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Accelerating Digital Transformation in Insurance

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Transformational Challenges

Digitalization is enabling new products, services, business models and new value propositions across the value-chain. For any insurance company hoping to realize these tremendous opportunities, digital transformation must be at the forefront of their strategy. But those taking these important steps are often faced with several challenges:

- Legacy systems. Replacing existing infrastructure and processes that are embedded deep in the organization can be a burden on resources and a timely process. Furthermore, any transition must have little to no disruption to day-to-day business.
- Complexities. Adopting the right partners and the right solutions that are scalable in design and future-proof at conception. Handling of more and more data being generated by the connected economy, while conducting more complex analytics.
- Realizing return on investment. Generating returns within a short space of time and mitigating risk from new digital centric entrants looking to disrupt the market. Meeting and exceeding ever increasing customer expectations, while increasing the value pool.

To help overcome these challenges, insurers need to:

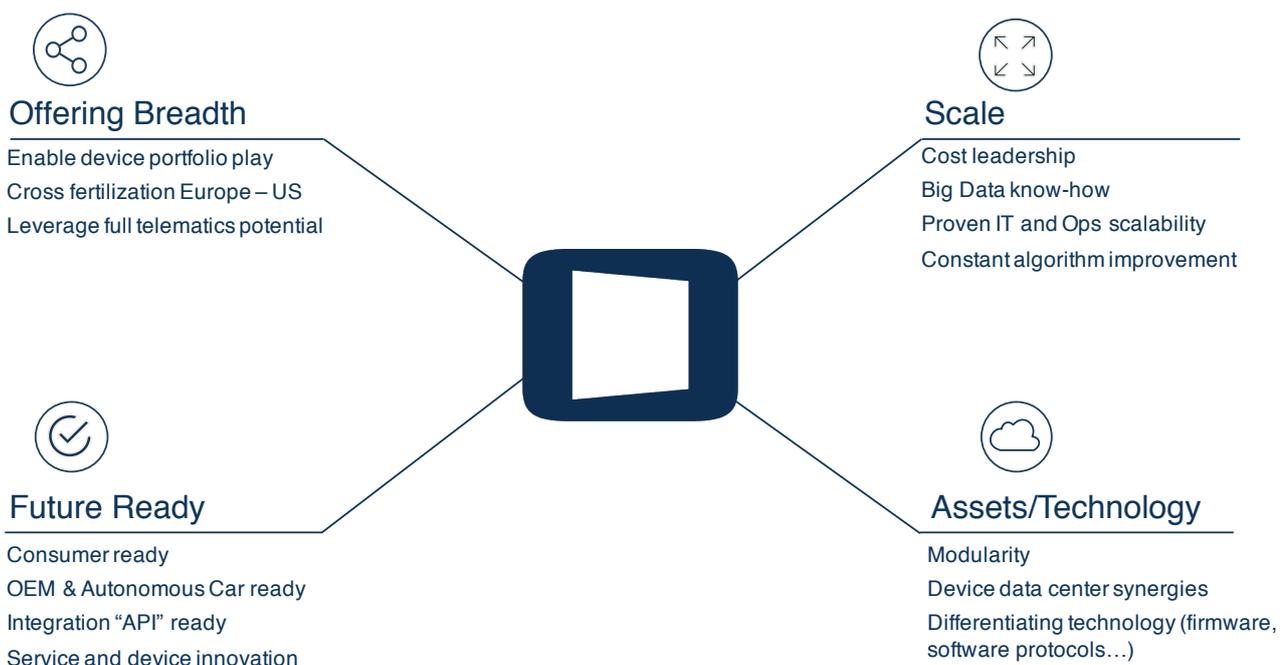
- Prioritize IT transformation and support with a strong economic business case
- Invest in new areas including mobile, digital marketing, analytics, cloud and security
- Support customer-centricity through new business models such as usage-based insurance, affinity-based marketing and new customer interaction options
- Include off-premises hosting and cloud-based models

Accelerating Digital Transformation with Octo

Octo's solution, the Next Generation Platform (NGP), uniquely links the characteristics of a horizontal IoT framework with rapidity and revenue to pre-built vertical use cases, helping insurance companies accelerate their digital evolution.

The platform has been built with four underlining principles. Breadth of offering to cater for all market needs, scale of capability that today already includes the world's largest insurance telematics database, assets/technology compatibility in its widest form and be fully future ready (see Figure 1).

Figure 1. Core Principles of Innovation and Competitive Differentiation



Centered around Octo's NGP are five unique components:

1. From a Traditional Approach to Real Data-Driven Big Data Analytics and Scoring
2. Breadth of Services and Breadth Sensors
3. Driver Genome
4. AI for Crash Validation and Reconstruction
5. CRM Service Cloud and Digital

1: From a Traditional Approach to Real Data-Driven Big Data Analytics and Scoring

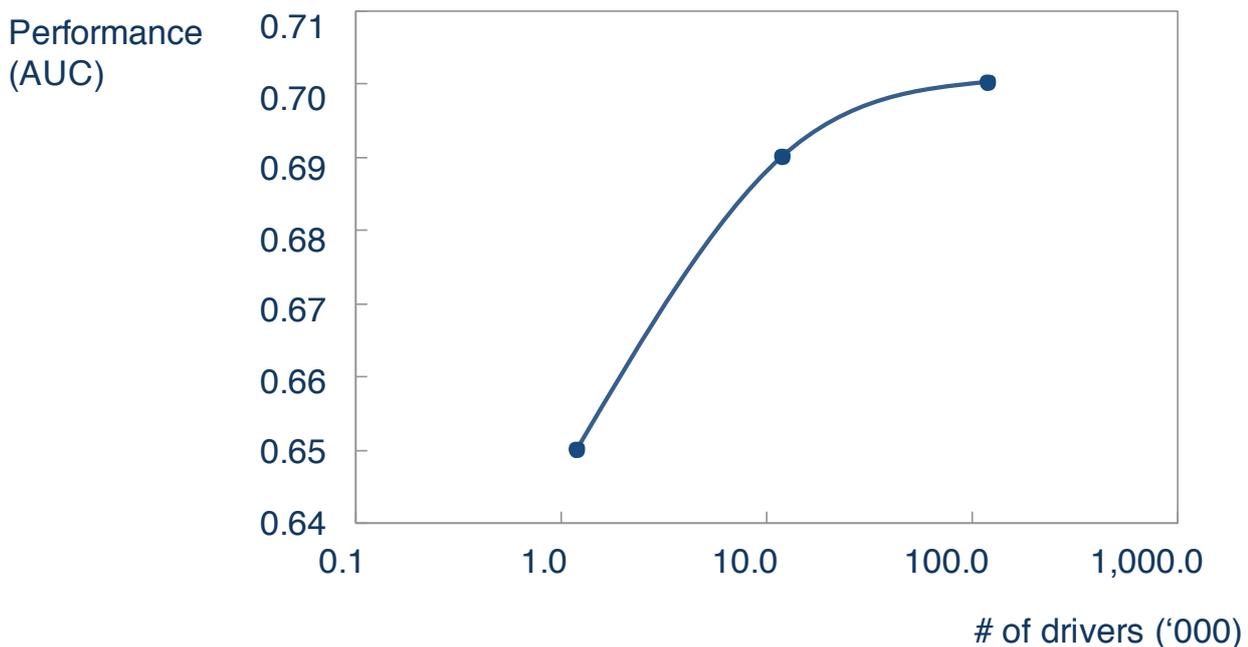
Supporting the insurer through digital transformation with market-ready analytics based on the performance

generated from the world's largest insurance telematics database. Simplifying the complexities from multiple dimensions of driving data and shortening the time-to-market with ready to use scoring algorithms that replace legacy actuarial practices.

As the market leader in connected auto insurance, Octo have over 100 B2B partners and more than 5.3 million connected users. With the largest number of connected users, Octo is the only telematics provider who can access new levels of performance from big data analytics. As the volumetric size of the dataset from drivers increases, performance increases at an exponential rate (see figure 2).

Octo scoring algorithms leverage on three main dimensions, Driving Habits, Driving Behavior and Driving Context.

Figure 2. Exponential performance versus driver data sets



Driving Habits: Consider where and when the customer drives at different times of the day, days of the week and various road types (highways, urban and extra-urban roads). This information is collected from the GPS sensors and can be analyzed with different levels of granularity. The Octo standard is based on a 2 km frame.

Driving Behavior: Driving behavior indicators are mainly based on cinematic measures collected from the accelerometer and gyroscope, and generated from car movements. Events measured include:

- Speeding
- Hard braking
- Harsh acceleration
- Cornering (fast driving through corners)
- Sprinting (quick changes of direction)
- Lateral movement

Each event brings distinctive information and when pieced together provides a thorough picture of the manner of driving, focusing on driver behaviors. Driving behavior events are measured and analyzed considering both the number of events and also a comparison of the best combination of key metrics. A sample of these metrics could be reported as follows:

- Duration of events (milliseconds)
- Average severity (milliG)
- Maximum peak severity (milliG)
- Speeds (Km/hour at the beginning and end of the event)

Driving Context: all external information like metrological environment, traffic and demographic communities coming from different sources.

With regards to contextual habits information, depending on the country, the Octo algorithm takes into consideration the risk component of driving in a certain geographical area. To support this Octo has developed a new proprietary solution for the definition of risk areas (communities) working at a map level. The process relies on the following assets:

- Big data availability to geo-reference millions of events
- Analytics based on methodology working at a spatial level
- External data fusion

The outcome is a new area definition which is different from common zip code classifications traditionally used by insurers. The new area definition used with road type classification allows the insurer to define a more granular classification of the risk context. This includes vehicle, driver behavior, location, context, environment, crash and other complex data that we analyze across more than 2,000 combinations of parameters to provide actionable intelligence and insurance grade algorithms.

2: Breadth of Services and Breadth Sensors

While remaining device agnostic, Octo supports the insurer through digital transformation with the widest breadth of services and sensors, catering for all target markets. As well as significantly reducing the time-to-market, the breadth of services helps insurers increase their value pool.

Octo continues to define the connected auto insurance market with:

- A breadth of class leading services such as risk scoring the trend analytics, fraud prevention and crash and claims
- A breadth of sensors such as GNSS, accelerometers, gyroscopes and cameras; with a wide variety of form factors, including AAAS (App as a Service on the smartphone), AAAS + Smart Tag Sensor, Black-Boxes, ODB-II, 12v Adaptor and OEM line-fit

Furthermore, the NGP is designed to be truly device agnostic, not only supporting Octo devices, but third-party and mobile devices, as well as multiple data sources. Complexities and compatibility is fully maintained by the platform through sensor normalization, before value propositions such as data management and advanced analytics service multiple vertical business lines (see Figure 3).

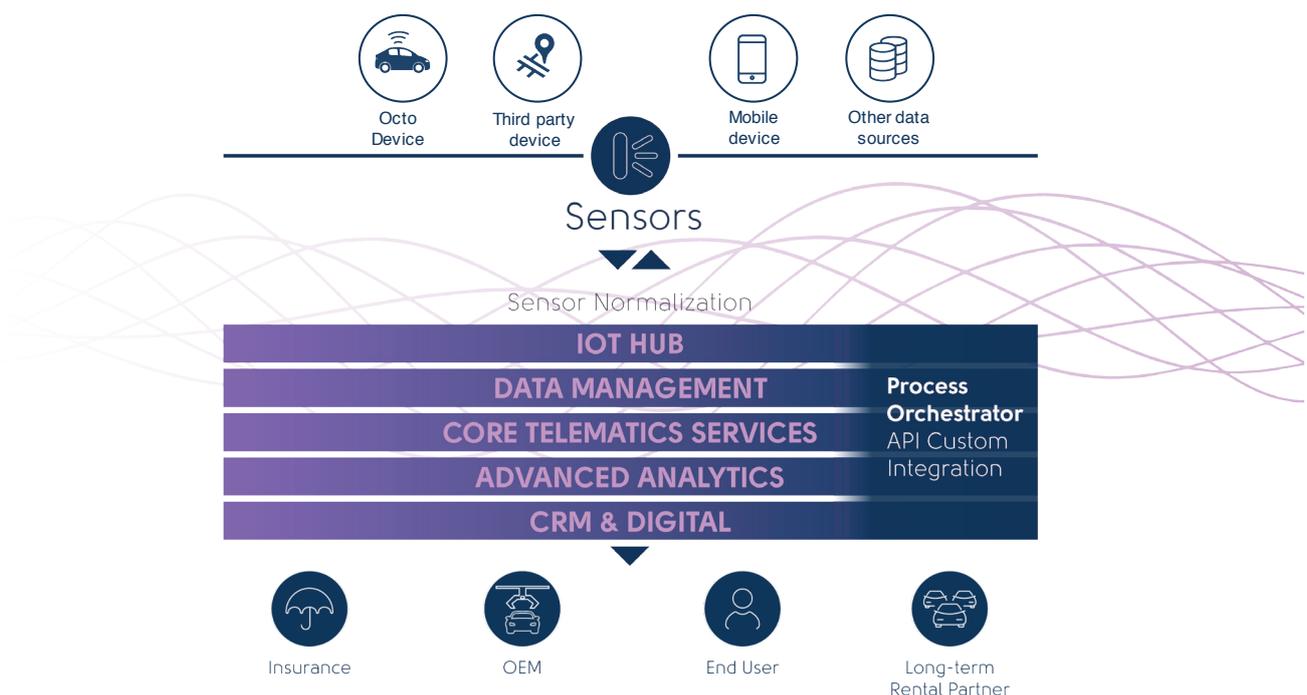
3: Driver Genome

Supporting the insurer through digital transformation through detailed 'gene' analytics that provides better driver profiling and proactive risk management. Better understanding drivers on such a granular level also provides visibility when there are data gaps, therefore maintaining a robust service.

The Insurance market is seeking disruptive, technology-driven innovation. Customers are expecting more from their connected insurance policies and insurers can exceed this expectation with capabilities such as machine learning and artificial intelligence (AI), that can potentially prevent an accident before it happens.

Driver Genome is Octo's system for a holistic and granular map of characteristics that influence the risk exposure. It consists of identifying, measuring and tracking changes across a number of features known as "genes". The more complex the Genes are, the more data is required to build them and as a result, the higher the predictivity of the model.

Figure 3. Device Agnostic, Servicing Multiple Verticals



The Driver Genome aims to:

- Address risks that are not well captured by classic insurance pricing parameters
- Allow meaningful inferences from changes to its components
- Contain information about the future evolution of components so the risk evolution is visible

Furthermore, as it is designed to carry a metric, it can also be used for relative assessment by detecting clusters in its genes. This is particularly useful in aiding inferences when there are limited observations available.

For example, a crash event takes place when a driver provides a poor response to an unplanned event. To better understand the circumstances of a crash

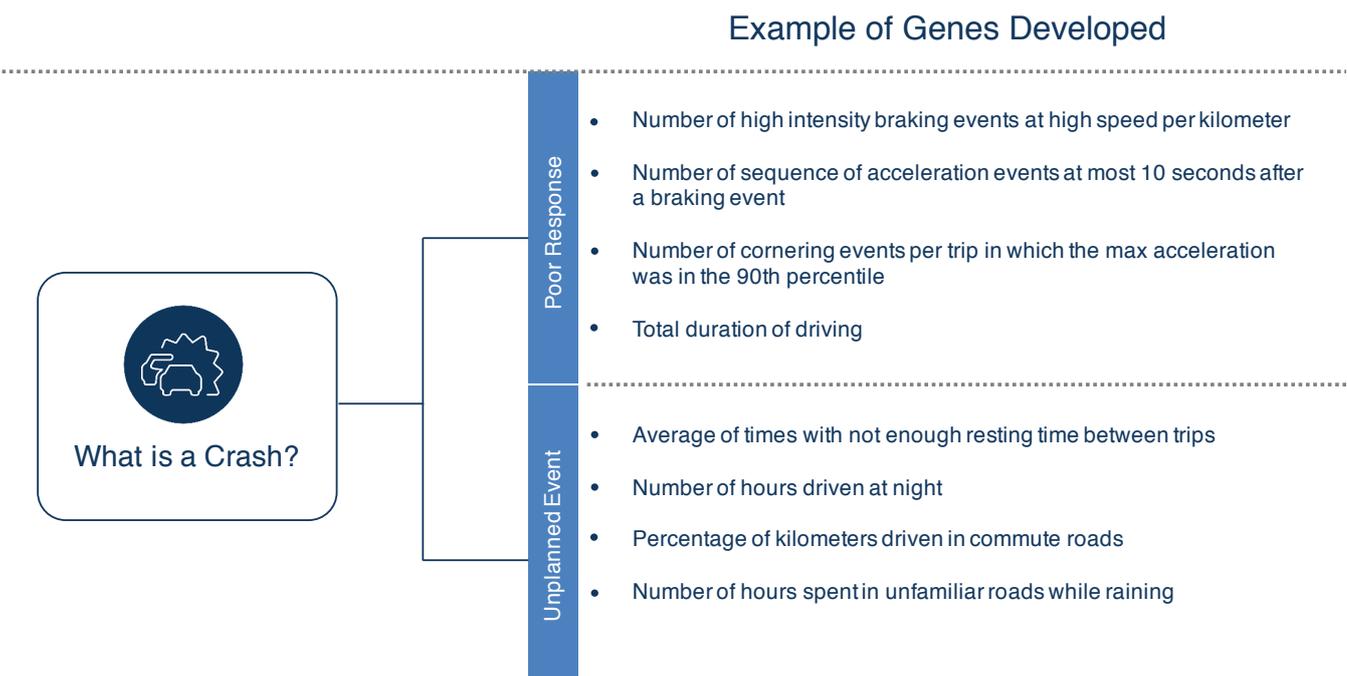
event, several genes are developed around possible poor responses and situations in which an unplanned event could take place (see Figure 4).

This generates additional value for Octo's insurance partners, as it allows them to enhance their technical pricing, positively influence the insured's behavior and enable new innovative pay-per-use services and products.

4: AI for Crash Validation and Reconstruction

Supporting the insurer through digital transformation with services that supersede legacy systems, in terms of risk assessment, crash notifications and claims processing. Value is realized across the value-chain, with customers benefiting from more accurate insurance quotes, emergency/breakdown support when needed and in the case of an accident, a faster settlement.

Figure 4. Example Crash Related Genes



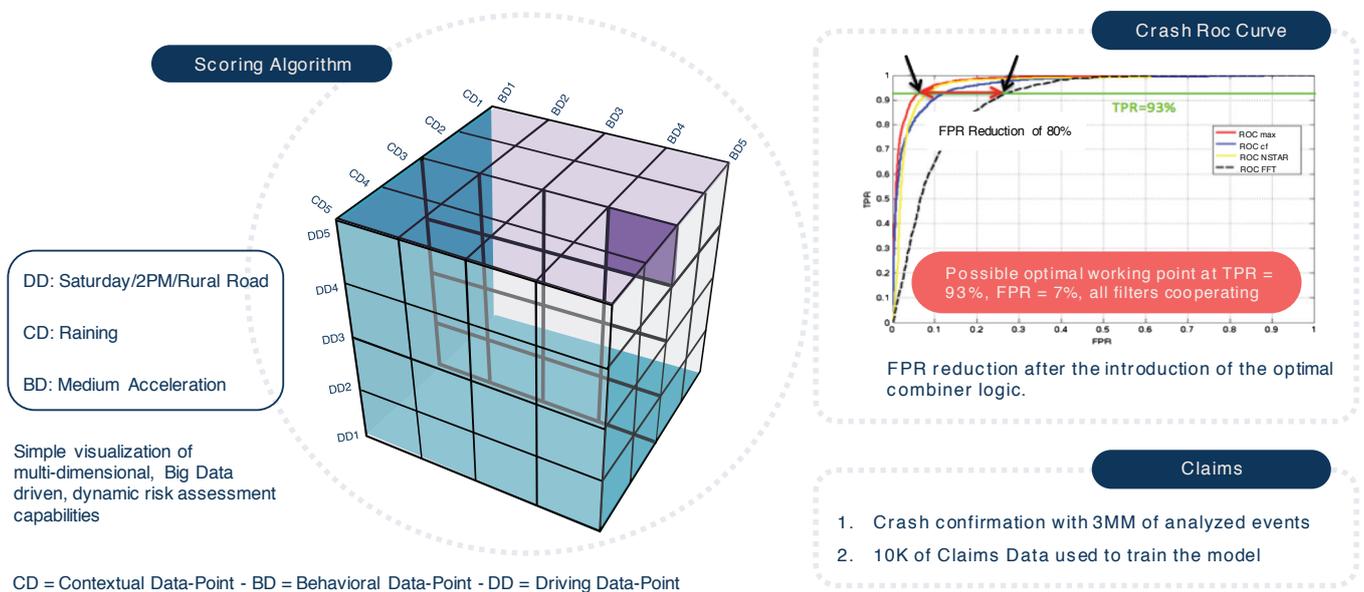
Consistent with the quality of Octo's scoring algorithm in which risk is modeled against three dimensions, contextual, behavioral and driving data-points to provide actionable insights for insurance partners (see Figure 8). Octo's state of art technology for crash detection is combined with different algorithms such as space state corridors, neural networks, genetic algorithms, as well as frequency and time analysis.

The accuracy of this approach is measured by the best compromise between the False Positive Rate (FPR) and True Positive Rate (TPR) represented by the ROC (Receiver Operating Characteristic) curve. Based

on millions of analyzed events and thousands of confirmed claims, Octo has reduced the FPR by 80%, while maximizing TPR detection to 93% (see Figure 5).

The engine behind the complete crash and claims service is a combination of a powerful mathematical model and a proprietary statistic engine. Currently, with any new crash recorded, the system searches for similar events in the claims database based on acceleration values, similar values are then expected to have similar levels of damage. Pictures relating to the stored claim are then displayed for comparison proposes.

Figure 5. Analytics Models: 3D Risk Model with Embedded Crash Data

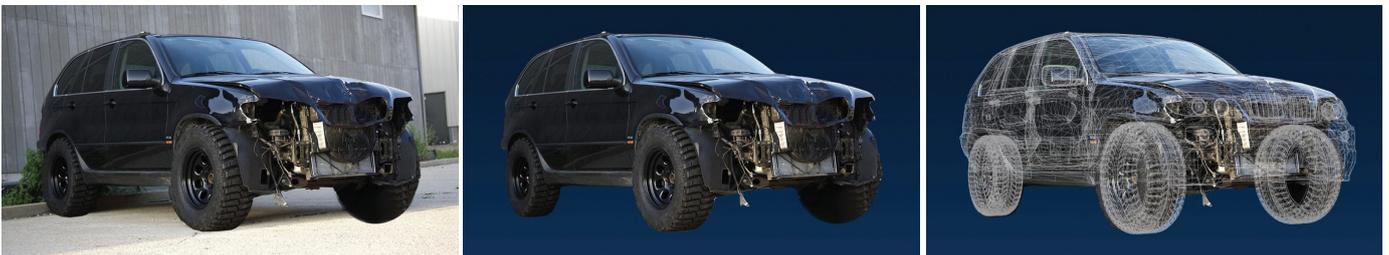


Furthermore, by combining the telematics data recorded from the sensors (acceleration, brakes, oscillations, impacts, etc.) with 3D and 2D animations, Octo's Multimedia Claim Service allows you to objectively reconstruct a claim, visualizing a crash as if it were real. In this way, the insurance company can lead a reliable process of accountability and claims settlement, limiting potential fraud. Starting from the analysis

of a video reconstruction, it will be possible to verify the compatibility and the suitability of the documentation of each claim received.

The next step of evolution is the damage estimation based on image recognition technology. To achieve this goal, it is necessary to develop an engine capable of recognizing different types of vehicles, types of damage and the magnitude of damage, solely from vehicle photographs (see Figure 6).

Figure 6. Example Image Recognition Technology



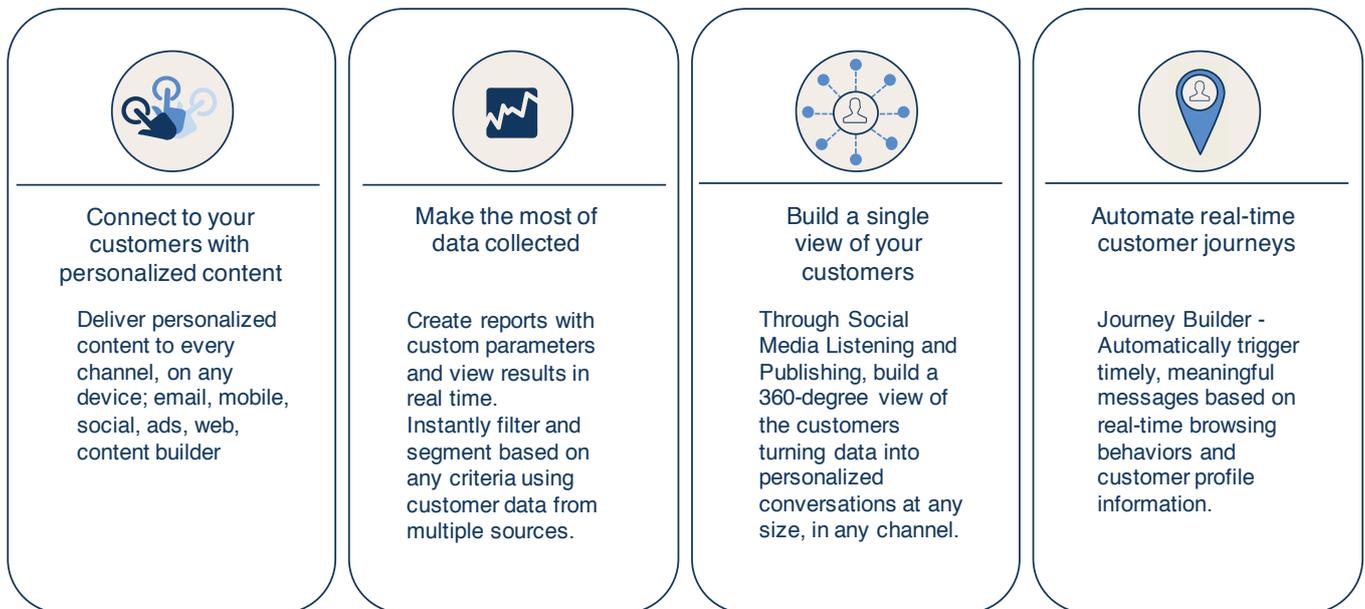
Source: Octo Telematics

5: CRM Service Cloud and Digital

Supporting the insurer through digital transformation with an integrated Customer Relationship Management (CRM) solution to increase customer retention, as well as increase up-sell and cross-sell potential. Enhancing the opportunities for more targeted, tailored marketing and pricing strategies.

The NGP is designed to be highly configurable, modular with product and service building blocks, with an architecture that reduces time-to-market. Compatible with B2B, B2B2C and B2C working environments, it supports personalized customer content which can be automatically triggered, provide custom reporting and helps build a 360-degree view of individual customers (see Figure 7).

Figure 7. Data Derived CRM Value



Source: Octo Telematics

Directly complimenting Octo's CRM services, is Octo's enhanced digital offering. Designed around the smartphone, the app supports both B2C2B and B2B2C business requirements. For example, building a community of consumers for gamification or analytics that support business activities (See Figure 8).

While the Octo smartphone app utilizes the latest built-in sensors from a smartphone, additional value can be further leveraged from being fully integrated with other sensors on the NGP. For example:

- Bidirectional flow of experiences between the Octo smartphone app and any additional sensors
- Octo smartphone app crash detection and reconstruction can be implemented with ease with Smart Tag integration

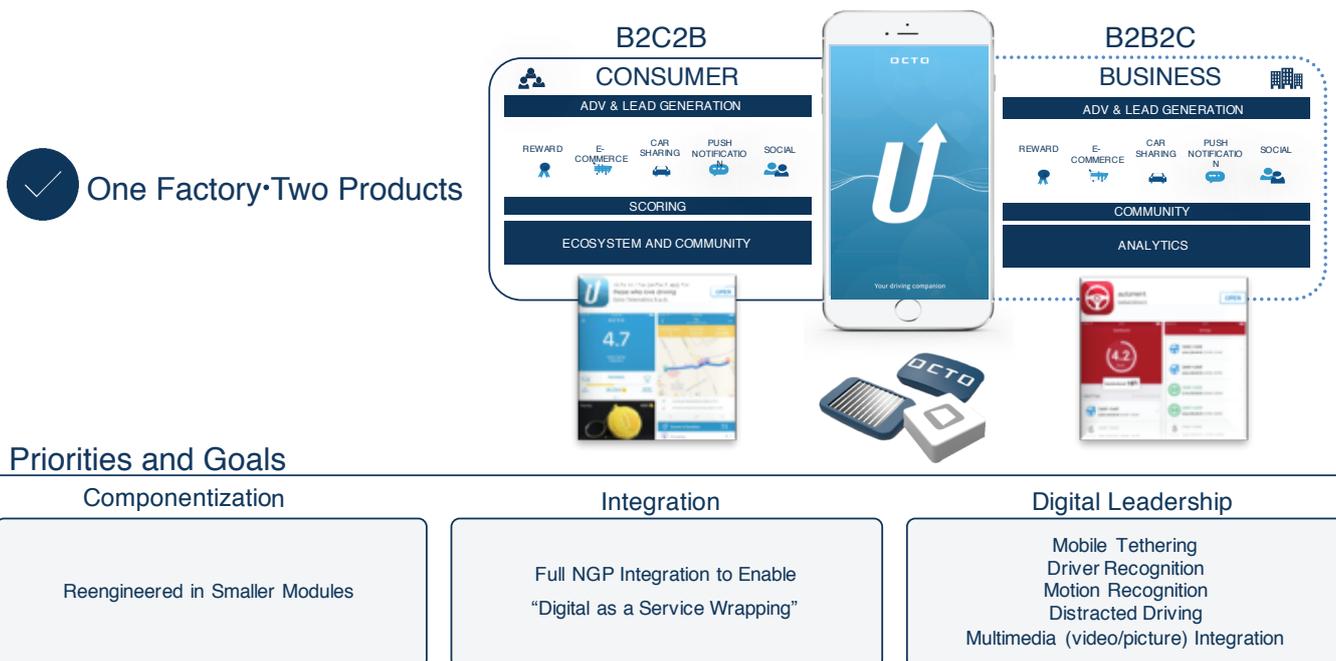
- Driver identification schemes can be implemented by exploiting user interaction with the app
- Distracted driving schemes can be better implemented by exploiting the integration of additional sensors

Digital leadership across Octo solutions is focused on supporting partners in achieving their priorities and goals across componentization, integration and leadership.

CRM Service Cloud and Digital, like the other unique components of Octo's NGP, is another step towards achieving digital business excellence.

Source: Octo Telematics

Figure 8. Digital Value Proposition



Source: Octo Telematics



Research From Gartner

How to Achieve Digital Business Excellence by Mastering Pervasive Integration

To make customer experience, IoT, ecosystems, intelligence and IT systems work together, a digital business technology platform must effectively interconnect all these subplatforms at scale. Application leaders should implement a pervasive integration strategy to succeed in digital business.

Key Challenges

- Any digital business technology platform (DBTP) initiative has to tackle a daunting array of integration challenges, but for many digital business leaders, integration is only an afterthought.
- The growing importance of digital business ecosystems is forcing organizations to face unprecedented scale and diversity of integration tasks, for which conventional B2B integration technologies and paradigms are proving inadequate.
- Application teams focused on individual DBTP subplatforms tend to address integration challenges on a small, local scale by optimizing short-term goals in a stovepipe fashion. This attitude may lead to a lack of agility and duplication of efforts, technologies and skills.
- To monitor, detect and react to business moments in an event-driven, business real-time fashion, while engaging their ecosystems, organizations are forced to integrate a variety of application services and data sources within and across the DBTP subplatforms.

Recommendations

Application leaders in charge of modernizing integration strategies and infrastructure to enable DBTP:

- Secure adequate investments and managerial attention to integration by educating your digital business leadership about the importance of a proactive, pervasive integration strategy to shorten time to value and improve the agility of your DBTP.
- Enable “event thinking” by adopting appropriate integration capabilities to empower your organization to join digital business ecosystems and their transformative opportunities.
- Develop a pervasive integration strategy by incorporating in your DBTP a comprehensive set of proper technical capabilities to enable an integrated digital business.
- Make these technologies pervasively available by implementing a centrally delivered hybrid integration platform (HIP) supported by a bimodal approach to integration to empower persona-based, self-service integration across the DBTP.

Introduction

The DBTP provides organizations with the technical foundation to support their digital transformation strategies. The DBTP is a “platform of platforms” that combines IT systems, customer experience, Internet of Things (IoT), ecosystems and intelligence platforms to enable new products, new services and even new business models. Application systems within these “subplatforms” must be integrated with each other and with systems in other subplatforms.

An “unintegrated DBTP” is simply an oxymoron.

To make their DBTPs work, organizations need to tackle myriad integration challenges that pervasively manifest across all the platform components (see Figure 1).

These integration challenges pervasively manifest at multiple levels of a given DBTP:

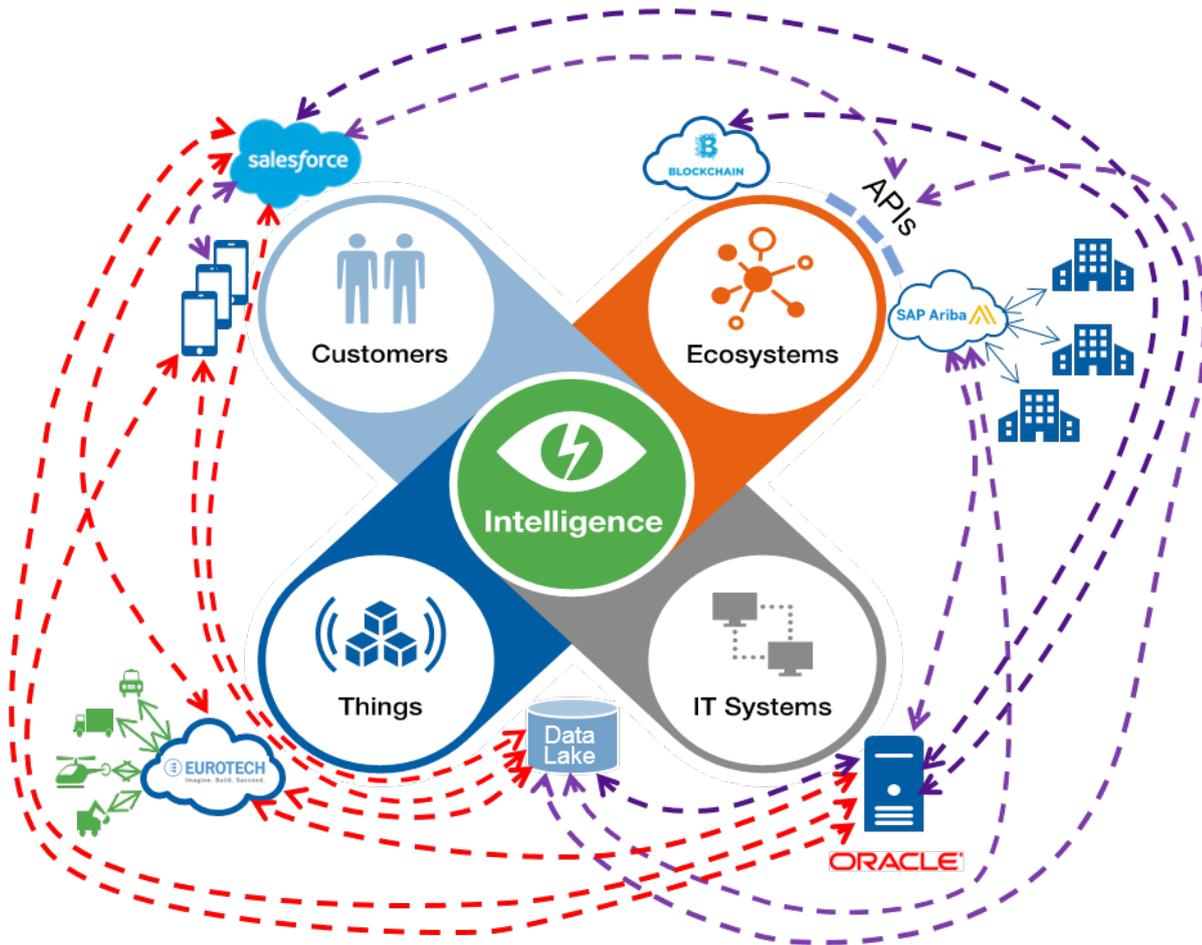
- Across different organizations within the same ecosystem and across ecosystems
- Across platforms (for example, to convey data from things into the intelligence platform, to back-end IT systems and ecosystem partners)
- Between systems and applications within the same platform (for example, between a business-to-customer [B2C] e-commerce portal and a lead management system within the customer experience platform)

Due to the quickly changing and highly competitive nature of digital business, organizations must be able to address these challenges quickly and cost-effectively (see the Octo case study in this research).

A sound pervasive integration strategy (see Note 1) is no longer simply “nice to have.” It cannot be an afterthought for organizations with digital ambitions.

Digital business is in its essence collaborative, heterogeneous and continuously changing and expanding. Without a solid underlying integration infrastructure and pervasive “integration thinking,” there is no digital business.

Figure 1. Examples of Digital Business Integration Challenges



Source: Gartner (August 2017)

Integration, however, is a tricky problem for application leaders to tackle. Moreover, it is often hard for them to secure resources and managerial attention to the issue. For many digital business leaders, in fact, integration is regrettably just “an implementation detail.” This attitude often stems from the incorrect belief that, after all, integration is a “solved problem.” This attitude occurs because of all the hype and rhetoric digital business leaders hear about APIs.

The tough reality is radically different:

Without a well-thought-out and wisely governed pervasive integration strategy, a DBTP will inevitably end up being based on an unmanageable, fragile, rigid, hard-to-change and horribly expensive “digital business spaghetti” nonarchitecture.

A digital spaghetti could potentially undermine the effectiveness and agility of any digital transformation initiative and keep the organization isolated from digital business ecosystems and their transformative opportunities.

This research is meant to help application leaders responsible for supporting DBTP initiatives to address these challenges by providing them with:

- The rationales needed to explain to business leaders why a sound, pervasive integration strategy is a key success factor for any organization's DBTP
- Recommendations about how to articulate a pervasive integration strategy that empowers any-to-any, API and event-based cooperation across their DBTP and with their ecosystem partners

Analysis

Secure Adequate Managerial Attention and Investments for Pervasive Integration by Educating Your Digital Leaders About Its Key Role

Even a superficial look at the integration issues associated with your DBTP will reveal that you must:

- Integrate the established, pre-DBTP information systems with new, innovation-enabling technologies, such as IoT platforms, platform business brokers, mobile apps or blockchain.
- Enable integration of processes while maintaining the quality of business operations throughout the highly heterogeneous and rapidly changing technology environment and ecosystem setting.

Even more daunting than the intrinsic complexity of supporting these requirements within and across the DBTP subplatforms is the sheer amount of integration work driven by digital business. For example, you may need to:

- Rapidly, securely and cost-effectively onboard hundreds, if not thousands, of ecosystem partners via event notifications, service APIs, web hooks, electronic data interchange (EDI) protocols, managed file transfer (MFT) and other means.
- Connect your intelligence platform with hundreds of thousands of IoT devices via a variety of protocols and data formats that are generating data at various speeds and volumes.
- Support millions of consumers that want to do business with your organization using multiple channels, thus becoming, in some cases, parts of your digital business ecosystem.

Without proper leadership, planning and substantial investment in terms of technologies, organizational settings and skills, you will never be able to sort out integration issues of that scale and complexity.

It is imperative that you properly sensitize your digital transformation leadership about the key role of pervasive integration to make sure top management allocates adequate managerial attention and investment as part of your organization's DBTP plans.

Action Items:

- Engage with your business and IT digital leadership to identify early on the key integration challenges your organization will have to face while implementing its DBTP strategy.
- Demonstrate to your business leadership how pervasive integration technologies (such as, integration platform as a service [iPaaS] and API management platforms) and methods address these challenges in a more agile and cost-effective fashion than traditional integration methods. You can do this through, for example, reference visits, peer networking, proofs of concept (POCs), pilot projects and early, limited-scale successes.
- Justify investments in pervasive integration based on the following factors:
 - Ability to participate in event-driven ecosystems and to enjoy their transformative innovations
 - Ability to enable superior business agility by supporting rapid replacement of now-inadequate DBTP elements (whether applications or ecosystem partners) with more valuable alternatives
 - Ability to monitor the business value and the end-to-end technical efficiency, quality and reliability of integrated digital business processes
 - Ability to achieve shorter (up to 50% or even 75%) time to integration for new digital applications

Adopt Event Integration Capabilities to Empower Your Organization to Join the Digital Business Ecosystems

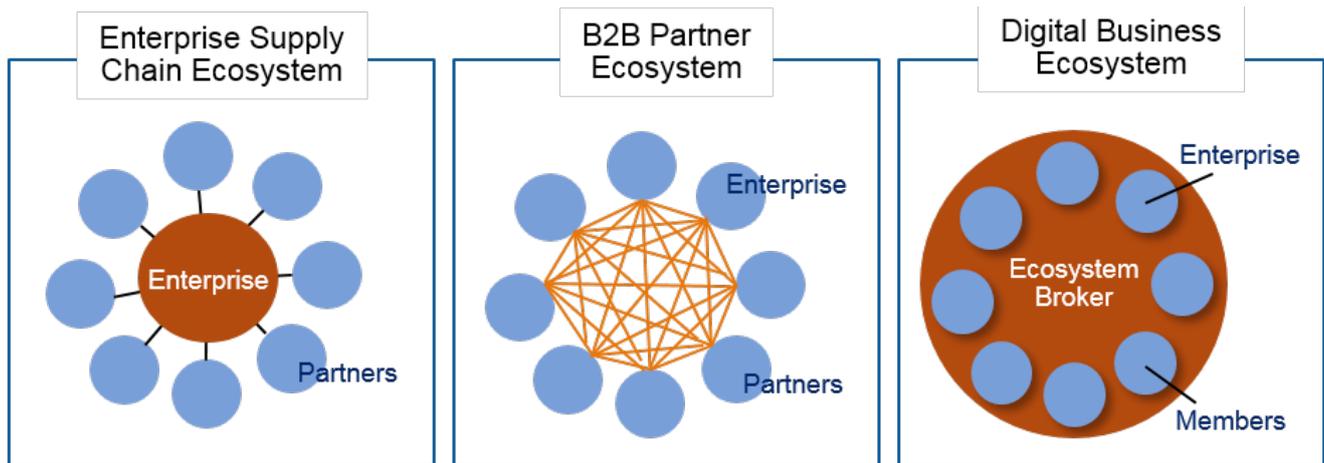
A key component of your DBTP is the ecosystem subplatform, which enables your organization to collaborate with your business partners in ways that go beyond traditional, decades-old models. Supporting these new approaches to ecosystems poses specific integration challenges that only in part overlap with the integration issues that manifest across the other DBTP subplatforms.

The hierarchical supply chain relationships (for example, a carmaker and its parts suppliers) and the B2B partner ecosystems where organizations enter into specific point-to-point agreements are widespread. However, these forms of ecosystems are too rigid, constrained and slow to support the digital context where real-time continuous monitoring for IoT events and ecosystem-supported business moments is a common behavior.

The more elastic and agile digital business ecosystems are peer networks of members that are facilitated by a third-party ecosystem platform broker. Their model is a direct descendant of the architecture of sharing economy platform businesses, such as Uber or Airbnb (see Figure 2).

The members/partners of any ecosystem are always independent entities with their own IT architecture and business models. Therefore, integration capabilities are essential in all ecosystem models. However, the digital business ecosystem peer network poses different integration challenges:

Figure 2. Evolution of Ecosystem Models



Source: Gartner (August 2017)

- In supply-chain-style ecosystems, the controlling enterprise (the carmaker in the earlier example) dictates the integration policies, protocols and technologies.
- In the B2B partner ecosystem, each partnership is negotiated separately, and your organization must be able to support all the protocols, formats and policies that are necessary.
- In the digital business ecosystem, a third-party platform broker technology is provided to all members. This technology is designed to support digital-business-style operations: real-time event-driven collaboration, matching, orchestration, creation, market-style brokering and other services to facilitate responsive business models and business ecosystem-supported business moments.
- Event-based integration, including communication and event object semantic transformation
- Stream and event analytics
- Ecosystem context sensing and analysis
- Decision automation and support derived from integrative event and data analysis
- High-productivity administration tools to allow business actors to join and influence the ecosystems
- High-control development tools to design algorithms and integrations for event, event stream and command processing in context

The demands to the IT infrastructure embedded in the broker platform and in the infrastructure of the ecosystem members include:

Member organizations of a digital business ecosystem retain fully autonomous operations and process their ecosystem-derived business internally, using their internal integration infrastructures and

approaches. In that respect, the ecosystem business is an “edge” activity that requires substantial integration investment due to its inherent diversity. It “plugs in” with the core integration infrastructure of the organization that manages the coordinated work of its own application, cloud services and other ecosystems or partnerships of various types where the organization is a member.

It will likely become imperative in the next two to three years that your organization be ready to join digital business peer-network-style platform businesses and ecosystems. Your integration strategy must support this imperative.

Action Item:

- Incorporate in your integration strategy technical capabilities, competencies and skills to enable integration of event-driven, real time operations, including stream-based processes.

Develop a Pervasive Integration Strategy by Including in Your DBTP an Appropriate Set of Technical, Organizational and Skills Capabilities

Many of the digital business integration challenges that we discussed above have a common trait: They must be addressed in a matter of weeks, days or even hours — not months or quarters — no matter what.

Most likely your organization already has in place one or more teams of integration specialists — typically referred to as integration competency centers (ICCs) — that take care of integration across IT systems. In general, ICCs do not have the amount of resources that are needed to perform the myriad integration

projects and tasks that will emerge as you implement your DBTP. Should the ICC have to deal with “all” these requirements, it would rapidly become a bottleneck, no matter how efficient the team is.

In the absence of a pervasive, organizationwide integration strategy, your individual DBTP platform leaders and specific project teams will naturally tend to address their integration challenges locally by optimizing their short-term goals (for example, developing ecosystem-enabling APIs) in a stovepipe fashion. They do not, and cannot, have a holistic perspective of the overall DBTP integration challenges, which may lead to duplication of efforts, technologies and skills within your DBTP and across your organization.

Moreover, developers, not necessarily with deep integration platform skills (“ad hoc” integrators), and even business users (citizen integrators) under time-to-value pressure inevitably want to address their integration issues by themselves (see Note 2). This may lead to further duplication of efforts.

The market offers several categories of platforms that can address a wide range of functional requirements and support these different personas (see Note 3). However, in most cases and especially in large and global enterprises, no single one of these platforms can support all the integration issues stemming from a DBTP initiative. You may need a combination of these platforms, but you will also want to optimize such a combination to keep your costs under control.

All the dimensions of your pervasive integration strategy — organizational, architectural and technical — must aim to minimize the costs of supporting these requirements while maximizing the agility and flexibility of your DBTP.

Action Item:

- Appoint a “digital integration czar” in charge of understanding the current and emerging requirements, defining a strategy and driving the pervasive integration plans. Should your organization already have an ICC, the head of this team could be a good candidate for the role.
- Set up a “digital business ICC,” typically (although not necessarily) led by the integration czar, and task it with initially implementing what Gartner calls the “systematic approach to integration,” which encompasses:
 - Collecting, from digital transformation projects, short-, medium- and, if possible, long-term integration requirements in terms of functionality and target integration personas
 - Defining your pervasive integration technology platform capabilities (typically based on the HIP framework) that meet these requirements
 - Selecting the proper combination of integration technologies that best implements these capabilities
 - Implementing, managing, maintaining and evolving these technologies as an integrated whole
 - Providing integration delivery services to the teams engaged in DBTP initiatives
 - Meeting agreed key performance indicators (KPIs) such as time-to-value, integration platform availability and efficiency, number of supported and enabled application teams, and integration cost reductions

If your organization already has a traditional ICC, it most likely already has these practices in place. It is only a matter of extending them to cover the DBTP requirements.

- Task the digital business ICC to incrementally evolve toward a role of facilitator for integration specialists and ad hoc and citizen integrators according to a “bimodal” approach.

Implement a Centrally Delivered HIP Supported by a Bimodal Approach to Integration

To react to business moments (but also to support more conventional process automation requirements), your organization must be able to integrate applications and data across the DBTP platforms in a business real-time, event-based fashion. For example, you may need to order a missing spare part via your procurement application (in your IT system platform) when a preventive maintenance algorithm (in your intelligence platform) notifies you of a potential failure in one of your IoT-enabled asset (via your “things” platform).

To support these types of scenarios, therefore, intra-/inter-subplatform and ecosystem integration capabilities must be available and consumable to the appropriate integration personas, anywhere throughout your DBTP. Ideally, you would like to have a single, shared set of DBTP-wide integration capabilities that are available, in a self-service fashion, to any integration persona in any DBTP subplatform. Such a setting enables:

- **Agility and flexibility**, from an integration delivery perspective, so that integration personas can address their needs in business real-time without being constrained by ICC personnel availability

- **Central management and control**, from an integration governance perspective, so that the ICC can monitor integration personas' activity in real time; troubleshoot issues as they happen; ensure technology consistency; and enforce security, compliance and governance policies

Enabling this model implies an extension of your current integration platform (if you have one) to cover the new requirements, such as IoT and digital business ecosystem integration. It also requires, however, a change in your organizational setting to extend your “systematic” ICC with resources, methods and skills aimed at empowering and facilitating such a self-service and persona-based approach to integration across your DBTP (see Figure 3).

Renovate the Platform by Implementing a HIP

As discussed previously, you can pick-and-choose from a wide range of integration platform offerings to get the products and services that best suit your needs. However, the risk of duplication of technologies is high and, to a certain extent, inevitable. Moreover, from a central IT perspective, the issue is how to make these integration platforms available to multiple stakeholders across your DBTP without encouraging an unregulated, chaotic integration spaghetti. From the technology perspective, you can mitigate the problem by providing the integration platform capabilities as a shared infrastructure (that is, your own private iPaaS). Everybody could use (upon authorization) it, but your digital ICC would deliver, manage, monitor and maintain it centrally.

Gartner calls such an approach the HIP. This is not a product that you can buy, but rather a framework of on-premises and cloud-based integration and governance capabilities that enables different integration personas to support a wide range of use cases, ideally in a self-service fashion.

Your HIP-inspired integration infrastructure (“your HIP,” for short) will likely implement only a subset of the overall HIP framework. Your HIP will be constructed by assembling a variety of technology building blocks, from one or more providers that, nonetheless, should be managed as a cohesive, federated and integrated whole.

To tackle your digital business integration issues with the necessary agility, short time to value and adaptability, your HIP must be able to support some combination of the following requirements:

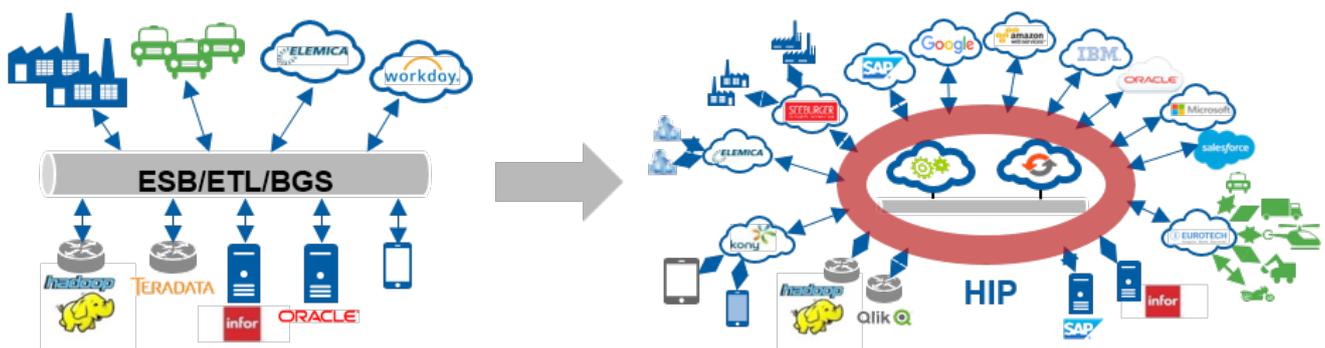
- **Empowerment of different personas:** Integration specialists and ad hoc and citizen integrators
- **Connectivity to a range of endpoints:** Cloud, on-premises, mobile, external ecosystems and IoT
- **Ability to enable a variety of integration patterns and use cases:** Application, data, event streams, B2B and process integration patterns, IoT, mobile, cloud, and on-premises integration use cases
- **Ability to allow cloud, on-premises, and hybrid (cloud and on-premises) deployments:** Including capabilities embedded in other products and services

Your ICC, ideally, should make these functionalities available in a role-based, self-service fashion. For example:

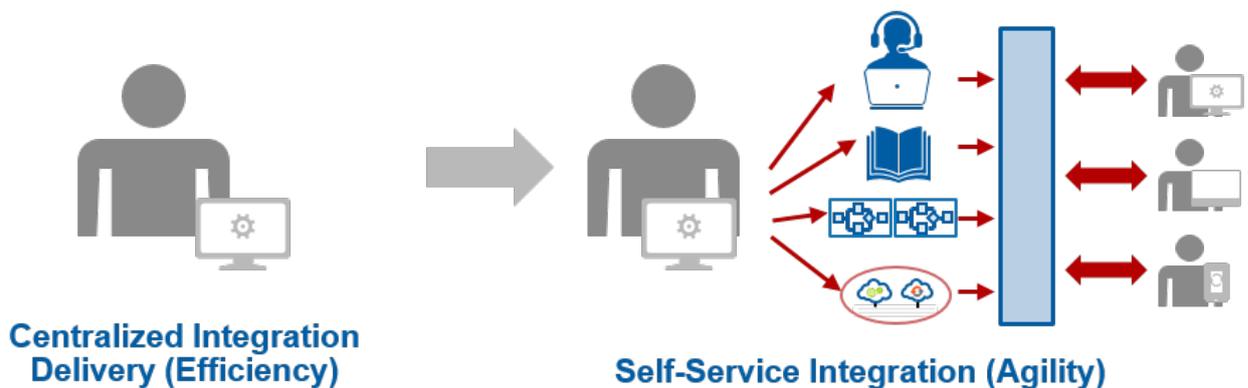
- **Integration specialists** have access to all your HIP functionality at any level of granularity.
- **Ad hoc integrators** are allowed to use an extended subset of these functionalities, often through some high-productivity, “low code” development environment.

Figure 3. The Two Aspects of a Pervasive Integration Strategy Plan

Renovate the Platform



Reshape the Organizational Model



Source: Gartner (August 2017)

- **Citizen integrators** are enabled only to customize and deploy integration templates (typically built for them by the ICC) via simple configuration wizard or artificial intelligence (AI)-assisted automation tools (digital integrators).

Reshape the Organizational Model to Support a Bimodal Approach to Integration

The “systematic approach to integration” has its merits in terms of efficiencies and quality of service, but, as discussed above, may not be agile and responsive enough. Thus, it may encourage

ad hoc and citizen integrators to work around the ICC bottleneck by relying on self-procured, “high-productivity” integration tools to quickly address their local integration issues by themselves.

Gartner calls this the “adaptive approach to integration.” It can rapidly deliver value and instant gratification, but it can also introduce long-term challenges in terms of economies of scale, expanding technical debt, manageability, auditability, security and compliance. These challenges extensively magnify across the DBTP.

They particularly affect subplatforms that must face high-scale integration challenges (IoT, ecosystems and customer experience).

Both the systematic and the adaptive approach deliver benefits and have drawbacks. Neither is inherently the best, but each can prove better than the other for specific use cases. You should plan, therefore, to reshape your organizational model to be able to support what Gartner calls the bimodal approach to integration. In this approach, the systematic and adaptive approaches complement each other.

The bimodal approach implies an evolution of your digital ICC toward a model that supports implementation, delivery and management of your HIP infrastructure. The ICC continues to deliver integration projects according to the systematic approach. But it also plays the role of facilitator for ad hoc and citizen integrators (but also for specialists elsewhere in the organization) by providing them:

- Integration aids in the form of templates, best practices, standards and guidelines
- Integration services such as training, consulting, support and help desk capabilities
- A self-service user experience they can leverage to access the integration aids and services as well as to consume the HIP functionality available to their roles
- A decision framework that helps them make informed decisions on whether to assume the systematic or adaptive approach on a project-by-project basis.

Action Items:

- Plan to aggregate the technologies required to support your digital business integration needs into a HIP-inspired infrastructure to be delivered as a shared, self-service infrastructure.
- Adopt bimodal integration by leveraging the best of the systematic and adaptive approaches.
- Gradually evolve the mission of your ICC from a centralized “integration factory” toward a role of “integration facilitator.”
- Implement both the technology and organizational aspects of your pervasive integration strategy in a stepwise fashion by incrementally introducing new capabilities in sync with the requirement emerging from your DBTP implementation plans.
- Consider federated settings, such as at the DBTP subplatform level, should a single HIP/single digital ICC arrangement prove impractical for technical, business or political reasons.

Case Study

Octo, founded in 2002, is a company providing a range of telematics services. It operates in 26 countries, with a particularly strong presence in the U.S., the U.K. and Italy. Octo business strategy is to help insurance and automotive companies successfully exploit the opportunities stemming from the dramatic transformation these industries will tackle over the next three to five years:

- Full digitalization of value chain
- Autonomous car
- Next generation CRM and billing

Octo based its business and service delivery strategy on a DBTP, implemented as a multitenant cloud platform, whose capabilities are delivered to partners via APIs and an IoT hub according to several models, including PaaS and business process outsourcing (BPO). Through this platform, Octo captures behavioral, contextual and driving data from consumer vehicles (cars, motorbikes and scooters). This data is then aggregated and analyzed in real time to provide services to a variety of different industries (insurance, automotive, car rental and fleet companies, and, through the Omoove subsidiary, mobility sharing organizations).

To implement and deliver these services, the company had to address myriad integration challenges involving IoT integration, event ingestion, API publishing and inter-DBTP integration issues.

These integration challenges are complex and at scale. The company has approximately 90 B2B partners (including Axa, General Motors, Unipol, Liberty Mutual, Admiral, Hastings Group, Mapfre Insurance and LeasePlan), and its telematics network connects more than 5.3 million vehicles, which gives the company a dominant market share in its segment.

Octo's DBTP provides a set of horizontal capabilities on top of which the company has implemented the services that consolidate the company's industry-specific, historical know-how. In this way, the company aims to:

- Generate more value for its partners via synergies across the different ecosystems
- Improve time to market for new services
- Reduce costs for its customers

A key enabler of the Octo DBTP is its HIP — based on Software AG's integration technology — which provides connectivity across IoT devices, Octo's internal systems, third-party service providers and ecosystem partners.

Octo's offerings include both real-time notification services (for example, car crash detection, parental control, theft prevention and "find my car") and "after the fact" services (for example, first notice of loss, crash reconstruction, damage estimation and various actuarial analytics). In turn, partners leverage Octo's capabilities to use data for improving their performance on pricing, claims and fraud detection. Moreover, partners can use those capabilities to provide innovative services for their consumer clients. For example:

- Insurance partners are selling driver behavior-based car policies and emergency services
- Automotive partners are proposing to clients customized support and maintenance services

Octo's DBTP consists of:

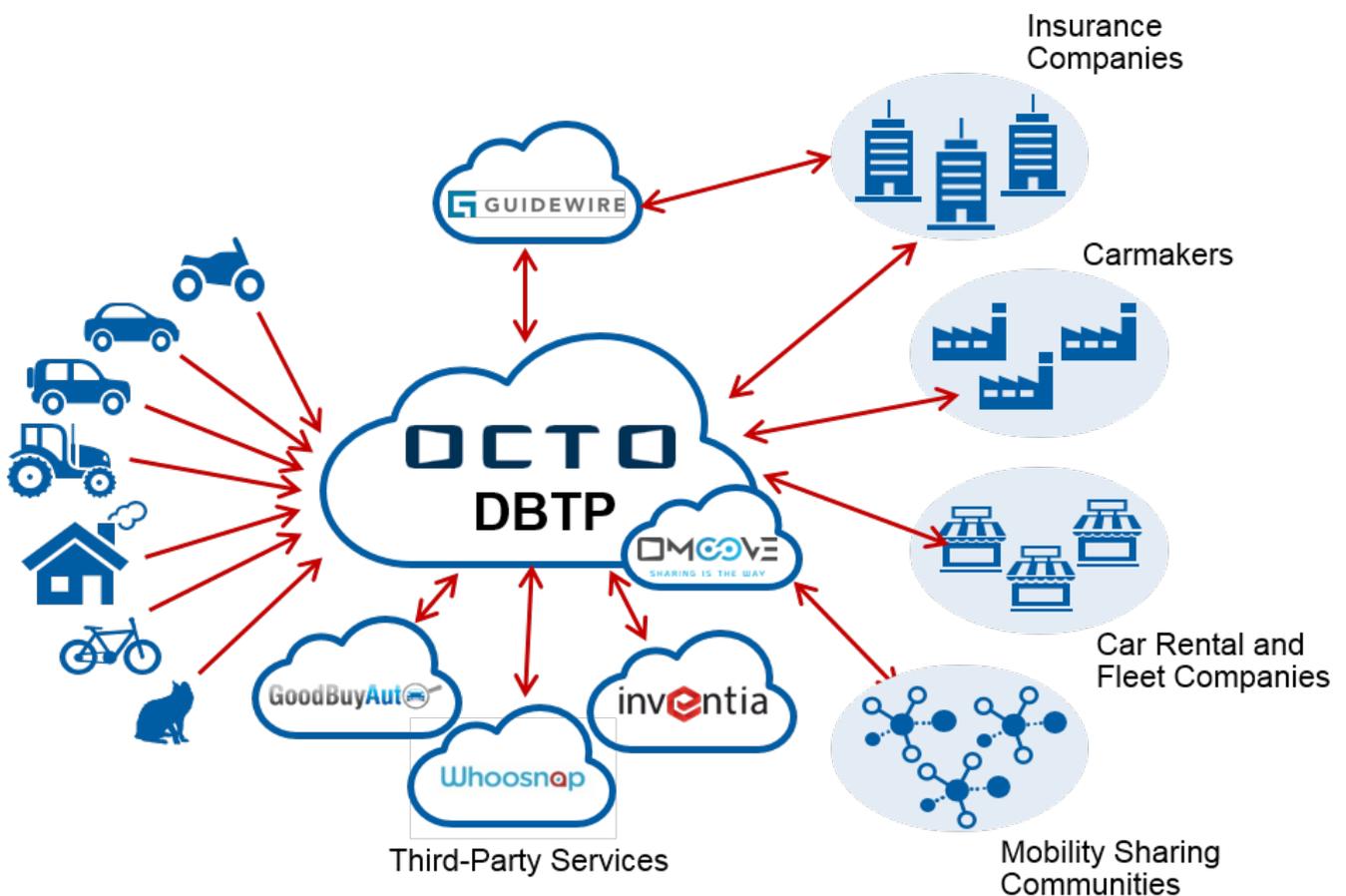
- Sensor devices deployed in the motor vehicles and other devices (for example, home devices) either by self-installing by consumer or by a dealer
- A horizontal application platform based on Software AG's IoT platform (Cumulocity), stream analytics (Apama) and in-memory data grid (Terracotta BigMemory)
- Actuarial analytics based on SAS Institute technologies
- Logistic services implemented via SAP ERP

- CRM and user experience services implemented via Salesforce
- Integration with third-party services (integration with Guidewire, Whoosnap, GoodBuyAuto and Inventia is under development)

Atop these horizontal services, integrated through the company's HIP, Octo's DBTP provides configurable application frameworks for the vertical industries it currently supports.

Such an architecture enables Octo to generate value from the IoT data for multiple ecosystems and across ecosystems alike. By reducing by 40% the time to market for new services, Octo expects that the new platform will enable the company to act as the "innovation enabler" for its partners. This way, the company aims to at least double its addressable market (for example, by entering the smart home, healthcare, agriculture and heavy machinery segments) and reinforce its global market leadership.

Figure 4. Octo Digital Business Technology Platform



Note 1. Pervasive Integration Defined

Pervasive integration is an organizational practice to build enterprisewide competency for integration across:

- An explosion of endpoints, such as homegrown applications and data sources, SaaS, mobile apps, and IoT devices
- Domains, such as data, process, application and B2B integration
- Deployment models, including on-premises, cloud and/or hybrid
- Integrator personas to enable integration specialists, along with ad hoc, citizen and digital integrators

Note 2. Integration Personas Defined

- **Integration specialists** are developers totally dedicated to integration. They have deep skills in one or more integration platforms, and their job is to implement integration projects either on behalf of their entire organization or of some specific organizational entity, such as a line of business (LOB) or subsidiary. They are typically located in a central or decentralized IT department and grouped in some form of ICC.
- **Ad hoc integrators** are developers, SaaS administrators, API product managers, data scientists or other personnel with IT skills who occasionally need to perform integration tasks in the context of the projects and initiatives they are engaged with. As such, they can at times use integration platforms that provide easy-to-learn and easy-to-use tooling.

- **Citizen Integrators** are business users (such as marketers, salespeople and customer support personnel) with limited or minimal IT skills. However, as part of their daily jobs or in the context of specific initiatives (for example, a product launch), they need to perform simple integration tasks via specific, extremely easy to use tools, such as iSaaS.
- **Digital integrators** are not humans, but tools that apply machine learning and AI techniques to facilitate the resolution of complex integration problems. These technologies may include chatbot-based integration flow development for conversational user experience, assisted data mapping and integration process optimization.

Note 3. The Integration Platform Market

The integration platform market is a large (approximately \$12 billion in provider revenue in 2016) and growing market. Some of the most relevant segments of this market are:

- **Integration platform software** (such as ESBs and data integration tools) provides a rich set of core integration capabilities, enables a range of integration patterns and targets integration specialists.
- **Integration platform as a service (iPaaS)** offerings provide similar capabilities as their on-premises counterparts, but they are delivered as cloud services and, in most cases, are designed for ad hoc integrators.
- **Integration software as a service (iSaaS)** offerings are wholly focused on citizen integrators. In many cases, they provide only very basic core integration capabilities.

- **API management platforms** implement key integration governance features (such as security policies, monitoring and tracking), manage access to any API-enabled endpoint and are a good fit for ad hoc integrators and integration specialists.

In addition to these general-purpose tools, you can also find specialty platforms in the market. These typically address use-case-specific integration needs. For example:

- **B2B gateway software** supports information exchange between an organization and its ecosystem partners' business processes using a variety of mechanisms (such as MFT, EDI protocols and APIs). These exchanges are typically based on industry-specific data formats.
- **IoT platforms** facilitate operations involving IoT endpoints and enterprise resources, such as analytics, cloud services and on-premises

systems. They support event stream analysis, decision making, and triggering of actions into business processes such as ERP, manufacturing execution systems (MES), supply chain management (SCM) and others.

- **Mobile back-end services** deliver capabilities to mobile apps via APIs and/or software development kits (SDKs) that can be incorporated into mobile apps, web apps and other digital channels. These services are delivered as an intermediary layer between the client-resident mobile apps and the enterprise applications along with any public or third-party data sources.

However, many other software products and cloud services — such as business process management (BPM) tools, analytics platforms and even packaged and SaaS applications — “embed” integration capabilities.

Source: Gartner Research Note G00337200, Massimo Pezzini Yefim V. Natis, 31 August 2017

About Octo Telematics

Octo Telematics (Octo) is the number one global provider of telematics and data analytics solutions for the auto insurance industry. Founded in 2002, we invented the insurance telematics industry. Today, we are the largest and most experienced insurance telematics company in the world, providing actionable intelligence to more than 100 business partners. We have 5.3 million connected users and the largest global database of telematics data, with more than 175 billion miles of driving data collected and over 433,000 crashes and insurance events analyzed.

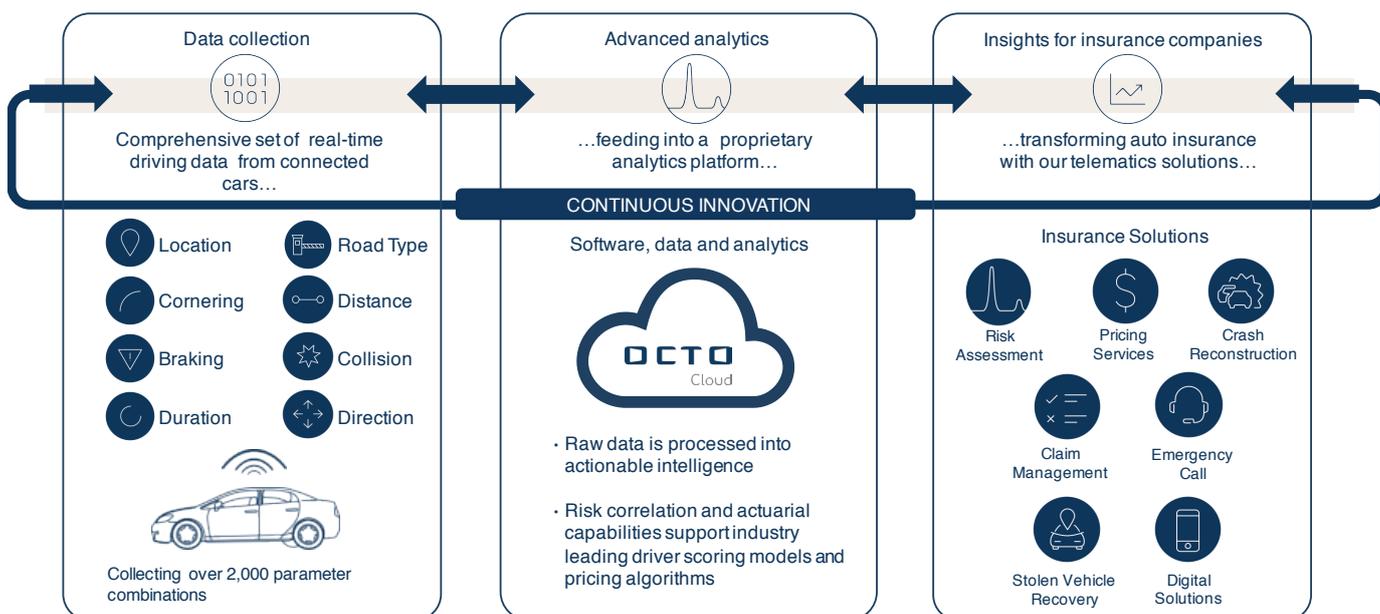
Octo's capabilities span across several technologies, from connected cars to aftermarket sensors to smartphone apps. Octo expertise derives from hundreds of projects all over the world during which, depending on the different market context and on the specific customer strategy, Octo has defined and executed the most suitable strategy and telematics services.

Octo collects contextual vehicle, driver, location and crash data and applies proprietary algorithms to transform it into actionable intelligence. This intelligence informs solutions that benefit both auto insurance companies and policyholders.

Octo's database is continuously made more robust in terms of its risk-assessment capabilities using data collected from our connected users. Each connected user automatically contributes data as he or she drives; this includes vehicle, driver behavior, location, environment, crash and other complex data that we analyze across more than 2,000 combinations of parameters. Using these insights, insurance companies are then able to transform the way they provide solutions in risk assessment, crash and claims, as well as many other value-added services such as emergency call (See Figure 9).

For more information please contact Us www.octotelematics.com

Figure 9. Continuous Innovation in Data Collection, Advanced Analytics and New Value Propositions



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