collaborate, automate processes, integrate with open APIs, extract new value from existing data and ensure all information and devices are securely managed—on and off the cloud. IM is a foundation from which raw data can be transformed into valuable information and intelligent action using automation, AI, and analytics-based algorithms that achieve a business advantage.

An Automaker can achieve competitive superiority when it successfully transforms the way it manages and leverages information, using it to its full potential. To learn more read our [CEO white paper](#).

About the Analyst

[Lorenzo Veronesi](#), Research Manager



Lorenzo Veronesi is a Research Manager for IDC Manufacturing Insights EMEA. In this role, Veronesi leads the Worldwide Smart Manufacturing research program and supports all the IDC MI research services for EMEA, by looking at Digital Transformation drivers in multiple manufacturing industry sub-verticals. He is also often involved in consulting projects across the world for end-users, IT vendors and the European Commission. During the last decade his research has focused across key processes such as manufacturing operations management, supply chain management, and product lifecycle management in multiple manufacturing verticals, including - among others - automotive, aerospace, machinery, high-tech, chemicals, CPG, and fashion.

About IDC

International Data Corporation (IDC) is the premier global provider of market intelligence, advisory services, and events for the information technology, telecommunications, and consumer technology markets. IDC helps IT professionals, business executives, and the investment community make fact-based decisions on technology purchases and business strategy. More than 1,100 IDC analysts provide global, regional, and local expertise on technology and industry opportunities and trends in over 110 countries worldwide. For 50 years, IDC has provided strategic insights to help our clients achieve their key business objectives. IDC is a subsidiary of IDG, the world's leading technology media, research, and events company.

IDC UK

5th Floor, Ealing Cross,
85 Uxbridge Road
London
W5 5TH, United Kingdom
44.208.987.7100
Twitter: @IDC
idc-community.com
www.idc.com

Global Headquarters

5 Speen Street Framingham, MA
01701 USA
P.508.872.8200
F.508.935.4015
www.idc.com

Copyright and Restrictions

Any IDC information or reference to IDC that is to be used in advertising, press releases, or promotional materials requires prior written approval from IDC. For permission requests contact the Custom Solutions information line at 508-988-7610 or permissions@idc.com. Translation and/or localization of this document require an additional license from IDC. For more information on IDC visit www.idc.com. For more information on IDC Custom Solutions, visit http://www.idc.com/prodserv/custom_solutions/index.jsp.

Copyright 2020 IDC. Reproduction is forbidden unless authorized. All rights reserved.