THE INSURANCE INDUSTRY AS A DIGITAL BUSINESS

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This is a time of both great opportunity and great challenge for what has been traditionally viewed as a business that is slow to change - the Insurance Industry.

Economic recession and recovery. Public demands for higher levels of trust and transparency. Geographic and demographic shifts. The on-demand and asset-light business. The growth of innovation imperatives and startup culture. All are converging and play a role in the way that the Insurance Industry must rethink its approach to all aspects of business – including design, partnerships, and customer interaction.

Today, the industry is facing a powerful new shaping force that is moving nearly every aspect of modern business from analog to digital. We are experiencing the birth of a new era of digital business unlike any we have ever seen before.

As technology drives the transformation to digital business, the opportunities for disruption increase, both from within the industry and from new and often unexpected external threats. Technology trends such as the rise of mobile and pervasive connectivity, data and machine learning, and the Social Network of Things – have crushed traditional barriers to entry and expansion, and have accelerated the speed of change within markets.

In this always-on, always-connected digital world, it is critical for the industry to reexamine its approach to the entire value chain using the lens of delivering customer-defined value at every touch point. Only with that fresh approach can the business be informed and prepared to successfully evolve to face new possibilities, challenges, and competitors – and be able to address important questions such as:

- What does it mean to insure assets for the new “asset-light” customer?
- How can new secure, seamless, context-aware experiences be implemented in an always-on, always-connected world?
- How can today’s insurance products evolve to seamlessly integrate with and build on the platforms of other companies – inside and outside the industry, rather than pursuing a “not invented here” strategy?

The Insurance Industry needs to embrace digital technologies as part of its core DNA. Only then can it take full advantage of the opportunities it gives them to think smarter by sensing and predicting opportunities, act faster through true business agility, and create a flexible approach to business to quickly take advantage of new circumstances. The rise of new competitive threats from companies born outside the rules of the traditional Insurance Industry makes this need for digital change even more imperative.

In short, the Insurance Industry needs to become a digital business – today.

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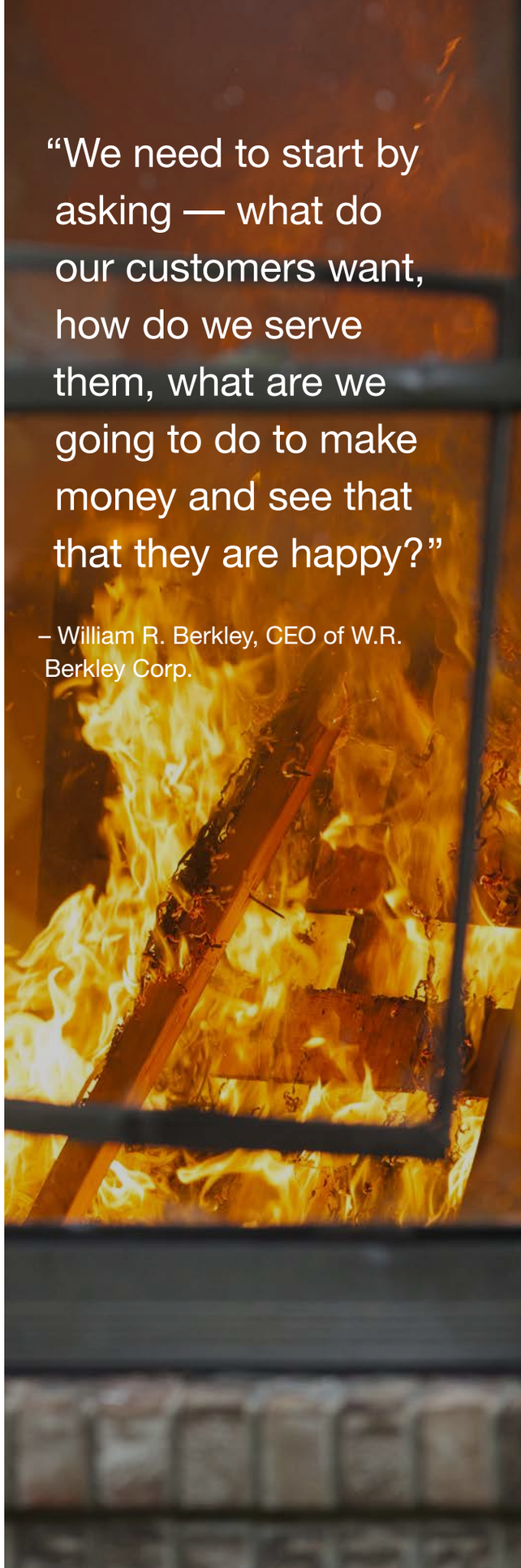
The origins of insurance can be traced back almost 3800 years with the first written occurrence of the concept in Hammurabi's Code from ancient Babylon c. 1750 BC. In 600 AD the Greeks and Romans introduced life and health insurance in the form of "benevolent societies" that took care of families and paid members' funeral expenses upon death. Blaise Pascal's probability theory emerged at the same time as the growing need to scientifically value risk, and John Graunt's discovery of predictable patterns of longevity were used to create the first actuarial table in the 17th century. Benjamin Franklin introduced shared risk pools in the United States in 1752 with the objective of insuring homeowners from loss by fire, and he helped to found the first life insurance company in the United States in 1759.

What we recognize as insurance at the institutional level began in the late 1800s. Traveler's Insurance is the oldest surviving insurance company (over 150 years), and was the first to underwrite a liability-only policy for automobiles in 1897 when they insured a Gilbert-Loomis-built car in Dayton, Ohio. At that time, the cost for $1,000 of coverage was $7.50. The early 20th century saw the evolution of industry-specific collectives which came together to pool resources and share risk. These evolved into many of the carriers we know today, including State Farm and Nationwide.

The emergence of the modern insurance model correlated roughly with a time in our history when we were institutionalizing care for others into central resources and the pendulum swing from shared risk-management (like governments) to individual responsibility. Arguably, in order to provide people with liability from other unsafe drivers wielding somewhat unreliable and dangerous vehicles, government required central licensure and thus identification along with minimum insurance policies. This move—rooted in the context of individual vehicle ownership—is so intrinsic to our model of insurance as to be nearly invisible (or at least difficult to discuss, much less manage) within the industry. Another part of the contemporary insurance carriers' worldview, which is difficult to divorce itself from, is the complexity of risk and assignment of liability. Both our court systems and our claims processes are constantly playing catch-up to efficiently address this level of complexity.

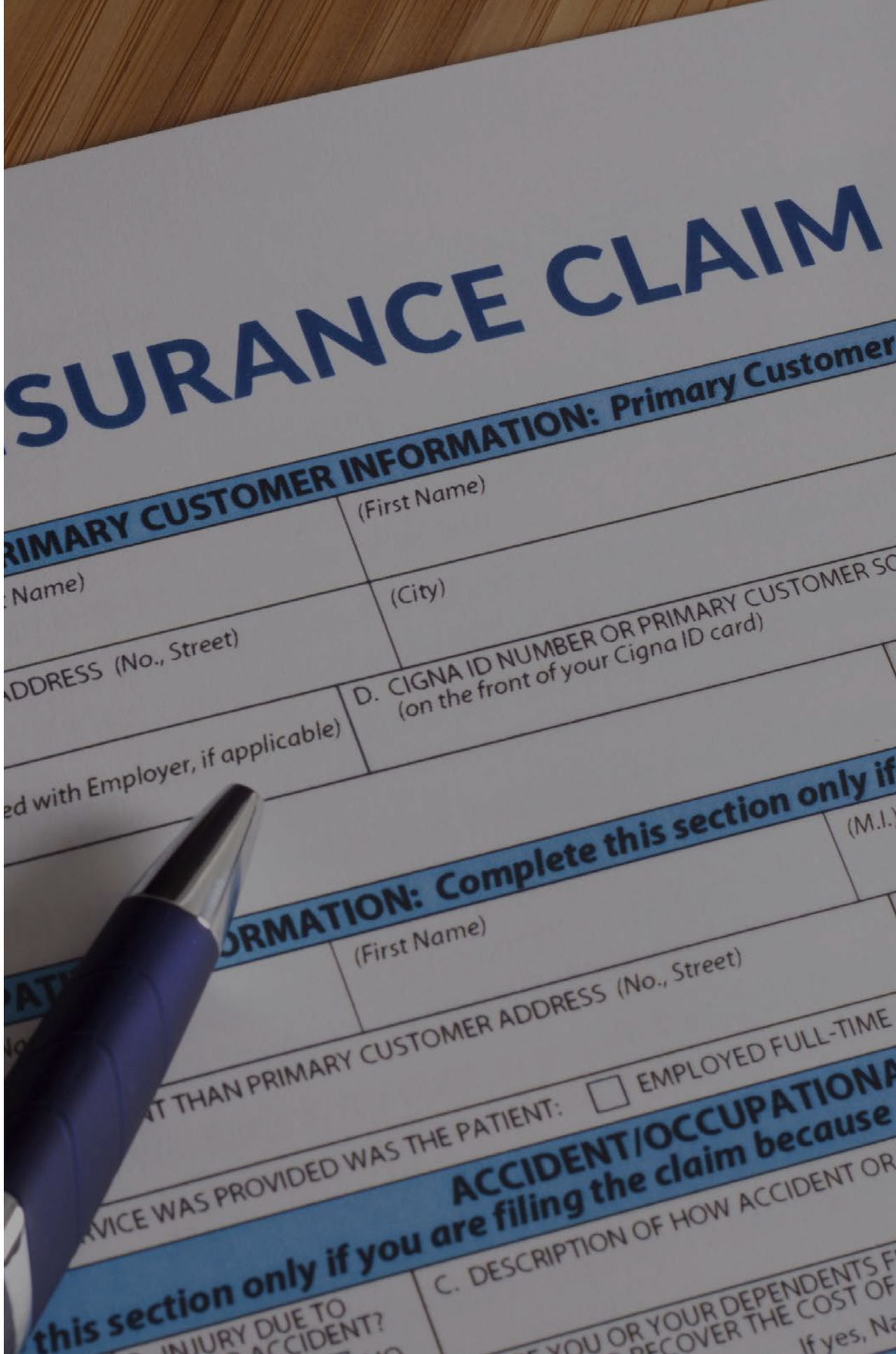


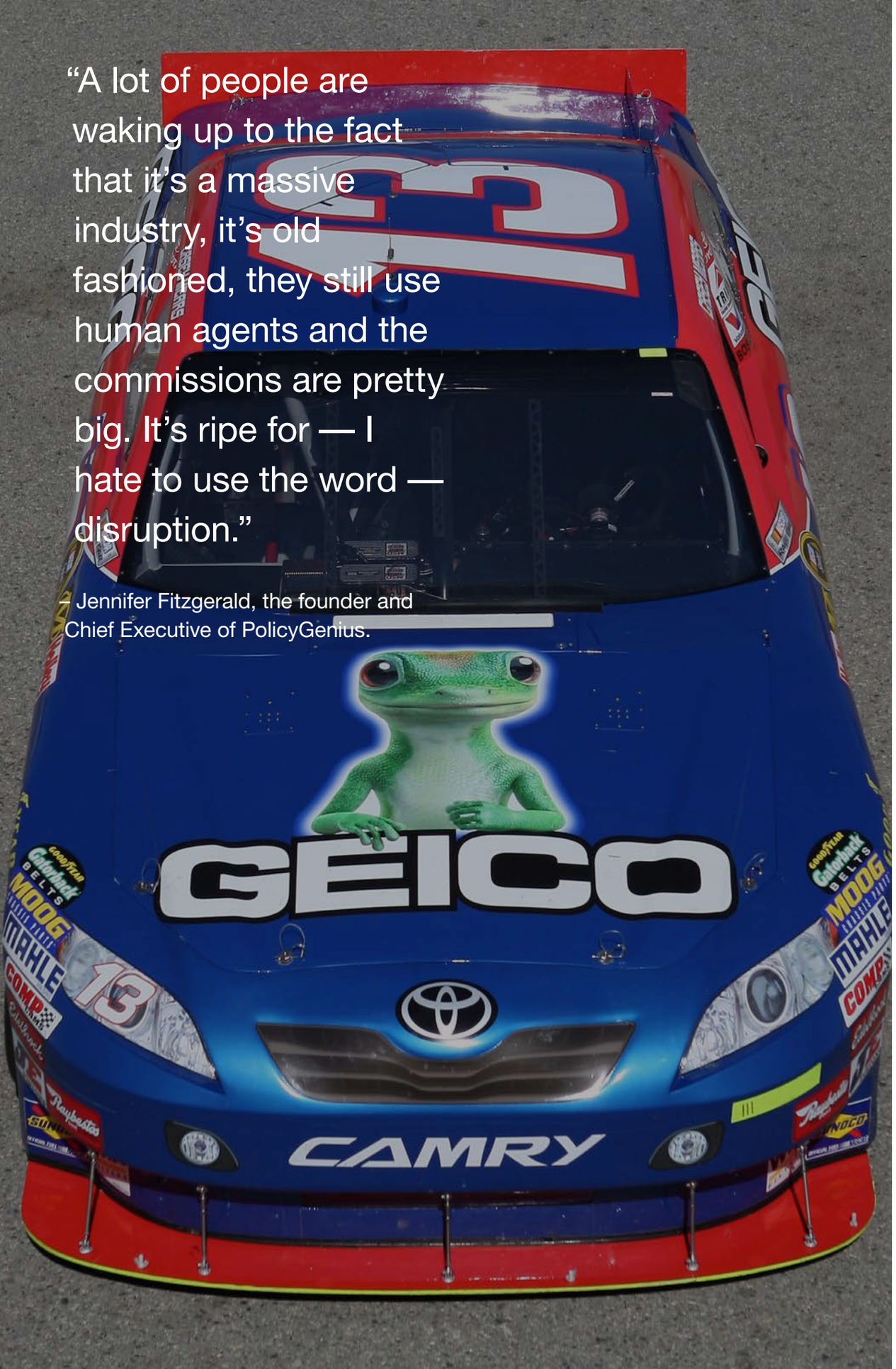
Insurance 1.0

Analog Insurance Companies

Over the past 60 years, the Insurance Industry has undergone a dramatic transformation powered by major advances in technology. The introduction and wide scale adoption of computers in the business environment drove automation, and carriers began using digital tools to perform processes which had previously required manual entry and stacks of paperwork. As computing evolved from mainframes to client-server architectures, many of these systems were recoded to use new technologies such as graphical user interfaces (GUIs) and hierarchical databases which were more user-friendly. Large carriers also leveraged new computing power to model and understand risk, create complex actuarial and statistical models to segment risk pools, and automate underwriting.

In this era, insurance carriers that did not have access to emerging technologies could remain competitive or even thrive through effective and lean processes at the core of their business, but investment in such optimizations began to yield diminishing returns. As we moved into the 21st century, most carriers have transitioned to a semi-automated, tech-enhanced version of this analog model of insurance.





“A lot of people are waking up to the fact that it’s a massive industry, it’s old fashioned, they still use human agents and the commissions are pretty big. It’s ripe for — I hate to use the word — disruption.”

– Jennifer Fitzgerald, the founder and Chief Executive of PolicyGenius.

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Insurance 2.0

IT-Enhanced Insurance

The emergence of the Internet and the adoption of e-commerce allowed insurers to use these technologies to target and reach new customers, and drive efficiency in their operations. In this environment, carriers have a sustained spend of an estimated 4-8% of their revenues on IT, leading to product and technological parity across the top five insurers in North America. All of these carriers have implemented online quote-and-bind, paperless billing, automated underwriting, self-service capabilities, and a high-touch claims process. With technical parity, the focus of competition in the market has shifted to:

Increased advertising to raise unaided brand awareness, visibility and an increased sales pipeline

In 2013 Geico spent $935 million in advertising for a 11.2 percent premium increase, surpassing Allstate as the second-largest provider of auto insurance. State Farm spent $608 million for a 5 percent increase. Progressive spent $604 million for a 6.5 percent increase and Allstate spent $655 million for a meager 3.5 percent increase.

Incremental improvements in product and service offerings

Notable examples include accident-free discounts or comparative rating (utilized by Progressive and State Farm), lower costs (Geico, eSurance and others), or other characteristics such as affinity/exclusivity (USAA and Nationwide).

The very old strategy of replacing legacy systems with pre-packaged software

This strategy is similar to what the manufacturing industry went through in the 1990s with SAP implementations in order to drive operational efficiency and enable business agility. The dynamics of the Insurance Industry make these efforts very expensive and time-consuming (sometimes taking five to seven years to complete) and could end up significantly restricting a carrier's ability to adapt and stay ahead of the rapidly changing marketplace.

Small carriers harnessing tech innovation and strategic partnership opportunities in a bid to leapfrog their larger competitors

Finally, in this ultra-competitive environment, super-regional and regional carriers with modest IT budgets are fighting an uphill battle to reach minimum efficient scale and compete effectively with the larger, national carriers. Those among them who are more agile than their larger competitors can use today's technology to achieve minimum efficient scale at very low cost and change the nature of competition in the Insurance Industry.

Insurance 2.5

Forays into Digital

The leaders in the property and casualty (p&c) industry already understand that technology can drive innovation in core insurance processes. They use technology and the availability of data to gain insights into the marketplace and their customers, tailoring their core insurance processes to create value that is difficult and expensive for competitors to replicate.

In many countries insurance lags behind other industries in their adoption of digital strategies. Early views of digitalization saw it as a means to reduce cost-to-serve, and the sectors investing in digital strategies first were those with very high volumes of customer interaction migrating human transactions online. Opportunities for insurers to differentiate themselves from other providers except through price seemed limited. Now, service, convenience and customization of experiences are all possible and customers demand it. As digital strategies mature, insurers and insurance distributors go through several phases of evolution. Initially web-presence is sufficient. Next comes the ability to transact via the Internet. The next phase brings process and productivity gains, largely to win cost efficiencies. The most sophisticated are building an ecosystem where they look to interact with their customers in multiple contexts and recognize that customers are complex and multifaceted.

Here are some examples:

- Using predictive behavioral analytics to drive customer retention and effectiveness of their distribution and service channels
- Using market intelligence and predictive analytics to increase share-of-wallet by customizing products to align with customer life events
- Using drones, aerial pictometry and other advanced cartographic techniques to deliver personalized claims services, and increased efficiency of operations after major catastrophes
- Deploying onboard devices to detect and understand driving patterns to customize insurance rates, as Progressive's Snapshot device and Metromile's device have, or through constant-camera systems increasingly used not just by taxis but many concerned drivers

"We see digital as critical to the delivery of world-class customer experiences. Quite simply, digital is better, faster and cheaper for most interactions. Digitization enables the 'shrinking' of the world that fuels globalization, which in turn creates wealth that drives the rise of cities, where an expanding consumer class buys digital products and invests in technological innovation."

– Michael Corbat, Citi CEO

Insurance 3.0

Digital Insurance Platforms and Products

Technology is evolving rapidly and is being adopted in all aspects of our lives. The personal relationships that individuals have with technology are creating a next generation of customers who are quite comfortable using tech as a natural extension of themselves. Digital is a new market force that is driving a massive change in consumer expectations. It will require a different set of skills, culture and measurements. Industries such as telecommunications, consumer products, and media and entertainment have already harnessed digital to attract and retain new customers. It is time for insurers to evolve and respond: they cannot afford to be on the sidelines of the shift to digital. At a time when the speed of digital change is so fast that standing still means falling further behind, insurance companies must be customer-centric, able to sense and respond to rapidly evolving customer needs with products that are timely and customizable. These innovative products are built through the effective mashup of core business processes, marketing, pricing, product and servicing to provide secure, seamless and context-aware experiences enabled by the innovative use of technology. As customers evolve, so must insurance companies follow suit, finding ways to be both digital and personalized, responsive and intuitive.

It is nearly impossible to identify the boundaries between the insurance business and the technology that enables it. In other words, insurance carriers will succeed based on their ability not only to add digital technology into their core businesses, but to create primarily digital business models — that are much harder to compete with.

WHY INSURANCE BUSINESS MODELS ARE HARD TO TRANSFORM

The basic business model of insurance has not changed significantly in over fifty years. It is a complex industry covering a diverse range of risks—often using hacked-together tools from older approaches to insurance (for example, the early editions of cybersecurity products to small business policies). Insurers are required to have individual state charters, unlike other industries that require a single national charter or no charter at all. This means that insurance carriers have to manage state-by-state insurance regulations and the resulting contradictions and complexities. This regulatory approach has fostered an environment where few carriers with a national footprint exist—while many players are instead region- or niche-focused.

The value chain of insurers has not changed in many years. It is a carrier-out, product-centric view of the p&c insurance business, built around a product created to address a specific pain point for customers as the assets they owned increased in value. This value chain represents a set of core activities and the enabling activities that help drive slow and incremental improvements in products, services and efficiency over a long period of time.

The business model has benefited from a high level of inertia as the result of these systemic issues:

- Government regulations mandated minimum auto insurance coverage for all drivers in the United States; these mandates served to reinforce the value chain and ossify many distribution and service models which have now become outdated or extinct in other less-regulated industries

- Significant barriers to entry and high capital adequacy requirements make it very difficult for new entrants and smaller competitors to achieve “minimum efficient scale”

- Distribution and servicing models which are expensive and anachronistic in today's self-service economy, due in part to the complexity of the product and thus the sheer effort required to modernize it

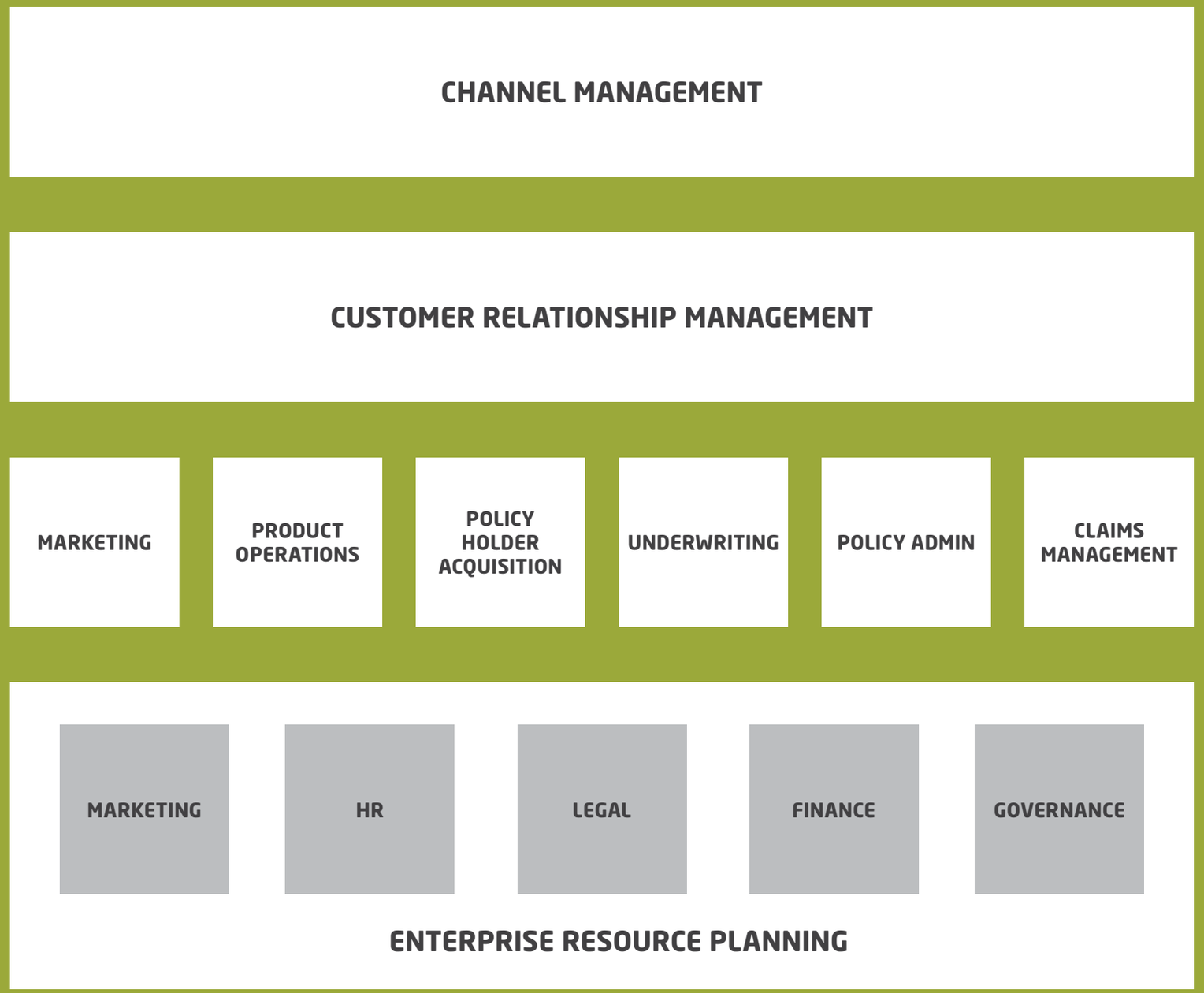
- Lack of a federal charter for insurance, continuing the fragmentation of products, with national re-aggregation of the market and competitive landscape existing only with a very few national carriers

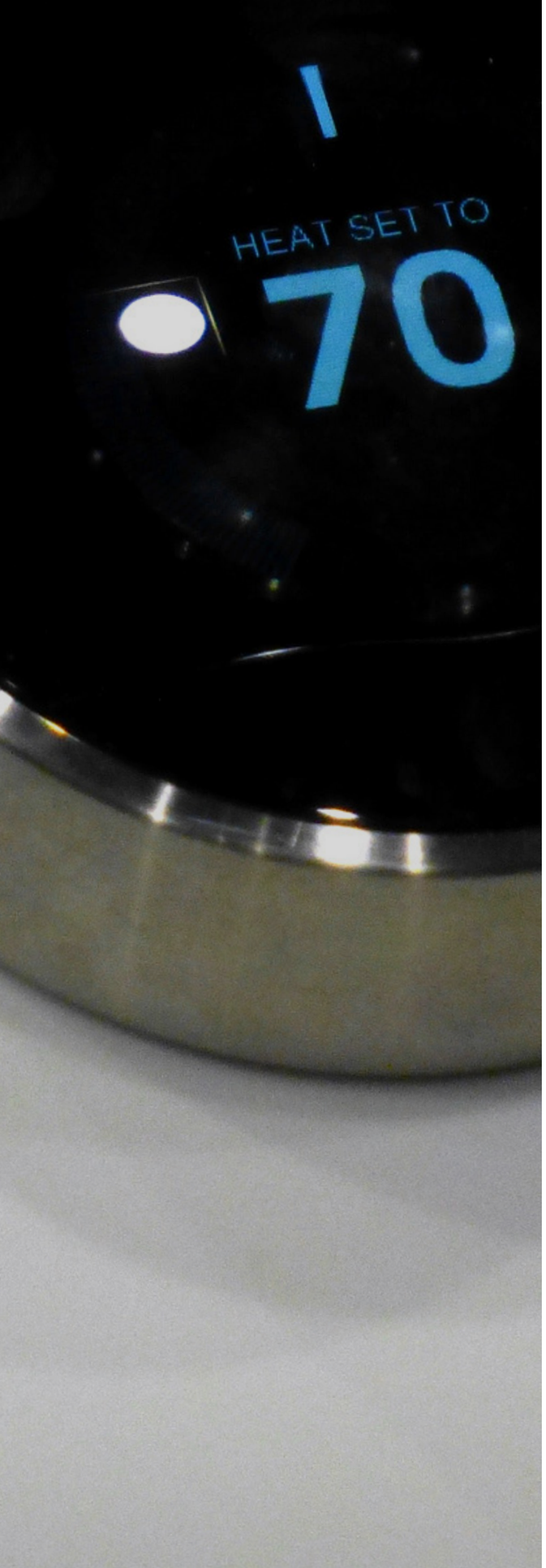
- A tendency for carriers to keep their long-term actuarial models private to maintain profitability—a strategy precluding deeper strategic partnerships and interoperable insurance platforms

Over the past decade, property and casualty products have become commoditized, resulting in carriers shifting their competitive differentiation towards service exclusivity (Nationwide, USAA, etc.), customer service (State Farm), price (Geico), product features (Progressive) or better knowledge of products and insurance (Farmers, AllState). All of these carriers have placed a premium on traditional advertising (where a message is pushed to a potential customer) through conventional (TV, Radio, Web) and emerging channels (Netflix, Youtube, Hulu, Social Media etc.), a strategy of potentially ever-diminishing returns, because of the difficulty of selling insurance products in a more social-enabled way.

As carriers continue to optimize the traditional value chain they also tend to focus on and improve the capabilities across only those traditional aspects of the value chain with which they are familiar, sometimes at the expense of potential new opportunities. Most carriers rightly view their traditional capabilities as a limited set of competitive advantages and invest much time and effort into their in-house ability to improve them, rather than tapping into external resources and partnerships. Progressive and Geico are notable exceptions, having embraced a more open model by expanding their portfolios through integration of white-labeled homeowners and renters products from other carriers.

In today's environment, charged by a dramatically different risk landscape and combined with the pervasive use of technology in all aspects of our lives, carriers need to evolve their business model—rapidly—by looking for new solutions, products and services which leverage the broader ecosystem beyond the walls of their enterprise. They need to build adaptive business models which can sense and even predict opportunities for cost reduction or revenue increases, and evolve quickly. In short, insurance needs to become a digital business.





WHY CHANGE NOW

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The competitive landscape driving the need for digital business models and platforms can be understood using Michael Porter's Five Forces, a well-tested and practiced business analysis model.

Bargaining Power of Buyers

Today's customers are better informed than any before. Comfortable with using technology in all aspects of their lives, they expect organizations they do business with to provide secure, seamless, and context-aware experiences in an always-connected world. In the P&C Insurance Industry, digital technologies have reduced switching costs, and have made competitive information (such as pricing and features) available to customers at all points in time.

These customers expect more information and look for products and services which are customized to their specific needs. They also expect high standards in all aspects of the product and service experience, and are ready to vote with their money when their expectations are not met.

In addition, as asset-light customers become a larger part of the marketplace, insurers need to move beyond old, monolithic products (like one-size-fits-all homeowners' policies) based on high-value capital assets; such products need to be replaced with tailored products that mitigate risk using an on-demand, pay-by-need model for insurance. This new model of asset-and-risk policies allows users to choose their own blends of coverage, such as a plan which supports very-low-mileage auto policies and integrated travel insurance for the global nomad.

Emerging social network of things (SNT) solutions and standards such as "Built for Nest" and Apple's Homekit provide opportunities to rethink homeowner and renter products by allowing policyholders to co-create the product and change how these services can be underwritten. SNT and mesh networks also provide exciting possibilities in agribusiness to assess and mitigate risk to crops. Both of these solutions can help carriers improve retention by providing value beyond the initial sale. In other words, carriers who have the early mover advantage can begin to establish themselves as the Apple for the insurance business—provided they rethink value across the entire spectrum of innovation opportunities available to them.

Rivalry Among Competitors

Digital technologies also lead to the evolution of faster, nimbler competitors who are not burdened by legacy systems and processes and are able to effectively go after highly profitable segments of the p&c insurance marketplace. These competitors have technology in their DNA and have customized the insurance experience to use technology to exploit these trends, gain key insights, and make informed, targeted, strategic and operational decisions that keep them ahead of their competition. This next generation of competitors are smart, sophisticated and have designed their unique experiences across a full spectrum of innovation strategies. This allows them to attract insurers away from traditional customers through unique value propositions which are very difficult for larger, more traditional insurers to match.

Threat of New Entrants

As technology becomes embedded into the fabric and DNA of all industries, we also see these competitors who have technology as a core competency jump the chasm between industries in a way that was not possible even five years ago. Horizontal and vertical expansion of digital businesses from adjacent industries, such as the automotive industry, are very likely in the digital marketplace. Today, companies like Tesla are built as a digital business and offer services such as several years of web connectivity bundled in and delivered through a single seamless, customer-centric Tesla Experience. It is not inconceivable to see a business model where Tesla extends their experience to offer insurance as a bundled service.

The telematic, mechanical and driving data that Tesla has is far superior to what most insurers have. Innovative insurers will build new actuarial models and underwriting approaches that fit seamlessly into this new model.

Over the next five years, self-driving tech-enabled smart cars that reduce collisions will change the nature of risk and the concept of liability. While initially property and damage (P&D) claims may be high, the cost of technology continues to drop along with the cost of P&D claims for these technology-enabled cars which are simpler and cheaper to fix. This combined with the reduction in bodily injury claims has the potential of radically changing the concept of

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insurance. Once again, any carrier who can move to adapt to this change across their value chain has the potential to change the market for P&C insurance in the future.

Innovative and agile carriers can take advantage of their core strengths in the business and put up barriers to entry by: defining and capturing first-mover advantage, collecting and accumulating product data, and using it to improve and in many cases redefine their products and services. They can reengineer their value chains in a way that increases customer retention and loyalty and makes it very tough for smaller competitors and new entrants to match.

Threat of Substitutes

Asset-light customers and the shared economy significantly change the dynamics of specific segments of the marketplace. These segments take advantage of sharing services and alternative modes for transportation, instead of owning assets that need to be insured through traditional products - such as auto and homeowners insurance.

These products require new business models that allow users to have full access to a service, but pay only for the amount of service they use. These products are also distributed through alternative (and significantly less expensive) non-traditional and emerging distribution channels. They are priced based on new actuarial and pricing models that result from sharing more specific and targeted data between partners across the ecosystem. This model is very different from traditional carriers adapting their current products to the new model of consumption. Companies such as on-board-diagnostics-sensor-linked Metromile have emerged very quickly to be able to handle the needs of new segments of the population.

Bargaining Power of Suppliers

Digital businesses need to rethink traditional supplier relationships across their value chains. In order to innovate and compete in this hyper-competitive economy, they have to create symbiotic ecosystems of partners that are built on a win-win model as opposed to the traditional win-lose model (where bargaining power rests mainly with the carriers). Future insurance products and services will be dependent on the ability of software to adapt rapidly to changes in the ecosystem. Software also provides the ability to tailor the experience to small micro-segments without having to incur the traditional high costs of customization.

As the shift to software continues, the bargaining power of hardware and software product manufacturers alike will go down and shift towards multi-sided platform providers who have the talent and capabilities that most carriers have not historically needed but that are becoming essential to product differentiation and cost. The bargaining power of these new platform providers can be high, allowing them to capture a bigger share of overall product value and profitability.

A good example of these new types of suppliers is the Open Automotive Alliance, in which General Motors, Honda, Audi, and Hyundai recently joined forces to utilize Google's Android operating system for their vehicles. Google provides a multi-sided platform through Android, serving up a robust operating system and excellent user experience along with an ecosystem of developers to build applications. This platform gives auto manufacturers access to significant technology innovations, accelerated speed to market and access to hard-to-find, critically-important talent. In a traditional model of proprietary business services and products, desire to keep capabilities in-house might have dramatically reduced the ability of auto manufacturers to tap into these new platform providers (such as Google and Apple).

CHAPTER 2

Trends driving structural change in business

DIGITIZATION

MILLENNIALS

APPLE-IZATION

THE SHARING ECONOMY AND "ASSET-LIGHT" WORLD

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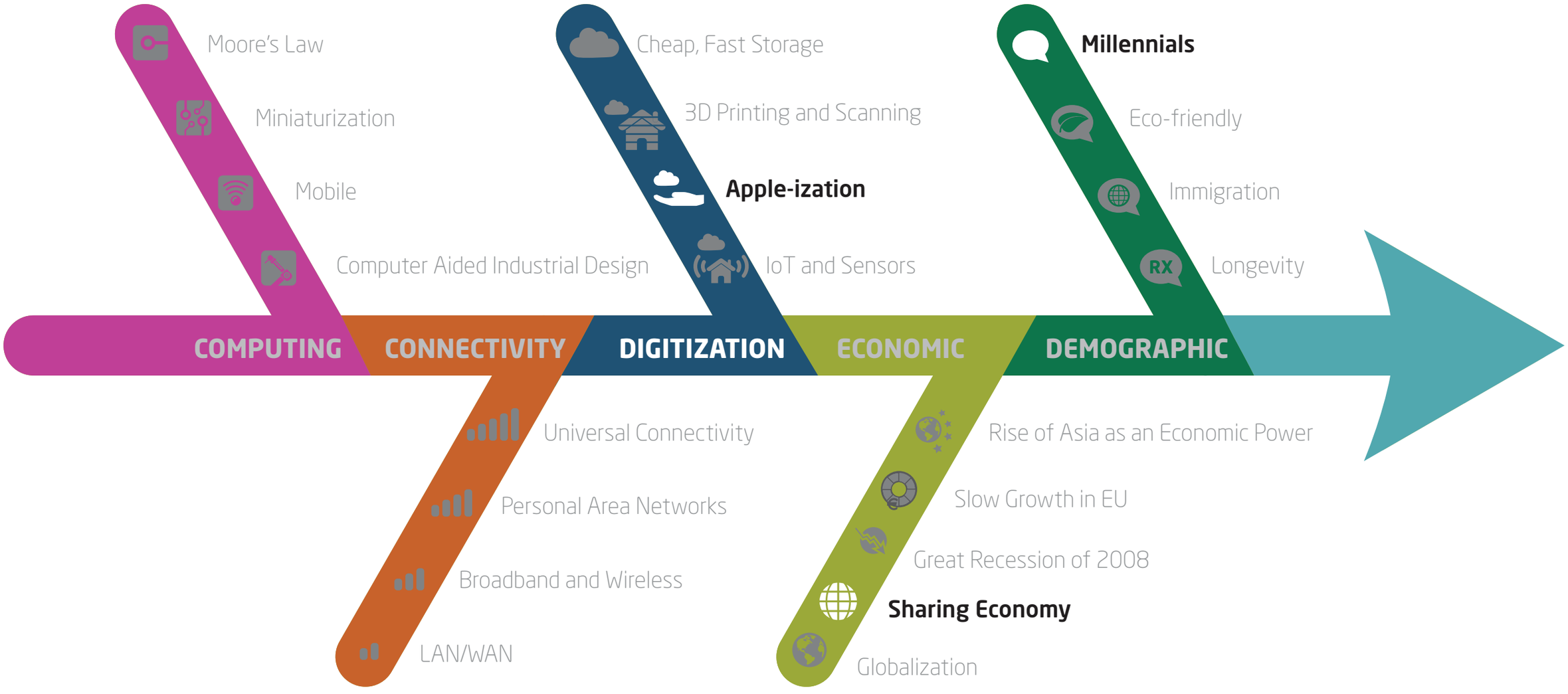
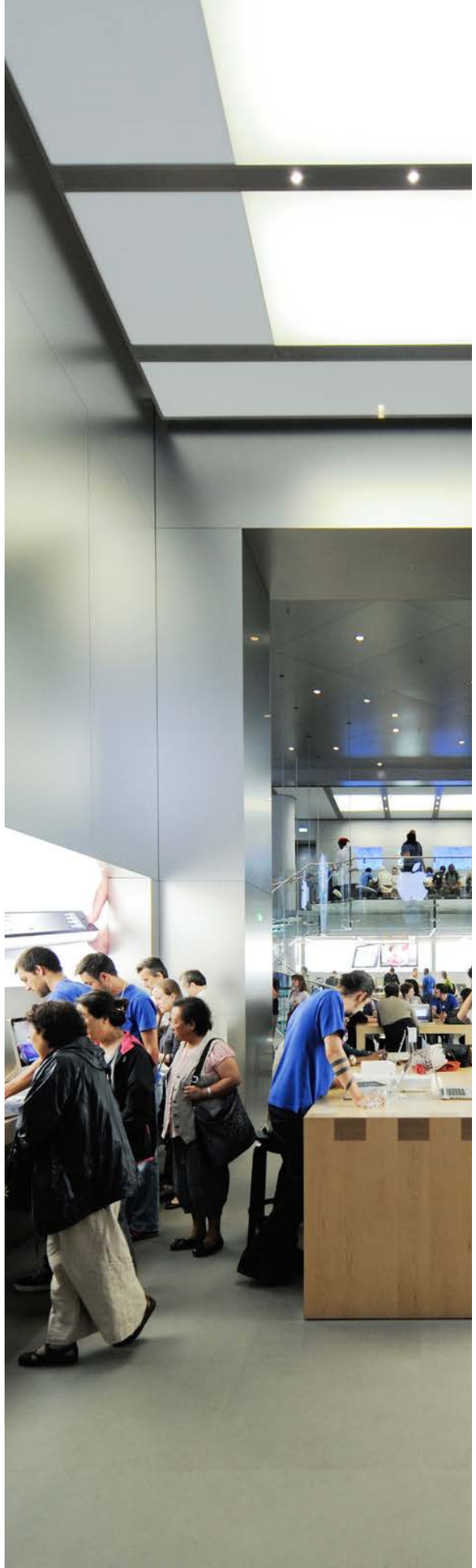


DIGITIZATION

As nearly every aspect of modern business that was once analog moves to digital, the opportunities for disruption increase. Market boundaries become permeable. The technical and talent resources required to mount a legitimate challenge to an established leader become easily accessible.

Digitization of the world means that no single approach to a market or innovation is competitive for long. Established and once stable industry leaders now face challengers from outside the traditional industry boundaries - companies such as Google, Apple, and an army of well-funded and nimble technology startups.

Digitization of the formerly analog world is forcing companies to face unprecedented change in customer expectations and values around wealth accumulation, asset ownership, the concept of mobility and tolerance for risk. The need to respond to the new mobility customer compels the consideration of changes in internal business processes.



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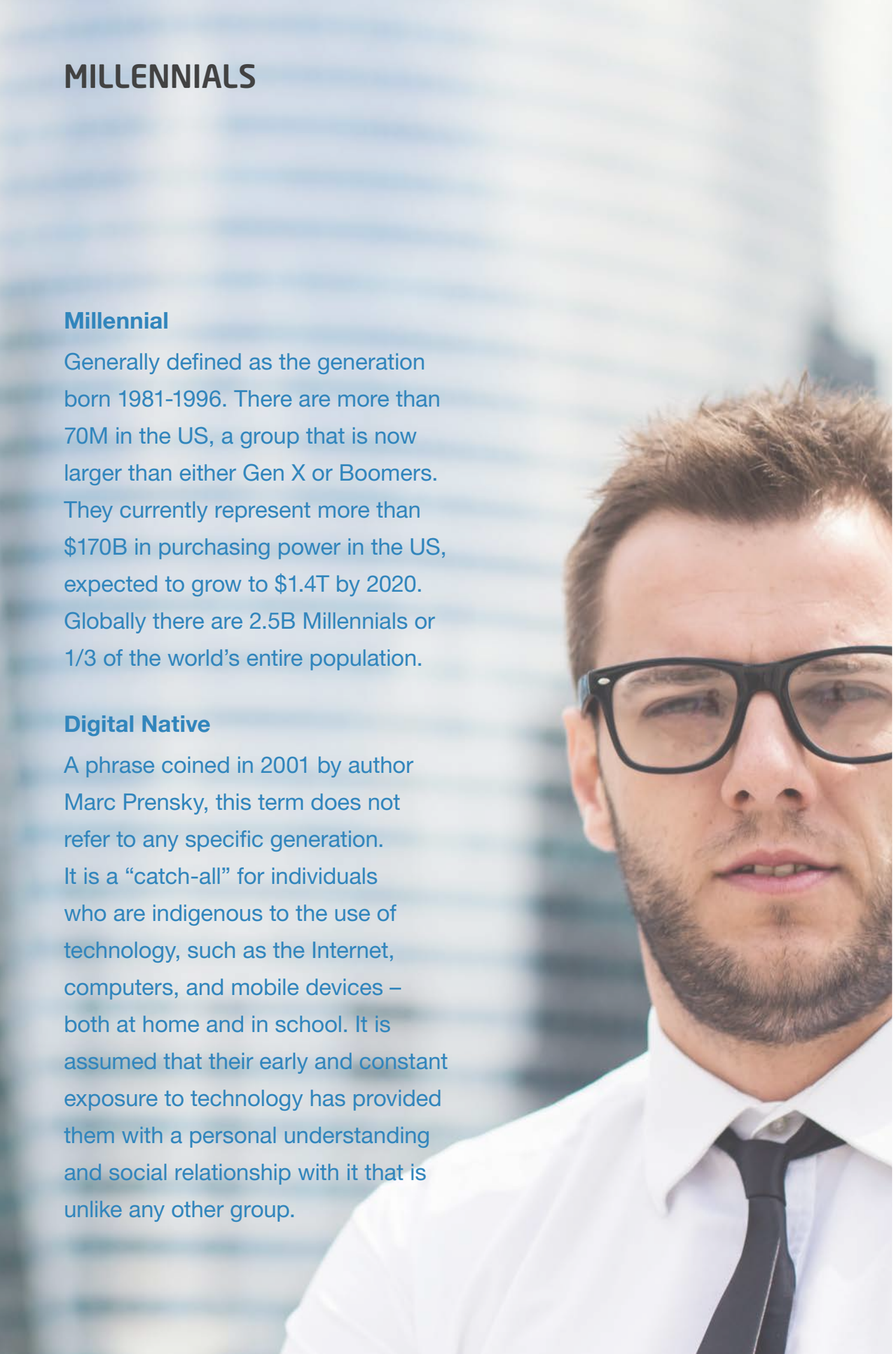
"The reason why it is so difficult for existing firms to capitalize on disruptive innovations is that their processes and their business model that make them good at the existing business actually make them bad at competing for the disruption."

- Clayton Christensen, of Harvard Business School professor and author "The Innovator's Dilemma"

MILLENNIALS



Millennial

Generally defined as the generation born 1981-1996. There are more than 70M in the US, a group that is now larger than either Gen X or Boomers. They currently represent more than $170B in purchasing power in the US, expected to grow to $1.4T by 2020. Globally there are 2.5B Millennials or 1/3 of the world's entire population.

Digital Native

A phrase coined in 2001 by author Marc Prensky, this term does not refer to any specific generation. It is a "catch-all" for individuals who are indigenous to the use of technology, such as the Internet, computers, and mobile devices – both at home and in school. It is assumed that their early and constant exposure to technology has provided them with a personal understanding and social relationship with it that is unlike any other group.

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The Rise of Millennials and Digital Natives

The sheer size of this demographic combined with its comfort and ease with technology make Millennials and Digital Natives and a powerful force that is reshaping the Insurance Industry. Detached from traditional institutions while intimately attached to their mobile devices, they are creating their own social and economic networks of friends, partners, and brand relationships.

Millennials have been shaped from their earliest days by significant social and economic factors that have had an undeniable impact on how they see, operate, and engage with the world. These include:

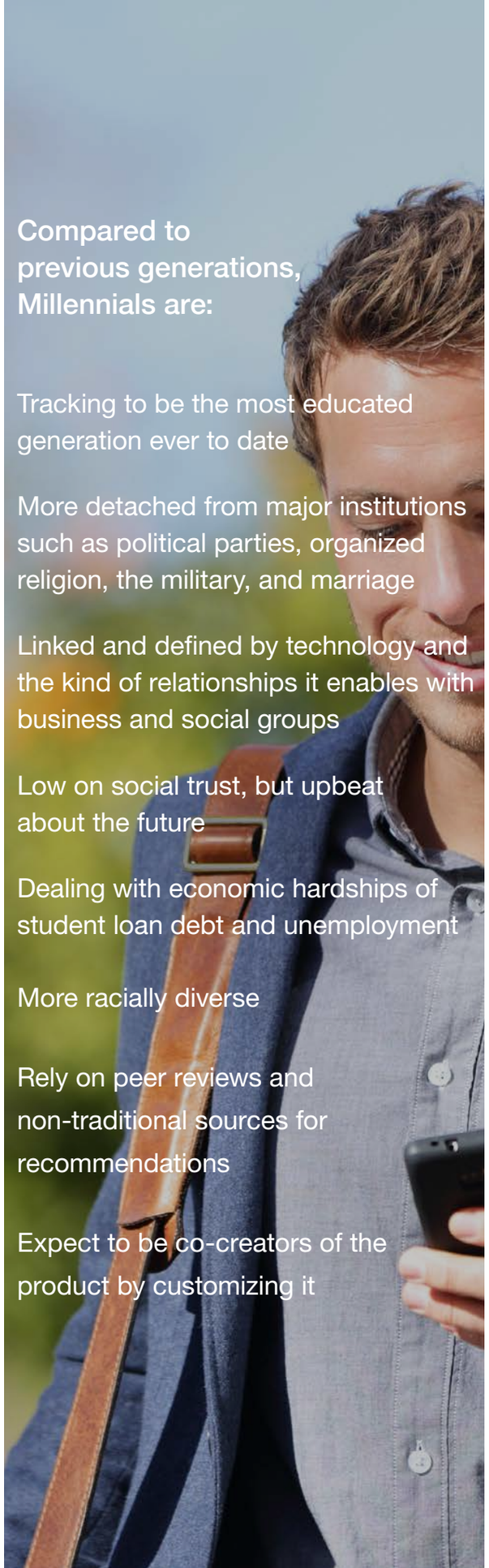
- Fifteen years of conflict in the Middle East and a new age of terrorism born out of 9/11
- The 2007-2009 Great Recession and the anemic recovery that followed, resulting in 1/3 of 18-29 year olds being out of the workforce, with many "boomeranging" back into the homes of their "helicopter parents"
- Significant changes in attitudes toward privacy and trust in government and business, with Edward Snowden and Julian Assange as icons
- Increasing globalization of the work force with jobs leaving traditional powerhouses like the US

While these events would be expected to have decades long negative consequences on their views of human nature and economic futures, this group still exhibits a generational personality that demonstrates confidence, multi-modal self-expression, flexibility, and connectedness to technology and social groups.

Millennials have a unique relationship with how they choose, use, and advocate brands, products, and services.

Products must provide quality, and design married with functionality. There needs to be online access to information, 24/7. There needs to be comparison shopping tools. There needs to be a satisfying customer experience. Millennials no longer see ownership of a product as required for access to the service it provides.

Not unexpectedly, the behaviors of Millennials could lead to significant changes in demand for products in several parts of the Insurance Industry – including auto, home, and healthcare insurance.



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Millennials have been getting flak from almost every side, over everything from their decisions not to purchase health insurance to their poor judgment in getting fine art degrees. Now the Insurance Industry is worried that the most populous generation in America happens to also be the most under-insured. Purchasing patterns for insurance by Millennials reflect that fact. 10% have homeowners insurance and 13% have renters insurance, according to a survey conducted in 2014 by the Princeton Survey Research Associates International.

But for Millennials that have purchased homeowners insurance, they have become increasingly critical of their policies and insurance carriers, more so than older generations. A part of this is a value shift in purchasing and the generation's interactions with large corporations that, as a whole, Millennials largely distrust. And therein lies the problem for insurance companies. Millennials may be the most educated generation in American history, but they tend to know very little about the Insurance Industry, how it operates or even basic costs of insurance policies. And they aren't listening to the industry that's trying to educate them. The solution, it seems, is for insurance companies that need to harness Millennials is to be more transparent and technologically savvy than they have ever been before. insurance companies need to be more technovative.

. Millennials are driving less than

previous generations in America with a 23% decline in 2009 from 2001. Additionally, the percentage who hold driver's licenses is at its lowest level in 50 years (67% in 2011). What will happen in the decade starting in 2030 when this group reaches what has historically been considered the peak driving ages of 35-54? Will their behaviors be the same as they are today, or will they revert to traditional patterns of ownership and use?

Regardless of which scenario proves to be true, the amount of driving is likely to be lower than recent years. This will have significant implications for insurance carriers. The demand for traditional car insurance with annual fixed premiums could decline, while the demand for pay-as-you drive models increases. The financial burden of insurance may even shift from the individual to the owners of car sharing services or even future autonomous driving vehicle companies.

. Millennials are twice as likely to challenge the cost of their medical care than the general population. They are also twice as likely to ask for cheaper treatment options and to seek help from providers to pay for costly medical bills. And it's behavior like this that could help shake up the way the healthcare industry does business. Millennials are a generation that has significant student debt, and whose wages have declined more

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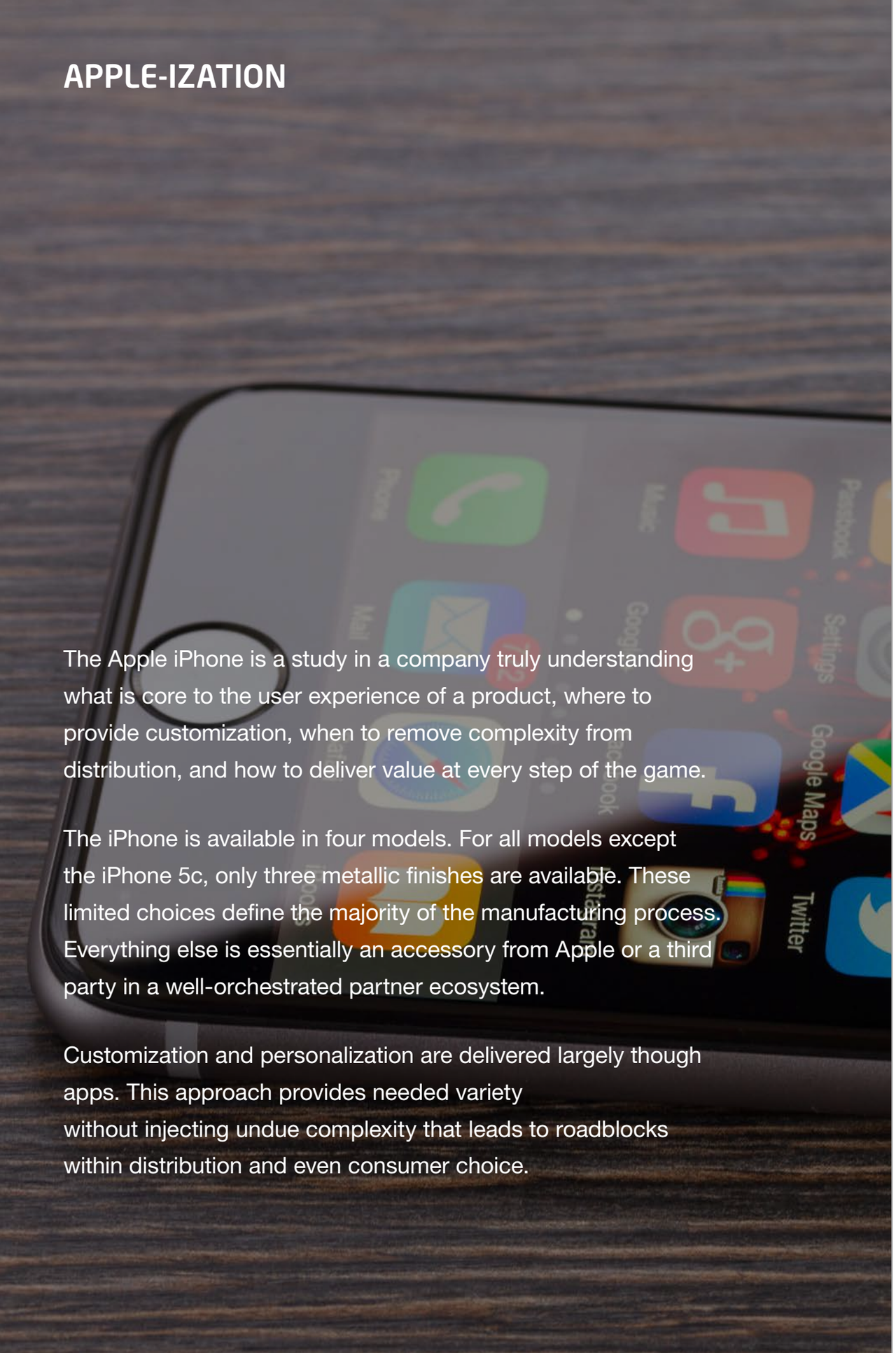
compare prices for everything from airfares to electronics, Millennials expect the same transparency in healthcare. They want to know prices ahead of time and to be able to comparison shop online.

Major insurers like Aetna and United Health, and more tech-oriented start-ups like Oscar Health Insurance are providing members with more online and mobile pricing, as well as comparison tools. More hospitals are working on simplifying the way they bill patients, embracing online and mobile bill payments: all things that are especially important to Millennials.

APPLE-IZATION



The Apple iPhone is a study in a company truly understanding what is core to the user experience of a product, where to provide customization, when to remove complexity from distribution, and how to deliver value at every step of the game.

The iPhone is available in four models. For all models except the iPhone 5c, only three metallic finishes are available. These limited choices define the majority of the manufacturing process. Everything else is essentially an accessory from Apple or a third party in a well-orchestrated partner ecosystem.

Customization and personalization are delivered largely though apps. This approach provides needed variety without injecting undue complexity that leads to roadblocks within distribution and even consumer choice.

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Apple has been at the forefront of the companies that have consistently and inventively launched products and services that are deeply personal, meaningful, and intuitive. They have conditioned their customers to expect useful and powerful technology delivered with a deep understanding of the desired user experience and a distinctive minimalist design. The company has designed its value chain to reflect those philosophies - from the choice of materials to the in-store and online “fan” experiences.

Other companies inside and far outside the world of consumer technology are studying the Apple phenomena, what we call “Apple-ization,” as one of the ultimate learning opportunities for the digitally-driven business.

There are several key lessons about both consumer value and enterprise operations (and their relationship to each other) that can be taken from Apple’s success and applied to the Insurance Industry:

- Balance of Design and Utility
- Rise of Mass Customization
- Importance of the Supporting Ecosystem
- Abundance of Consumer Choice
- Consumer Expectation of Product Obsolescence
- Product and Business Amortization Cycles

Balance of Design and Utility

With an Apple product, form and function naturally go hand-in-hand. There is a well-established customer expectation that the brand delivers human-centered design with elegance and value.

lesson:

Utility wrapped in human-centered design is today's baseline expectation from the digitally-savvy customer.

Rise of Mass Customization

Apple limits the configuration choices available to consumers to reflect those aspects of the experience that benefit the most from personal choice. Strategic limitations on configurations also lead to manufacturing and supply chain efficiencies. Within the world of hardware, Apple is clearly on the side that more choice is not always best, and may actually lead to inaction from an overwhelmed customer.

lesson:

Balance product personalization with standardization of manufacturing and predictability of delivery.

Importance of the Ecosystem

Dating back to the days of the Apple II, the company has excelled at building and supporting a robust ecosystem of third party developers. This success results from the company's emphasis on delivering a reliable, well-designed foundation on top of which others can create value. Apple's customers benefit from greater personalization of products without Apple having to shoulder the business burden.

lesson:

Keep the core product straightforward and simple. Add physical customization through an ecosystem of well-informed and collaborative partners.

Abundant Consumer Choice

The world of the iTunes and Apps Store has given the Apple customer a nearly endless world of choice to add functionality to their product. Barriers to switching to a different app and vendor in those environments are virtually non-existent.

lesson:

Understand what is important for user customization to deliver the most value. Don't touch anything else. Too much choice can become no choice.

Consumer Expectation of Product Obsolescence

The rhythm of new hardware announcements and software upgrades has accustomed customers to expect various levels of obsolescence in products. Some of the "Apple fans" must have every new product at the moment of launch, and end up replacing products every 18 months or less. Others wait for a new product to become more established and to prove its value.

lesson:

Products will have varying levels of "obsolescence" depending on the ability to add value and function through after-market software.

Amortization Cycles

Even with the ability to upgrade and change functionality through software, product and business amortization cycles have changed in response to the speed of technology change. Different levels of performance and function are now expected every 18 months as opposed to 3-5 years.

lesson:

Business must respond to the shrinking cycles of consumer demand and value. Attention needs to focus on the evolution of products being demanded by the market.

Apple has demonstrated that the elements of choice, flexibility, transparency and consumer-defined experience are now critical dimensions that businesses cannot ignore.

The “Apple-ization” of the auto industry could help drive the business and their IT organizations to look beyond technology as an end in itself - and to focus on the experience and value provided to customers by their technology-enabled products and services.

THE SHARING ECONOMY AND "ASSET-LIGHT" WORLD

Mary Meeker, a partner at the venture capital firm Kleiner, Perkins, Caufield & Byers, has identified a growing generation of consumers as the "Asset-Light Generation." These individuals have embraced preferences for utility and simplicity along with a new model of consumption that is motivated by their desire to save resources, money, and time. Their preferred social engagement and on-demand consumption models are dramatically changing the business landscape, and have already lead to the emergence and growth of the Sharing Economy.

That Sharing Economy is a vibrant, culturally-driven economic system built around the sharing of human and physical assets. It redefines economic flexibility to make it easier for people to get what they want, when and how they want it. And it has created new, and still controversial, ways of making additional money, if not a full living.

The meteoric growth and valuations of some of the Sharing Economy's most famous "unicorns" has resulted from their ability to take full advantage of:

- Digital representation and transfer of physical assets owned by others
- Ability to quickly and intelligently identify excess capacity and then aggregate mass audience around intent
- Cultural zeitgeist, economic concerns, and values of Millennials

The Sharing Economy's models of operations and growth may permanently change the rules of some of the most asset-intensive industries in the world, including the Insurance Industry.

P&C decision-makers must elect either to ignore the asset-sharing trend or work with these entrepreneurs to provide insurance solutions which address the needs of this customer segment.

What do the Behaviors and Rules of the Sharing Economy Mean for the Insurance Industry?

The sharing economy is likely to radically change the way insurance is provided.

- As a result of car sharing offerings like Zipcar and ride-on-demand services like Uber, the average US individual's need for the car—and especially multiple cars—may be in decline. This will then generate an accompanying decrease in the need for traditional property and casualty insurance for individuals. The financial liability may actually shift from the individual driver or user to the manufacturer or provider of future self-driving car services.

- New levels of trust and rapport are developing for members of the "asset-light" economy and the on-demand mobility service providers Like Zipcar, Uber and Lyft they value and interact with up to several times a day.

- As on-demand service platforms like TaskRabbit grow —these companies are beginning to offer bundled liability insurance and service guarantees to customers. This can cause an overlap with domains previously attended to by traditional small business liability and workers' compensation policies that can create unanticipated risks for some renter and homeowner policies.

The sharing economy is driving a larger cultural shift from the individual to the collective group ownership of physical assets and property. This is further fueled by the income stagnation many groups are experiencing, as well as emerging technologies that make previously difficult business models far more feasible. Friendsurance in Germany is hacking the business model of group-based insurance. Customers pair up with friends or family members to share a risk pool for car insurance or other types of coverage. By leveraging positive peer pressure within risk pools, the company avoids unnecessary or high cost small claims, and passes on some of the savings to the users.

Customers are evolving into relationships with companies that are more similar to collaborative partnerships versus extractive consumerism. Trust and authentic rapport are shifting the dynamic from a mostly adversarial customer relationship to one more akin to partnership. This is opening the door for new offerings in an area adjacent to insurance, financial services. Crowdlending companies, like the startup Puddle, enable users to lend to each other in small, incremental amounts to build trust and prove accountability over time. How might this apply in the world of insurance around risk and premium payment?

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These elements of the sharing economy reflect a larger cultural shift, expanding the concept of ownership beyond individual scale to highlight groups' collective assets. This refocusing on the commons is to be expected given the increasing costs and relatively stagnant income experienced by most classes of society, as well as the enabling technologies which make previously difficult business models far more feasible.

In the Insurance Industry, we are seeing examples like Friendsurance— the highly successful group insurance company based in Germany— hacking the business model of group-based insurance. Customers pair up with friends or family members to share a risk pool for car insurance or other types of coverage. By leveraging positive peer pressure within risk pools, the company avoids unnecessary or high-cost small claims, and passes on some of the savings to the users.

At the same time, they are developing trust and rapport, shifting the dynamic from a mostly adversarial customer relationship to one more akin to partnership— opening the door for adjacent offerings in crowdlending like the startup Puddle which enables users to lend to each other in small, incremental amounts to build trust and prove accountability over time.

CHAPTER 3

The drivers of digital business transformation

TECHNOLOGY AND DIGITAL TRANSFORMATION

THE SOCIAL NETWORK OF THINGS

AUTONOMOUS CONTROL, AND 3D PRINTING

THE CONNECTED CAR, CONNECTED DRIVER, AND MOBILITY CUSTOMER

DATA, MACHINE LEARNING, AND CYBER-SECURITY

OPEN SOURCE PATENTS AND APIS

THE CHANGING NATURE AND SOURCES OF COMPETITION

If we believe that all businesses now need to become technology first digital businesses, then how do we define that?

Digital Business:

- Provides customer-centric, seamless, and context-aware experiences that result in a sustainable competitive advantage.
- Requires technology, but demands a vision and plan beyond the latest technology in order to deliver on a new value proposition.
- Moves beyond the ‘value extraction’ model of a ‘consumer’ to an approach built around ‘reciprocal exchange’ of value with customers.
- Operates in ecosystems where the focus of competition has shifted from product features to individualized experiences.
- Delivers experiences designed to play to a firm’s strengths by leveraging people, processes, data and the Social Network of Things across the entire value chain.

Key Attributes of a Digital Business Technology

Flexibility
Scalability
Interoperability

Human Relationships

Empathy and Relevance
Respect

TECHNOLOGY AND DIGITAL TRANSFORMATION

Technology is a necessary, but not sufficient, component of digital transformation. When it does come to technology, businesses need to focus on, understand, and implement systems that follow three critical characteristics of flexibility, scalability, and interoperability.

Flexibility

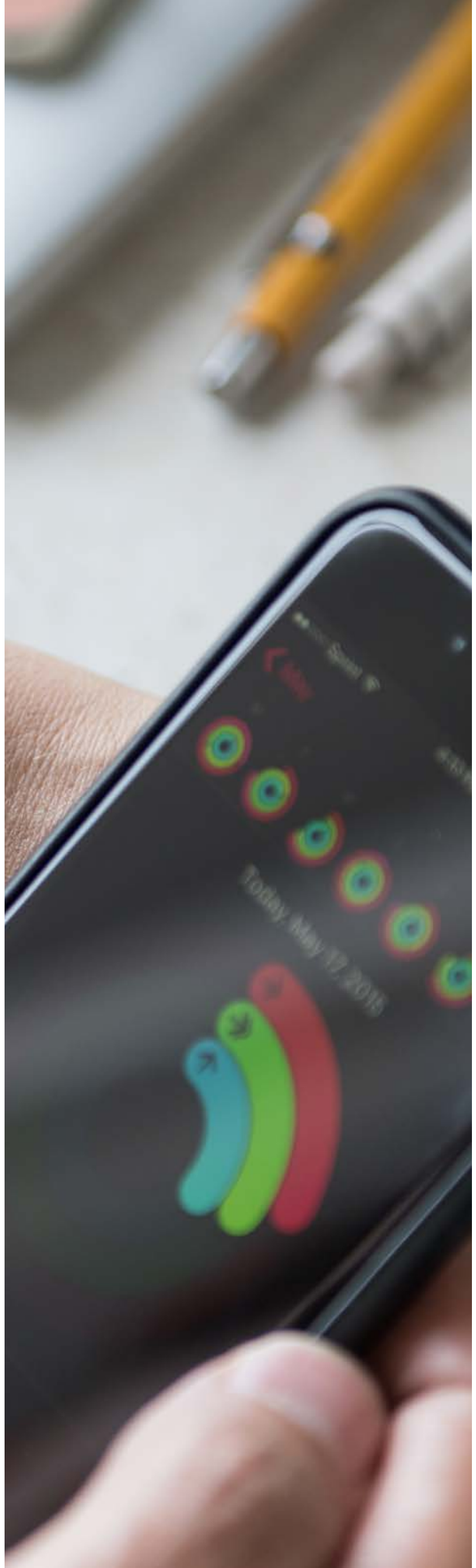
Digital businesses are built to achieve sustainable competitive advantage by being agile, resilient, and responsive. They understand the importance of flexible enterprise architectures and build efficient, reliable back-end systems. Digital businesses use technology flexibility to enable them to:

- Think smarter through the intelligent and effective use of predictive and real-time analytics at all critical touch points of the data value stream.
- Act faster by lowering barriers to entry and enabling their employees to experiment quickly and cheaply with prototypes and pilot programs.
- Adapt business and operational models to changing customer desires and market dynamics.

Scalability

In order to build a truly flexible and adaptive system, companies must know how to start small and quickly experiment with solutions. This allows them to test effectiveness before choosing to scale to meet high demand - or - ramp down to reduce costs. Digital businesses can use scalability to help them design:

- Flexible enterprise architectures that can be expanded across the company.
- Partnerships with cloud, SaaS, and security providers, so that internal teams can focus on code and users.



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Interoperability

Today's customers expect seamless experiences that blend individual transactions and engagements into a larger context across all of their touch points with a company or product. Digital businesses focus on interoperability and its standards in order to create and deliver:

- Customer experiences that easily travel across all platforms and networks, from a desktop in an office, to a smartphone on the go, to an embedded system.
- Highly integrated and intelligent manufacturing facilities and supply chains.

THE SOCIAL NETWORK OF THINGS

Evolving from the Internet of Things to the Social Network of Things

Since the phrase was first coined in 1999 by the British entrepreneur Kevin Ashton, much has been written and debated about the potentially game-changing impact of the Internet of Things as it relates to the evolution of consumer experiences and enterprise processes.

Phase 1: Internet of Things

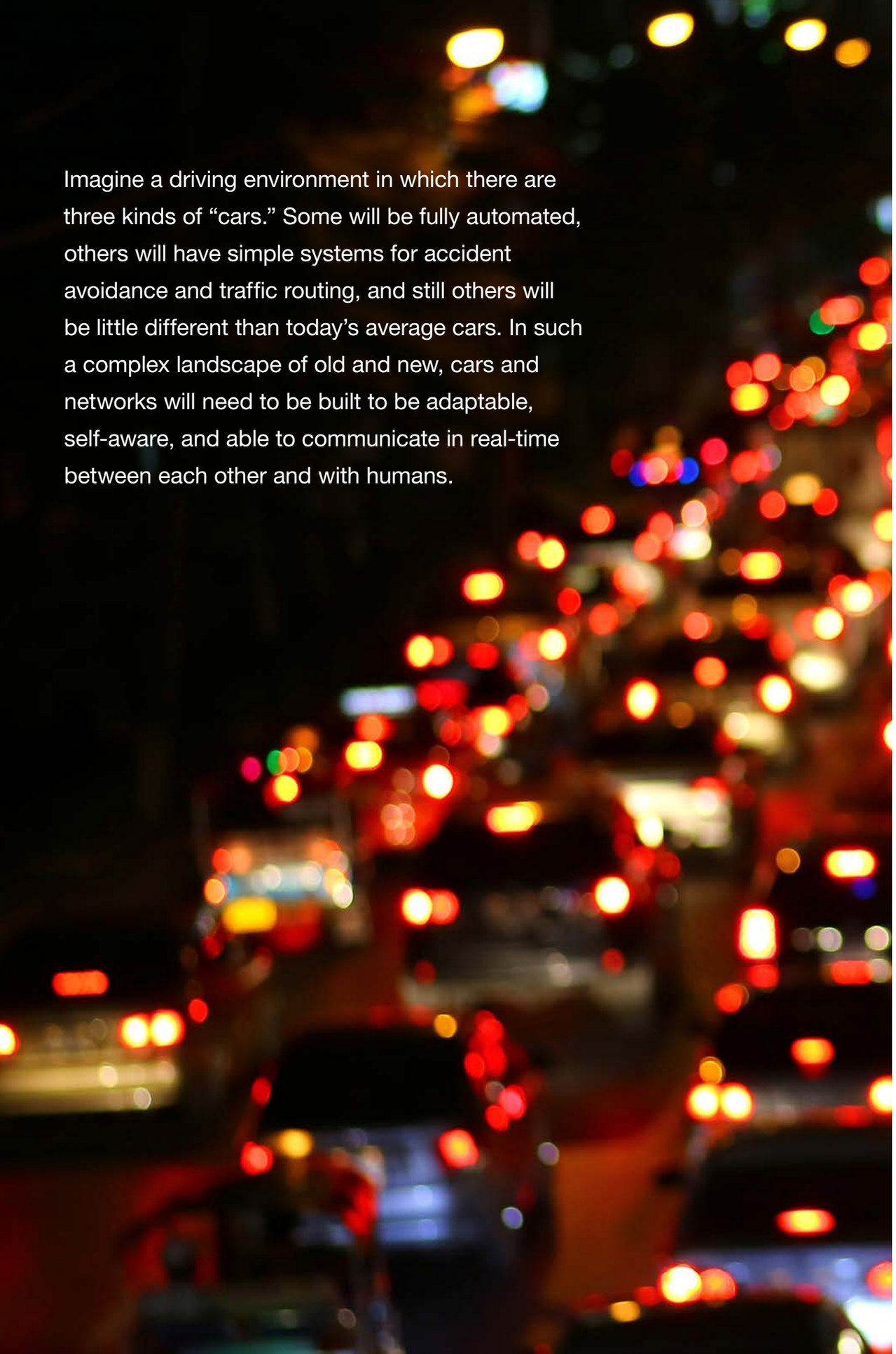
The first phase of IoT largely focused on adding sensors to devices designed for relatively isolated purposes, with the data generated primarily used for reporting purposes. This is still the case for the majority of companies and applications. Look at Fitbit in the consumer space, most smart meters in the utility industry, and on-board data recording or navigation systems in cars.

Phase 2: The Transition to Greater Integration and Intelligence

Today, industry evolution has taken us to somewhere between the Internet of Things and the near future possibilities of the Social Network of Things. Last year's isolated products with attached sensors are being replaced with greater levels of network power, social connectivity, systems interoperability, and robotic hardware. In today's smart homes, appliances and sensors that were islands of automation are now network connected and in many instances collaborate with other devices to provide a comprehensive security and automation solution (Xfinity Home), entertainment system (Apple TV), or environmental controls (Nest). These solutions provide seamless integration, intelligent collaboration among devices and analytics that put the home owner in control, and make them a co-creator of customized experiences.

"In the twentieth century, computers were brains without senses—they only knew what we told them. That was a huge limitation… In the twenty-first century, because of the Internet of Things, computers can sense things for themselves… In the imminent future, it will enable things like self-driving cars, which will give us back the 20 days a year we spend doing nothing but driving, will save 40,000 lives a year in the U.S. alone, will reduce traffic and pollution, and will allow cities to grow without devoting as much land to roads."

– Kevin Ashton in The Smithsonian, January 2015



Imagine a driving environment in which there are three kinds of “cars.” Some will be fully automated, others will have simple systems for accident avoidance and traffic routing, and still others will be little different than today’s average cars. In such a complex landscape of old and new, cars and networks will need to be built to be adaptable, self-aware, and able to communicate in real-time between each other and with humans.

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Phase 3:
The Social Network of Things

The Social Network of Things is predicted to mark a time when devices, machines, and people are deeply connected through pervasive computing, rich networks with highly integrated sensing capabilities, advances in machine learning and cognitive computing, robust APIs and equally important – significant cultural changes. This evolution of connectivity, integrated standards, and intelligence will enable most of our personal devices and industrial machines to increasingly interact, collaborate and coordinate with each other – if that is the human design choice. This is what distinguishes the Social Network of Things and its evolution from today’s Internet of Things.

An Insurance Industry that is integrating the Social Network of Things will be faced with some fascinating and fundamental questions such as a smoke detector, security system and thermostat coordinating with each other to prevent a accidental fires, the security of their assets at home, or their identities in today’s interconnected and always on world.

Evolving From the Internet of Things to the Social Network of Things

	INTERNET OF THINGS →	TRANSITIONAL PHASE →	SOCIAL NETWORK OF THINGS
OVERVIEW	Purposes for devices are still relatively isolated Information focused on reporting	Introduction of basic networks and social aspects Basic augmentation of human capacity	Devices are highly networked Devices and systems that can predict, negotiate, and impact outcomes
THE SEARCH FOR	Efficiency	Efficiency	Transformative experiences
DATA	Access to recent info from individual devices	Near real-time on-demand data access	Real-time data from multiple sources
INTELLIGENCE	Device data to human feedback loop	Limited machine learning driven by humans	Autonomous decision making
CHALLENGES	Privacy Security Interoperability Limited Networks	Privacy v. Functionality Network security v. Innovation Interoperability Dumb Networks	Safety conflicts Cyber-security Social and technology complexity Legacy systems
TECHNOLOGY	Cloud platforms Data Proximity Tools Sensors Robotic toys	Products dominate systems and networks Analytics and Big Data Machine learning Smart products Robotic manufacturing	Adaptive and resilient platforms Little Data Cognitive computing Rich APIs Proliferation of robotics and intelligent devices
EXAMPLES	Web-enables GPS and maps	Waze app and crowd sourcing community	Self-driving cars

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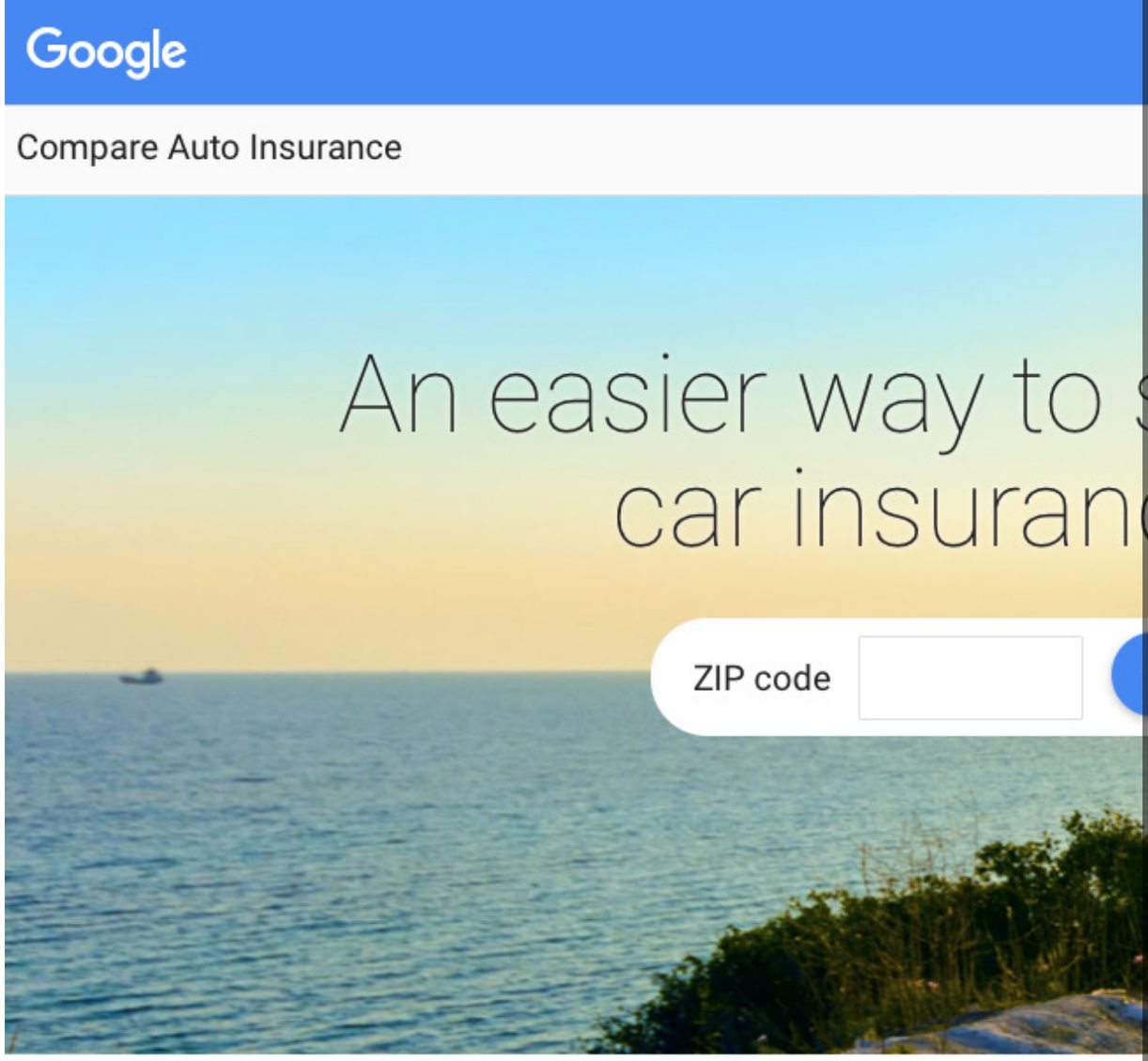
What do sensors mean for insurance?

The increasing use of sensors and the vast amounts of data they collect, as well as machine learning and other technologies, means that there are few if any technical barriers to tracking and managing rigorous analysis of causation and correlation of risk factors which led to an incident. A camera-laden, road-sensing vehicle could provide its record of events to be cross-referenced against other vehicle information, location and motion-sensing data of occupant smartphones and wearables, traffic cameras, medical treatment personnel's trackers and documentation tools. An accident which is the fault of a particular driver but which should have had a minor impact on the occupants of another vehicle might be held to account differently if it were determined that the victim's vehicle had defective airbags or that the road surface was poorly maintained. While investigating this apportionment of responsibility might have been unreasonably costly in the past, pervasive sensors (from vehicle 'black boxes' recording vehicle driver inputs, proximity radar and other onboard systems to smartphones, GPS system records, traffic cameras and more) make such granular investigation easier and the proof thereof much simpler to present.

In such a world, fundamental assumptions about underwriting and claims management could change to a fair model, that is less expensive for end users and insurers alike. At the same time, new forms of insurance become feasible when they had previously been too costly or niche to make viable before. For example, granular damage insurance for electronic devices subject to accidents, defect or customer abuse. Perhaps more interesting is the possibility of cyber insurance—insurance of digital assets and risks, such as the much-publicized insurance of legally downloadable music, for example. As we look further out, we will need to begin insuring against electronic attacks to our 'augmented' selves—the digital elements of our lives. Our externalized memory—personal photo collections and relationship databases. Our externalized brain—data analytics algorithms. Our externalized selves—the futuristic-sounding artificial intelligence.

New Distribution Models and Agency Relationships

As technology continues to enter all aspects of the insurance business, it lowers the barriers of entry providing opportunities for more technologically advanced competitors from adjacent industries. Google, for example, is now licensed to sell insurance in 20+ states, providing a comparative rating service that allows for customers in 20+ states to buy insurance from insurance carriers in their ecosystem. Consumer focused, tech savvy companies such as Google, Amazon, Airbnb, and Uber have shown that simplicity and transparency can be a key competitive advantage, and as such, their entry into this industry has the potential of reshaping distribution models of insurance carriers and restructuring traditional agency relationships.



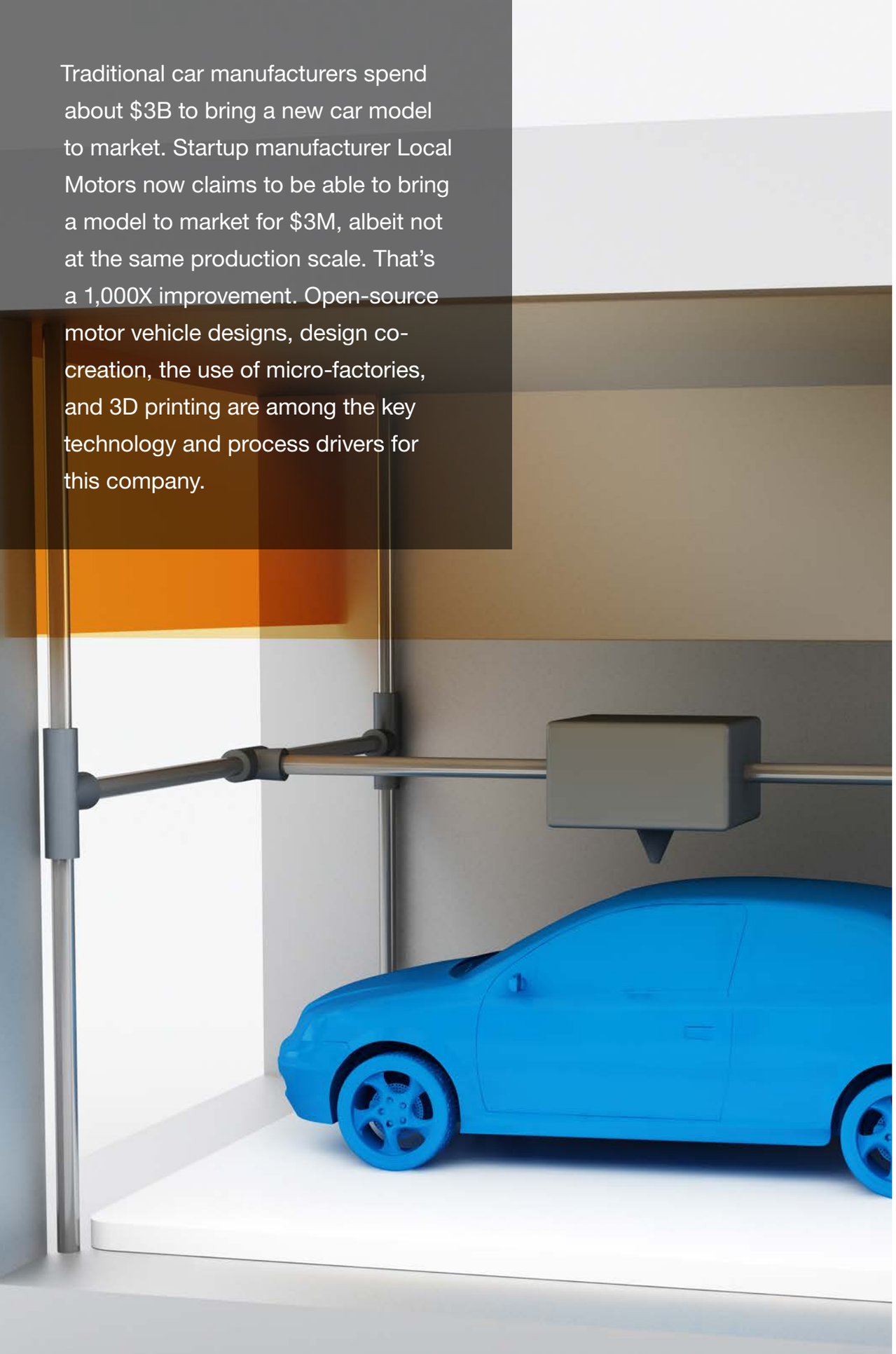
Today's tech savvy insurance carriers will need to explore multiple distribution models that include::

- Selling through general agents such as Google and Amazon
- Distribute customized products through alliances with leaders in adjacent industries (such as the auto industry)
- Try and buy models that allow consumers to try theproduct before they buy itdirectly from the carrier
- Support an on-demand model for the consumption of the product

Find more options, faster

Researching for car insurance can be time consuming. We're working with a growing number of insurance providers to aggregate their questions into a single form.

Enter your information once and get up to 18 prices.



Traditional car manufacturers spend about $3B to bring a new car model to market. Startup manufacturer Local Motors now claims to be able to bring a model to market for $3M, albeit not at the same production scale. That's a 1,000X improvement. Open-source motor vehicle designs, design co-creation, the use of micro-factories, and 3D printing are among the key technology and process drivers for this company.

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3D Printing Goes Mainstream

3D printing technology can have significant impact on several touch points in the auto value chain including the design cycle, replacement parts for customer service, and even customer co-design of their vehicles.

3-D printing is the process of making three-dimensional physical objects of virtually any form/shape from a digital model designed on a computer. Advances in 3D Printing are leading to a world where anything can be replicated and printed using a wide range of materials.

For the car owner, one of the greatest annoyances is in needing a replacement part and not having one easily accessible. Using locally deployed 3D printers and creating a "print parts on demand" service business could change not only the customer experience, but also the whole supply chain and warehousing infrastructure.

3D printing can radically transform the claims process and dramatically reduce the cost of producing and printing parts as required without the need for shipping parts or holding an inventory of spare parts. This immense potential comes with an equally challenging set of legal implications and associated insurance risks. Besides the obvious product liability risks and inevitable intellectual property disputes, the liability issues are equally mind-boggling.

The Attack of the Drones

The development of general purpose and special use drones is one of the hottest areas of investment in the valley today.

Proponents of this technology believe drones represent the next big thing in technology that can be used from surveillance, to package deliver to aerial photography for personal and business use. At the same time it is also one of the most controversial areas, causing the government and regulatory bodies to look at everything from who can fly them, in what area, for what purpose and the security and privacy implications of the use of these devices.

Drones have several potential uses in the Insurance Industry. They can be used to perform underwriting inspections on the exterior of the home or business. They can be used to get more detailed topographical information about a newly developed subdivision. Drones can also be used to inspect damages to assess and estimate the cost of claims. They offer a much more safer alternative for roof inspections and other tasks that are high risk activities for claims adjusters. Finally, drones can provide a quick and non-intrusive way to capture more detailed information about traffic, road conditions and gather more information about accidents that cause major backups on freeways.

THE CONNECTED CAR, CONNECTED DRIVER AND MOBILITY CUSTOMER

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When “Cars Become Apps” and On-Demand Mobility Doesn’t Require Owning a Vehicle

The evolution of the connected car presents new requirements and challenges for the Insurance Industry. While the connected car has been a part of the language of the auto industry for over a decade, the rise of the connected driver and the mobility customer is relatively new – and will be game changing for those insurance carriers who are prepared and understand the risk and liability implications of these technologies and have flexible products that address these emerging needs.

Connected Car

The connected car has largely been focused on delivering content from infotainment networks and enabling dealers to access black boxes for diagnostics.

Today many insurers are implementing telematics solutions that use this data to predict driver behavior and provide discounts on traditional auto policies.

Connected Driver

With the connected driver, there is a deeper integration of the customer-car-service relationship. The ‘car functions as an app’ enabling the vehicle to obtain new functionality and service repairs via OTA software uploads. The driver experience discussion evolves beyond the tradeoffs of the distracted driver and their infotainment systems. New insurance business features that can supplement these downloadable capabilities present new opportunities for Mobility Customer.

Mobility Customer

Mobility customers look across a variety of platforms and options for their transportation needs, which are often on-demand. Their choices may be the result of a practical and emotional rethinking of how they relate to their once beloved cars. They may see all options as equally likely: car ownership, two-way car sharing, one-way ride sharing, app-facilitated car pools, long distance buses, and even bike sharing. Leading insurers are looking at the concept of personal liability policies and how they can add/supplement commercial fleet policies that are provided by the service providers.

CONNECTED CAR ····· CONNECTED DRIVER ····· MOBILITY CUSTOMER ····›

BIG AND LITTLE DATA, MACHINE LEARNING, AND CYBER-SECURITY

Data is core to understanding and delivering on both the new customer experiences and market insights demanded by Insurance 3.0.

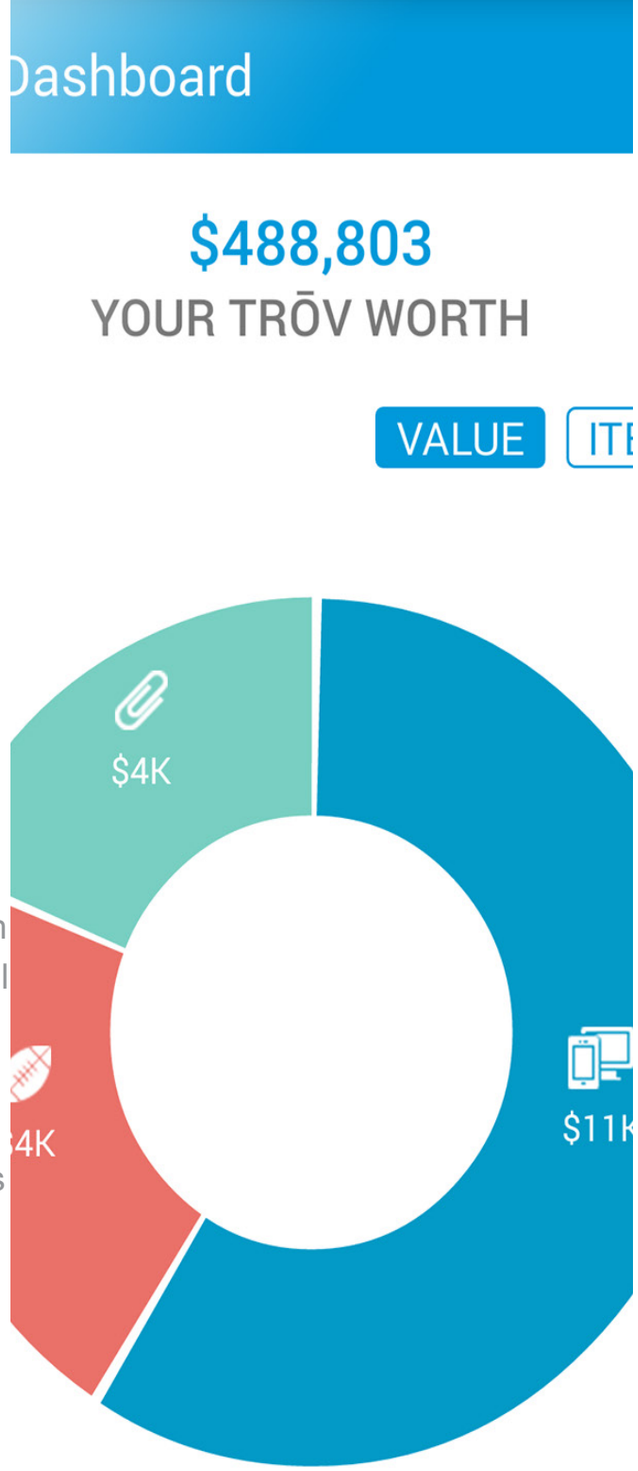
The financial services and Insurance Industry is already one of the largest generators of data in the world. To take advantage of the new data-driven business opportunities, auto OEMs will need to understand and address IT infrastructure, technology expertise, and business and policy systems in relationship to the issues of:

- Big Data
- Little Data
- Machine Learning and Cognitive Computing
- Cyber-Security
- Consumer Privacy

Big Data and Little Data

One of the consequences of the advances in computing and storage technologies is the rapid digitization of the analog world. This when combined with advances in networking technologies that connect everyone and everything, has led to unprecedented availability and access to data and information that was previously very expensive to obtain and elusive to all except for a select few governments and organizations. This "Democratization of Data" has changed the dynamics of the information marketplace, and has leveled the playing field by enabling small and mid-sized business to have access to the same type of information that their larger counterparts have. For example, the unprecedented availability of data has resulted in the emergence of data brokers such as DataLogix, InfoChimps and Acxiom who provide companies with extremely valuable data at a fraction of the cost to access and collect data compared to even five years ago. It has also resulted in the creation of data science and analytics companies such as Kaggle, which aims to make data science an affordable practice by combining key elements of cloud computing, crowdsourcing, gamification and social networking. With companies such as InfoChimps and Kaggle, companies can post a time-boxed data project in any industry and offer a reward for the best solution. This model makes advanced R&D and data science available to everyone. Allstate posted a claim production challenge to predict bodily injury liability, based solely on the characteristics of the insured vehicle, and the small online automobile dealer Carvana launched a data project to develop an algorithm which calculates the likelihood that particular cars found at auctions would turn out to be lemons.

"They (Google) have a ton of data on where people drive, how people drive," said Jon McNeill, chief executive of Enservio, a Needham, Mass., company that makes claims processing software. "It's the holy grail of being able to price auto insurance correctly."



Little data can provide the Insurance Industry with incredibly valuable information to inform products and personalization. Little data includes just about every type of data a person produces: schedule, shopping choices, patterns of travel, temperature preference in home or car, physical health, emotions. If you can measure it through a sensor or interface, data about humans can be collected and analyzed. The key issue is to get permission to collect personal data. With opportunities for innovation at nearly every point of the spectrum related to little data, it is increasingly appropriate to start asking what your users value in exchange for their data. Asset management startup Trov has formed an appraisal and insurance platform based entirely on the value of little data. Users upload information about their tangible assets, add new purchases through a mobile app, receive updated information about changes in the value of their possessions, share that information with their insurers for accurate real-time adjustments in coverage, and have the option to sell valuables through Trov's connection to "specialized marketplaces" online. Having real-time, detailed information about customers' assets and purchasing behavior is a clear benefit for the insurers who are partnering with Trov, and users are getting more customized service from features and partners in return

Metromile is a car insurance company that offers customers a deal— they put a sensor in the customer's car that tracks driving habits to tailor the premium specifically to the vehicle use. The benefit for both parties is clear: customers pay only for the amount of coverage they actually need, and Metromile gets detailed information which helps them better manage risk. Other car insurance companies have used in-vehicle sensors to offer discounts for safe driving behavior, but Metromile is the first to incorporate little data in an on-demand model of insurance where customers who drive less pay less— by the mile.

Little data also becomes its own product. Insurance companies' fates are decided by how well they balance price and service with the statistical models they use to underwrite customer's risk profiles. If Metromile or companies like them—due to user-granted access to rich, detailed data—can better predict risk, they can offer services at a lower price and/or higher profit margin. But they can also sell access to that actuarial model to other companies, allowing them to focus on what they do best so far: creation of a compelling brand that has users' interest and rapid accumulation of data. Jesse Beyroutey, a venture capitalist specializing in the field, calls this exchange 'data diplomacy'—a new business model defined by data-sharing partnerships between companies. In the coming decade, we will continue to see innovative companies that want to offer customized and easily updated products—but also to inform their own statistical models for the best pricing and profit margins—creating little data agreements with their customers as a way of informing credit offers, insurance premiums, interest rates, and financial management apps.

Machine Learning and Cognitive Computing

Machine learning based on data inputs and outputs within specific contexts is a key force in the evolution of both autonomous robotic manufacturing and self-driving vehicles.

In the case of vehicles, cameras, sensors, and specially designed computers create 3D representations of the world that are used to navigate safely through unpredictable traffic. The rule set and ability to make complex split-second decisions is the result of both man-made and machine learning in the systems.

In the factory, robots can have the capability for both autonomous and human-collaborative modes as a result of the intelligence imparted by machine learning that evolves them into ‘cognitive computers.’ In time, cognitive computing may expand from individual robots and processes to entire factories or factory networks.

Cyber-Security - Insurers Face New Cyber Threats

Swiss Re Group Chief Executive, Michel Liès estimates that within 10 years cybercoverage will be in every retail, commercial and industrial insurance policy.

Today's customers are savvier and more demanding than ever before. They want instant access to their information over the Web and their mobile devices. They expect to complete transactions on the spot by connecting to an insurer's backend systems.

As a result, a growing number of companies are integrating their existing systems and business processes with Web portals, third-party vendors, cloud based applications and mobile technologies — not fully aware of the cyber threats that await them.

By opening up data to external channels, insurers are exposing customer records and sensitive company information to an unprecedented level of threats in cyberspace, and many insurers that have already been infiltrated don't even know it.

The buying public continues to lose confidence in the Insurance Industry's ability to protect consumer information given the recent spate of breaches at Anthem and Premera harming everyone involved: insurers, regulators, and consumers themselves.

Needed: Holistic Approach

Now that data is no longer contained within the perimeter, protecting the perimeter will no longer suffice. Insurers need a new, proactive strategy that embeds information security into the heart of their global business processes and operations, and secures company data wherever it may reside.

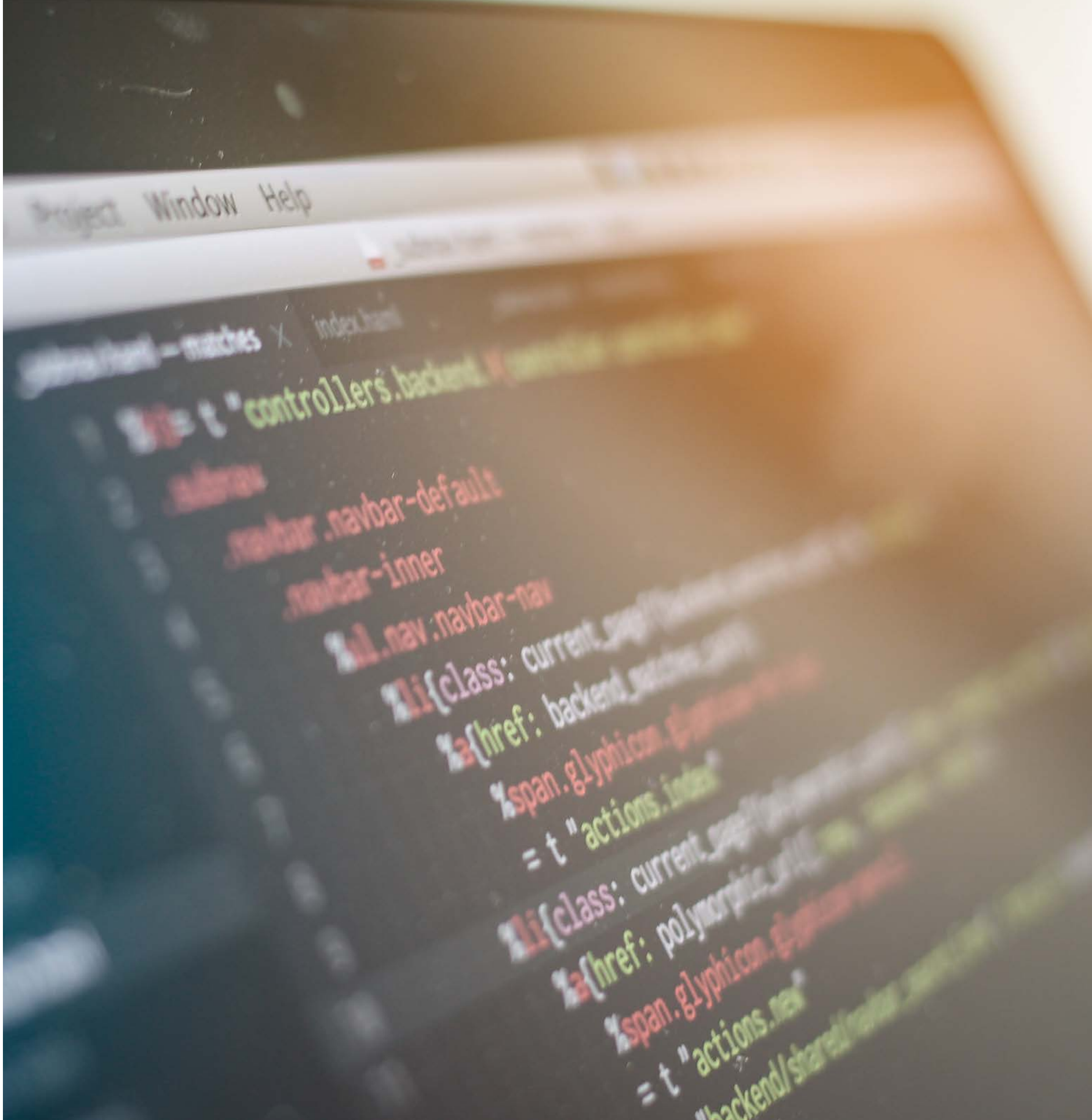
Insurance companies must adopt a holistic approach to identity management, compliance and business continuity/disaster recovery. They will be asked to provide a full range of cybersecurity services that extend from the development of corporate and mission strategy down to the very bits and bytes that make up the billions of threats global security centers monitor daily.

Either holistically or through third-party partnerships, insurance companies will incorporate the experience designing, managing and securing the mission-critical data. They must become proficient at understanding and reacting to the broad threats their customers face and the steps they must take to eliminate them. Best practices will be put into place and outreach to consumers to ensure trust will be taking place in full force.

Open Source Patents and APIs

The ability to create ecosystems of complimentary products and services built upon the IP and APIs of others has been a key driver in the exponential growth of the technology industry over the past 5 years.

Large insurance carriers have traditionally operated across all aspects of their value chain. This has required limited integration with other organizations. This has limited the adoption of Insurance Industry standards such as ACORD and associated API's to specific areas such as integration with Agency Systems, ordering standardized reports and state reporting. Today's Digital Insurers should focus on a broader adoption of open standards and APIs across their entire value chain.



THE CHANGING NATURE AND SOURCES OF COMPETITION

As digital businesses are evolving, the nature and source of competition are changing with them – often in dramatic and unexpected ways.

Technology enables competition from outside the industry

With technologies that lower the costs of entry into the market and that also enable rapid scaling on demand, new entrants unburdened by legacy infrastructure and practices will challenge established industry leaders. This same dynamic may also enable challengers to move into adjacent markets that expand their economic opportunity.

digital future:

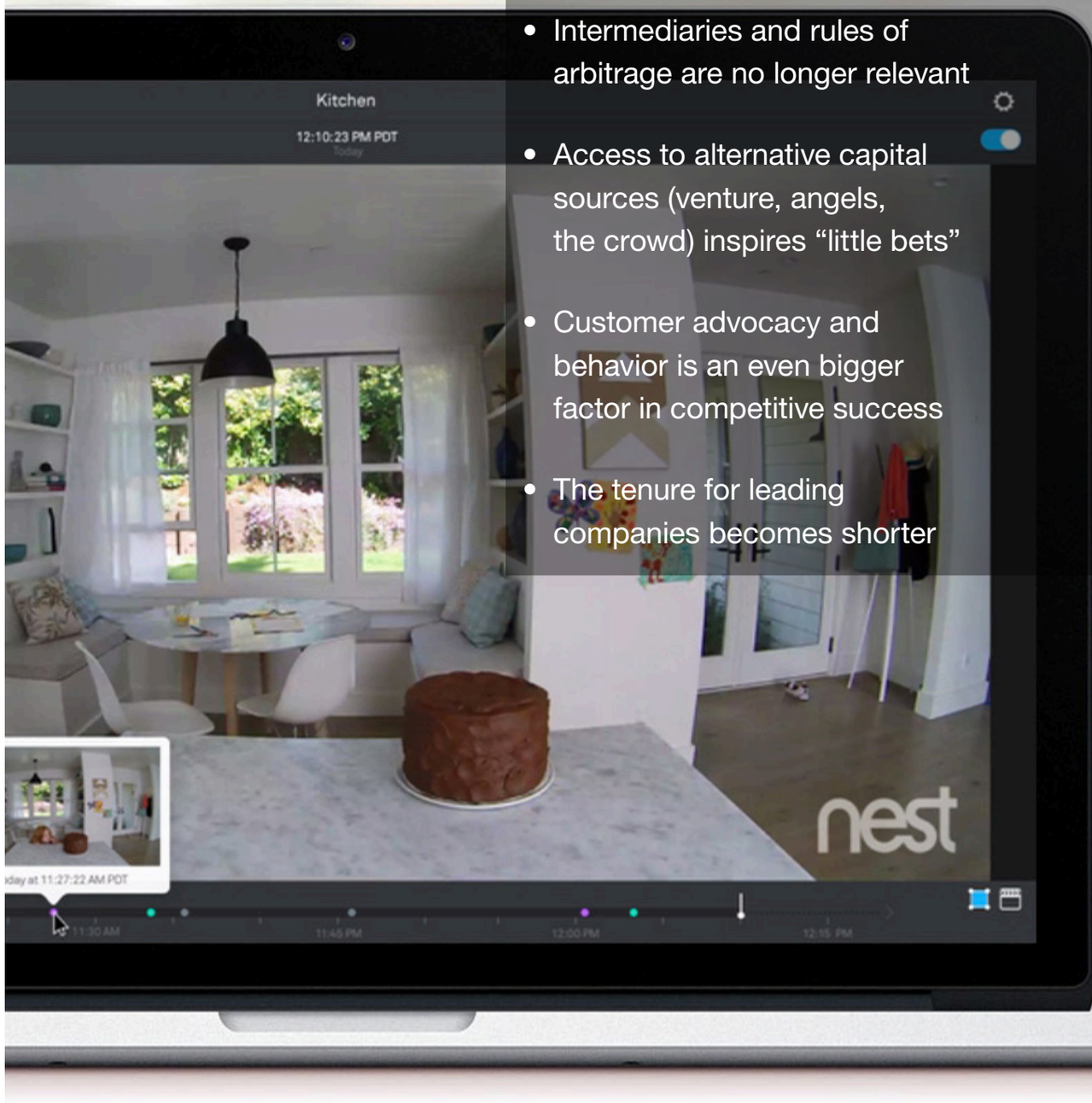
Will new entrants such as Tesla that initially focus on “niche” markets become the mainstream leaders of tomorrow? Will the on-demand utility-driven models of app-based ride sharing services replace a significant portion of urban auto ownership, and force a multi-platform redefinition of mainstream mobility? Will Tesla’s move into energy for homes fuel future success in cars?

Intermediaries and rules of arbitrage are no longer relevant

Companies and industries that have built significant portions of their competitive advantage around serving as gatekeeper or intermediary are seeing their core value propositions eroding and their competitive advantage crumbling. Data-driven technologies, the cloud, and social platforms are enabling challengers to quickly aggregate and understand disperse sources of information, and convey that to an audience with which it can directly communicate.

digital future:

Will Google with its long held mission to “organize the world’s information,” not only help consumers make better insurance comparison decisions, but get into the business of providing or brokering product itself? Will the Tesla “no dealer” model succeed, dislodging the traditional auto dealership structure as industry intermediary to customers?



Competition Is Changing

- Technology enables new sources of competition from outside the industry
- Intermediaries and rules of arbitrage are no longer relevant
- Access to alternative capital sources (venture, angels, the crowd) inspires “little bets”
- Customer advocacy and behavior is an even bigger factor in competitive success
- The tenure for leading companies becomes shorter

Access to capital from the venture community, angels and the crowd inspires ‘little bets’

If the barrier of access to needed levels of capital can be lowered or provided through non-traditional sources, challenger strategies for targeting initially niche markets within an industry may scale quickly to a mass-market opportunity. Companies that pursue markets where they no longer need to own all of the assets of “production” naturally have lower fixed financial requirements. Challengers can also target markets that incumbents do not see as returning the financial ROI required to support their massive infrastructure.

digital future:

Will Tesla evolve from its initial status of “fan boy toy” to “mainstream darling” in 2017 with a $30k electric vehicle tied into a network of Supercharger stations?

Customer advocacy and behavior will be an even bigger factor in a business’ competitive success

Customers are increasingly in the driver seat as a result of their nearly unlimited access and choice about information, products, and services. Millennials in particular have an innate understanding of marketing and of their value as consumers. They’re significantly more likely than older generations to believe they have the capacity to help a brand succeed or fail.

digital future:

Will customers be making decisions that boards and executives are making today?

The tenure for leading companies becomes shorter and is no longer guaranteed

Looking at the changes in the composition of the S&P 500 over the past 60 years shows this to already be true. In 1958, the average tenure of a company in this index was 61 years. By 1980 this had dropped to 25 years, and in 2011 it was but 18. At the current churn rate, 75% of the current firms will be replaced by companies first entering the index in 2027. Technology is accelerating this fact of the impermanence of business life.

digital future:

Will size matter in the future or will agility determine the leaders to follow and their tenure at the top of a new kind of index?

“Innovation distinguishes between a leader and a follower.”

- Steve Jobs

CHAPTER 4

Insurance 2.0

PUTTING THE CUSTOMER AT THE CENTER OF THE UNIVERSE

FROM INTUITION TO INSIGHTS

ANOTHER CRACK AT LEGACY TRANSFORMATION

TAKING INSURANCE TO SMART-PHONES

USING TECHNOLOGY TO DRIVE CONTINUOUS INNOVATION

Since 2013, the P&C Insurance Industry has been going through a hard market that was a result of economic turmoil from the later part of the past decade and a historically high year of losses that were precipitated by many natural disasters in 2011. This hard market has been characterized by higher premiums, more stringent underwriting guidelines and a higher expectation on rate on the renewal book of business.

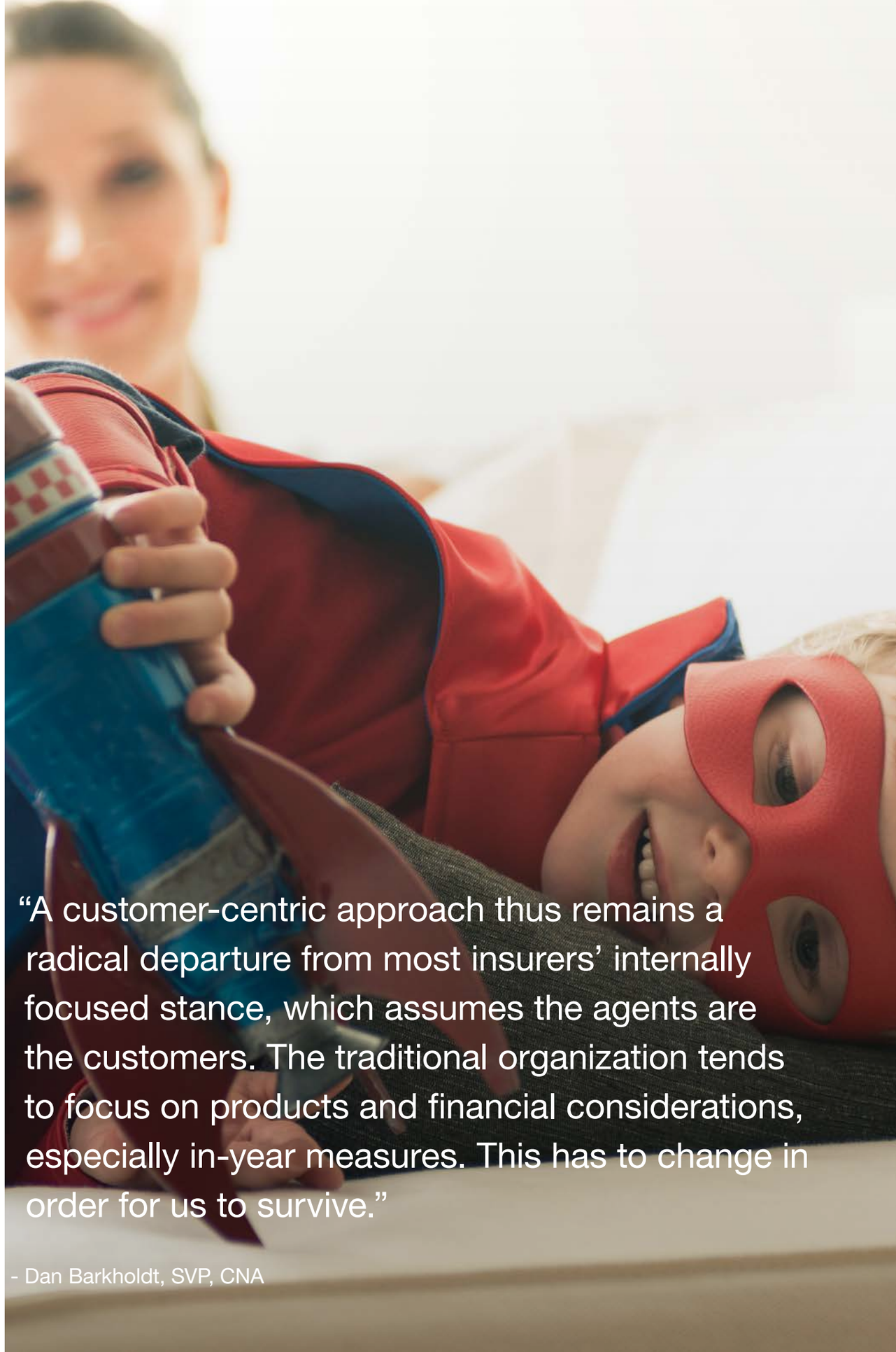
These macro-economic and industry trends, as well as a high rate of return on investments from equity markets, have caused many large and mid-sized carriers to embark on several key costly and long-term initiatives. As the business cycle in the Insurance Industry tends to evolve, and we start seeing the softening of markets especially in areas such as private passenger auto, it is imperative that these carriers achieve the stated results and closure on these long-term projects.

PUTTING THE CUSTOMER AT THE CENTER OF THE UNIVERSE

Carriers in the Insurance Industry find it hard to offer customers a differentiated value proposition in a market where the product is mandated by government regulations, and the features and functions have not seen any major changes for decades. In addition, since most of the large carriers have parity across all core insurance functions (underwriting, actuarial etc.), price based differentiation is temporary. In this environment, providing better value to the customer through improved service and claims is seen as a differentiator and an important way to retain existing customers and acquire new ones. This focus on service and building better relationships is also a direct response to intensifying competition and increased expectations from digitally savvy and empowered customers.

While the tactics of a carrier may vary, the basic elements of these initiatives tend to be aimed at:

- Informing and in some cases educating the customer about the product, its features and the benefits. Carriers who have exclusive distribution channels and large marketing budgets leverage these channels to focus on a well-informed customer. For example, Liberty Mutual and Farmers insurance focus a lot of their marketing campaigns on educating customers about the features and functions of their products.
- Increase the transparency of core processes by providing more information across the insurance value chain research, through to purchase, billing, claims processing and post-sale interactions. The integrated experience should prevail throughout the life cycle of the insurance policy and insurers who get it right will be able to maximize cross-selling opportunities. For example Progressive Insurance has long emphasized comparative rating, better information on driving habits and getting up-to-date information on claims.

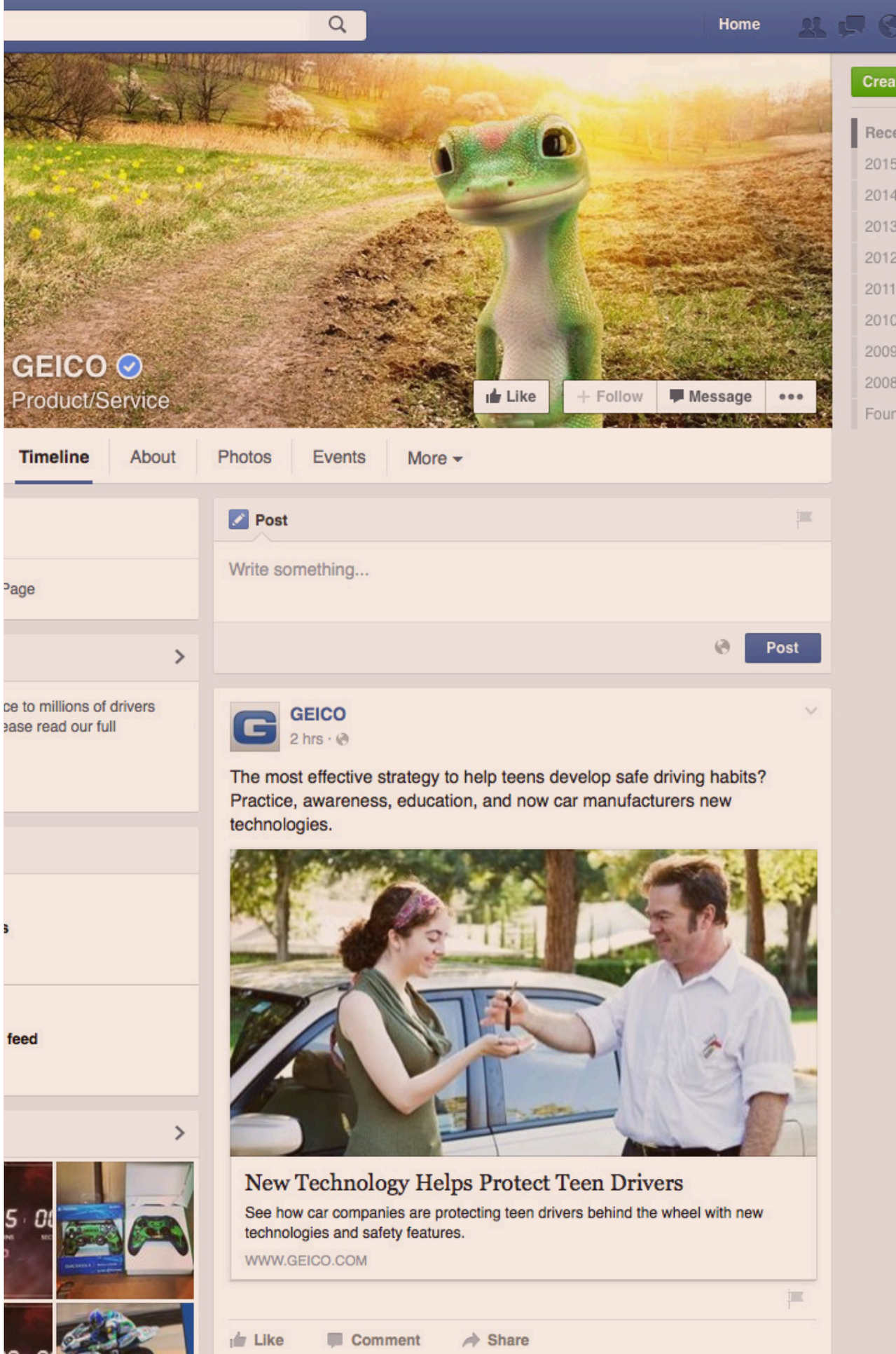


- Provide a consistent, integrated and personalized experience across a number of channels (Omni-channel experience). For example, Geico provides a seamless and consistent user experience through their Web, Mobile and Direct channels (contact centers). This experience is very consistent with their brand.

- Focus on building an effective and responsive social media approach that is closely integrated into the overall customer experience. By bringing the online and social media dialogue together with face-to-face interactions insurers can create seamless multichannel engagement for everyone, anytime, anywhere through any channel that they choose.

- Understand how customers want to use their products and services to develop new propositions which help customers improve their lifestyle and increase their loyalty.

- Partnering with leaders from other industries and investing in programs that help establish the value of insurance products by extending it beyond the individual insurance transaction to focus on and drive customer loyalty. For example, Nationwide has partnered with Macys, Exxon, AT&T and others to implement a rewards program for its members.



FROM INTUITION TO INSIGHTS

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Data has been one of the most powerful weapons in the Insurance Industry arsenal since its inception over a 150 years ago. As mobility, computing and technology continues to pervade all aspects of the insurance business, three things begin to happen:

1. All of the data that is analog becomes digitized, resulting in the ability to use computing to process the data and drive better insights from the data

2. All of these data sources that were islands are now connected and are more readily accessible than ever before and

3. All this data and insights are now available to anyone with a network connected smartphone anywhere on the face of this earth (and space).

In addition, the “Democratization of Data” and the emergence of data brokers (such as DataLogix, InfoChimps and Acxiom) has provided minimum efficient scale to small and medium-sized insurance businesses by giving them access to the same type of information and capabilities that their larger competitors have, changing the dynamics of the insurance marketplace.

The leaders in today’s insurance marketplace are moving from decisions that are made on intuition to a mix of intuition driven by data and insights. These carriers are exploiting new sources of available information to differentiate themselves by using advanced, predictive analytics techniques to segment and price risk, as well as attract and retain profitable customers and proactively prevent loss.

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Although Business Intelligence technologies are not new, they are now getting much better, efficient and easier to work with. In addition, advanced and more powerful computing capabilities allow for new statistical modeling techniques and simulations that can provide more timely and useful information. The sources and use of data have also expanded, opening up new opportunities for insurers to:

- Improve matching of customer risk with the right coverage and price based on exhibited behavior, increasing sales and cross-sales.
- Better manage their risk portfolios.
- Long-term ability to fundamentally.

reposition themselves as proactive advocates in the eyes of their customers, by giving them information that can be used to alter their behavior to reduce the price paid for insurance policies

Carriers are achieving measurable results by identifying; sourcing and complementing internally structured records, with external unstructured data (from social media, smartphones, computers and other platforms & devices). They also use predictive analytics to provide new behavioral insights, which can be used to improve the effectiveness of distribution, improve customer service and lead to more accurately priced and customized offerings for their customers.

ANOTHER CRACK AT LEGACY SYSTEMS TRANSFORMATION

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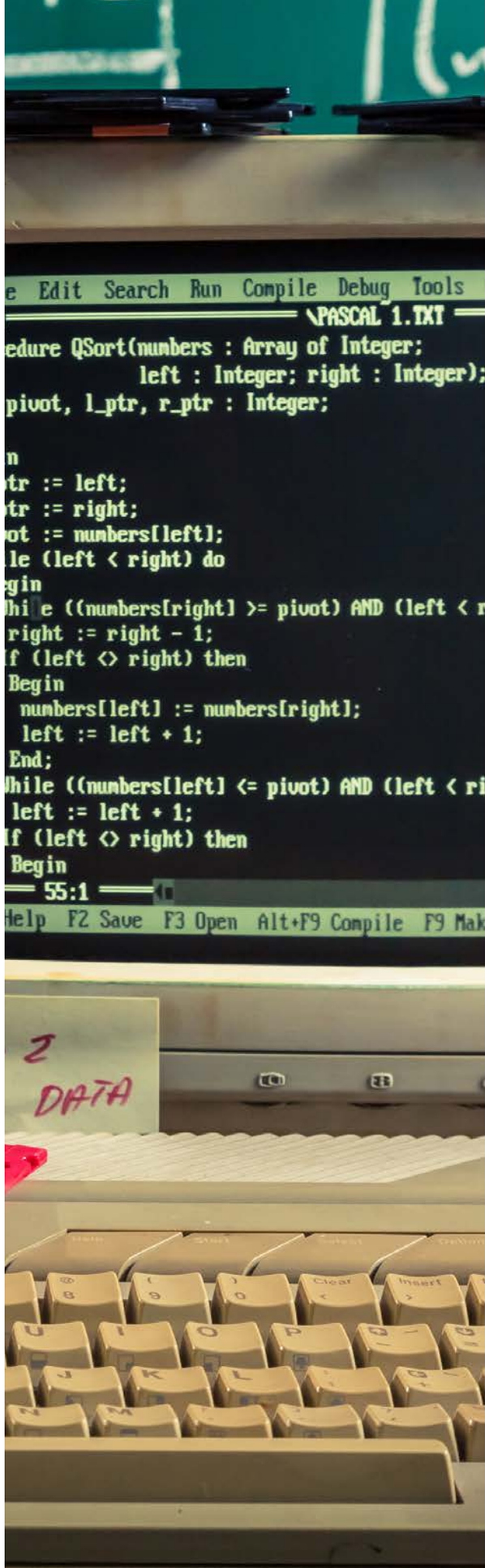
As one of the earliest industries to invest in and adopt technology, the financial services industry and especially the Insurance Industry was able to gain efficiencies from this use of technology. However, this has also resulted in legacy systems that have lasted the test of time but are beginning to show their age and are seriously impacting the ability of insurance carriers to deliver business agility and respond to a rapidly changing marketplace.

In a recent study from PWC, insurance CEOs see the speed of technological change as one of the largest potential business threats to their organization's growth prospect. In order to become more efficient and capitalize on the growing digital trends, insurance businesses need to modernizing their way of working by investing in new back-office technology, partnering up with IT and data providers, as well as outsourcing infrastructure and adopting loosely coupled cloud-based solutions to reduce costs and accelerate implementation time.

The task of modernizing or transforming their legacy systems is made more complex, expensive and time-consuming in the United States that does not have a Federal Charter for insurance. This means that the products, the laws and regulations governing them require changes and approvals from state insurance agencies that in many cases tend to have vastly different rules and regulations that govern insurance products. Gartner estimates that more than two-thirds of insurers still rely on legacy systems (some up to 40 years old) to manage their core processes These legacy IT systems are completely ill-suited to the needs of modern, complex insurance offerings, and businesses need to invest if they are to capitalize on the digital trends.



In the past 15 years, many carriers have attempted to transform their legacy applications with limited success. Now with an aging workforce and a rapid attrition of the skills required to maintain these applications, these carriers have moved away from modernizing systems and turned to implementing packaged industry vertical applications from software vendors. These efforts are currently consuming a significant portion of their IT budgets and capacity with at best mixed results.

TAKING INSURANCE TO SMARTPHONES

Apple's introduction of the iPhone in 2008 ushered in a new era of computing which transformed the mobile phone from a communication device that was restricted to voice calls and SMS text messages to a powerful computer with more intuitive and immersive user experiences. Over the past 7 years, since the advent of the smartphone, these technologies have continued to evolve so quickly that the first iPhone looks like a quaint old device and most of us do not remember an era before we had a smartphone.

Carriers such as Nationwide and Progressive were among the first to embrace this trend and release applications that enabled their customers to perform several insurance functions such as view ID cards and coverage, pay bills, report claims and request changes to policies from a smartphone. Today, many large and mid-sized carriers have comparable features on their mobile apps and continue to deliver incremental features and functions on a regular basis. However, none of the major carriers have yet adopted a mobile-first strategy that moves away from porting functionality from the desktop or the web to a smartphone, but fundamentally re-implements the experience and interactions with a mobile customer in mind. Many start-ups (Metromile, Ingenie etc.) are leading the way to a differentiated and customized set of experiences and products that are addressing the needs of today's Millennial and digital-savvy customers.

USING TECHNOLOGY TO DRIVE CONTINUOUS INNOVATION

Technology savvy carriers such as Progressive, Nationwide and USAA have always been at the leading edge of using technology over the past decade. From using Grid Computing to run simulation models to leveraging satellite and mobile communications to respond to catastrophes, these carriers have led the implementation of technology-enabled solutions that drive incremental innovation of business processes. Here are some examples:

- Aerial photography and advanced cartographic techniques to estimate damages from catastrophes and prevent fraud.
- Using drones for underwriting inspections and in assessing damage for property claims.
- Tapping into data streams provided by today's automobiles to influence driving behavior and impact rates on auto policies.
- Self sufficient and network connected vehicles that can be deployed to areas impacted by catastrophes to service customers and
- Establishing seamless and automated interactions with service providers in the insurance value chain including preferred repair shops and glass replacement vendors.

The challenges faced by most carriers today is the ability to provide these new capabilities quickly, associate them with measurable business results and at the same time deliver them in an efficient way that does not significantly increase the cost of providing these services.

We will now look at organizations that are taking approaches that go beyond using technology as a supporting or enabling function, but as an integral part of their business operations – Digitally Native Insurers.

CHAPTER 5

Insurance 2.5

INSURANCE ON DEMAND - METROMILE

SOCIAL INSURANCE - FRIENDSURANCE

THE RISE OF MOBILITY SERVICES - BMW DRIVENOW

AUTO-PILOT AND SELF DRIVING CARS - GOOGLE

SOFTWARE IS EATING THE WORLD - APPLE

INSURANCE ON DEMAND - METROMILE

The Insurance Industry has operated for decades in a very onerous and complex regulatory environment and has focused on identifying patterns and deriving insights on large amounts of data. These patterns are used to create risk pools of customer segments based on similar demographic, financial, behavioral and psychographic criteria. The success of the company is then determined by its ability to build and match products to these risk pools through insights in a very efficient manner. While this has proven to be a very successful and profitable model, today's technology and processes give us more granular tools that carriers can use to look at customers as individuals and provide a highly tailored experience to these customers.

Earlier in this book, we talked about the evolution of the sharing economy and how tech-savvy Millennials tend to own fewer assets, drive less and be more comfortable with sharing services. These trends drive the need for microinsurance where the customer only needs to pay to mitigate the risks he/she actually takes. Today's leading edge insurers are trying to answer that question and figure out how they can make buying insurance and using it as simple as buying an app?

Metromile – A New Kind of Insurance Company

Metromile, founded in 2011, offers customers a deal. They put a sensor, called the Metronome, in their car to track their driving habits and charge an insurance premium which is tailored specifically to the number of miles driven by the customer. In this way Metromile is different than other incumbent carriers, such as Progressive whose model is based on discounts driven by driving behavior. They target customers who drive less than 10,000 miles per year by offering plans with low

fixed rates and variable rates that are based on the number of miles driven. The benefits of this model are clear: customers pay only for the amount of coverage they actually need, and Metromile gets detailed information which helps them protect themselves from risk. Other car insurance companies have used in-vehicle sensors to offer discounts for safe driving behavior, but Metromile is the first to incorporate little data in an on-demand model of insurance where customers who drive less pay less—by the mile.

At its core, Metromile is a technology company that is built around the hypothesis that data is their most valuable asset. This hypothesis is the basis of its business model, the products it develops and its service offerings. Metromile does not try to perform all of the functions of a traditional insurance company. It operates as the agent, partnering with National General Insurance Group who underwrites the policies. This data-driven approach and insights show that 70% of the variation in insurance claims can be explained by miles driven rather than driving habits, Metromile demonstrates a more intelligent and targeted approach to data monitoring in the Insurance Industry than practiced by larger and more sophisticated competitors. This on-demand model and usage-based pricing align well with the buying habits of today's Millennial customer and has resulted in the company seeing significant growth by attracting customers who value flexibility while still providing attractive margins for the company.

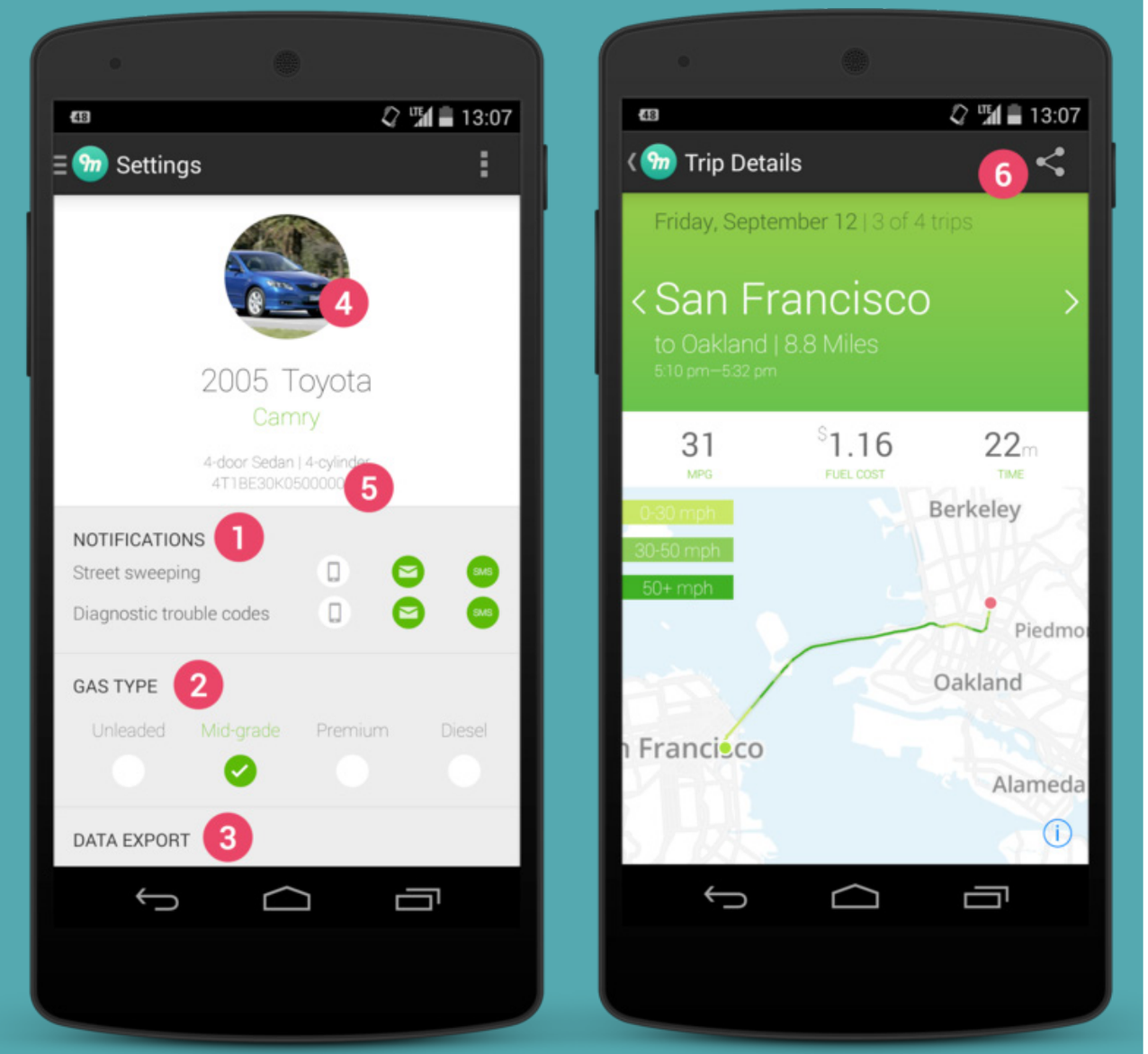
Metromile and the Opt-in Customer

The on-boarding process that Metromile uses is a 'try before you buy' model where it is easy to provide a few pieces of information and receive a free Metronome. Once the device is installed, the potential customer can connect it to their smartphone and begin to understand their driving patterns and if Metromile is the right fit for them. Once the prospective customer determines that it is a good fit, they can provide more information and become a customer of Metromile. This approach has several benefits including

1. It helps educate the customer using their on driving patterns to help them understand what drives the cost of insurance and the features and functions they can tailor to meet their individual needs.
2. This approach provides a low cost customer acquisition model based on viral marketing that is very different from the agency based distribution model used by traditional carriers and.
3. Provides Metromile the ability to price the risk based on actual data for the individual as opposed to pricing the risk based on what risk pool the customer falls into.

"If something is important enough, even if the odds are against you, you should still do it."

– Elon Musk,
CEO of Tesla



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Engaging the Customer After the Sale

Based on publicly available data, this is an area where Metromile has mixed reviews. Metromile provides several engaging experiences and useful alerts to customers, such as alerting drivers when they are parked on the wrong side of the road during days when the roads are getting swept. These alerts and experiences deliver value beyond the initial sale. However, there are also several reports that indicate challenges customers have with processing claims and the challenges they encounter as they interact with the company on a day-to-day basis that point to the need for tighter integration, smooth hand-offs and best-of-breed service across a disaggregated value chain.

Products that are Mass-Customized to Individual Customers

Metromile focuses on creating value for its customers through flexible premiums, which appropriately match the risk-level of the driver. The products offered go through frequent updates and changes that reflect the needs of its customer base. One such example was the introduction of the ‘road trip friendly’ option, which allows the policyholder to cap the per-day chargeable mileage when taking their car out for a weekend trip. The mobile app and its tight integration with the Metronome device in the car allows it to provide information and advice to help with maintenance, issue alerts based on in-vehicle diagnostics, traffic alerts, parking notifications, tracking of the device and security alerts in the event of a break-in.

This approach to product design and development allows them to flex their model to rapidly take advantage of emerging opportunities. A good example is the recent partnership between Uber and Metromile that allows drivers in Uber’s ride sharing service to get personal policies from Metromile that will provide coverage to the driver when they are using

the car for their personal use. This product is designed to integrate seamlessly with and complement the coverage they get from Uber's commercial insurance policy.

A Technology and Data Company Disguised as an Insurer

Many of today's startups such as Tesla, Uber, Metromile and AirBnB have technology in their DNA and claim technology as their core competency. In these companies the data collected and used by these companies becomes its own product. Insurance companies' destinies are decided by how well they balance price and service with the actuarial models they use to underwrite customer risk pools. If Metromile or companies like them—due to user-granted access to rich, detailed data—can better predict risk, they can offer services at a lower price and/or go after niche customer segments.

But they can also sell access to that actuarial model to other companies, allowing them to focus on what they do best so far: creation of a compelling brand experience which has users' interest and rapid accumulation of data.

Jesse Beyroutey, a venture capitalist specializing in the field, calls this exchange 'data diplomacy'—a new business model defined by data-sharing partnerships between companies. In the coming decade we'll continue to see innovative companies which want to offer customized and easily updated products—but also to inform their own statistical models for the best pricing and profit margins—creating little data agreements with their customers as a way of informing credit offers, insurance premiums, interest rates, and financial management apps.

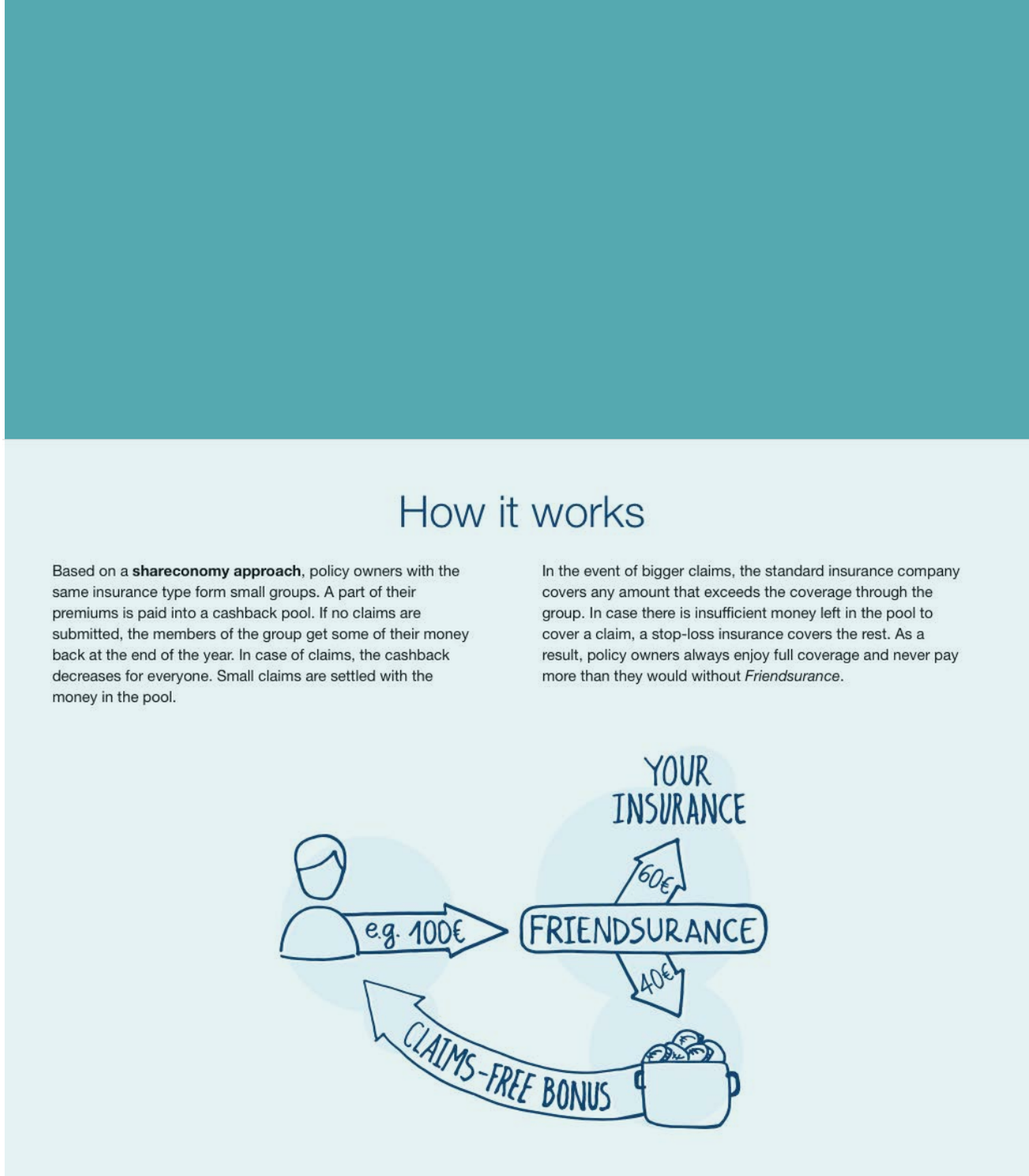
Markets that initially looked separate, can after some time, appear as a coherent business opportunity. At one time MP3 players and mobile phones were seen as separate market opportunities. That is no longer the case.

SOCIAL INSURANCE - FRIENDSURANCE

The past decade has seen the emergence of technology-enabled social networks that are aimed to connect individuals who share a common set of interests of a common purpose. Social networks are a great representation of Metcalfe's law in action. This law states that the value of a network is proportional to the square of the number of nodes connected to the network. Large Social networks such as Facebook, LinkedIn, Twitter, Weibo and WhatsApp now wield a great deal of influence in our daily lives as we use them to share experiences, learn about topics of interest and get reviews from friends or from other people with similar interests. Today every industry from Automotive to Financial Services to Retailers and the Hospitality Industry rely on reviews from social networks such as Yelp, Foursquare and TripAdvisor as a core component of how they raise awareness, build their brands and stay connected to their customers. Other sites such as Pinterest, TaskRabbit and 99designs have become the preferred way for individuals and organizations alike to take their business directly to customers across the globe.

In the Financial Services Industry, social business models have evolved rapidly over the past three years. This trend is more pronounced and moving faster in the banking industry as companies such as Lending Club and Prosper are dramatically changing how customers borrow money for personal or small business loans. While the Insurance Industry has been slower to embrace this trend, the past two years has seen the evolution of Social Insurance.

The major objectives of Social Insurance are to reduce the cost of getting insured and rewarding

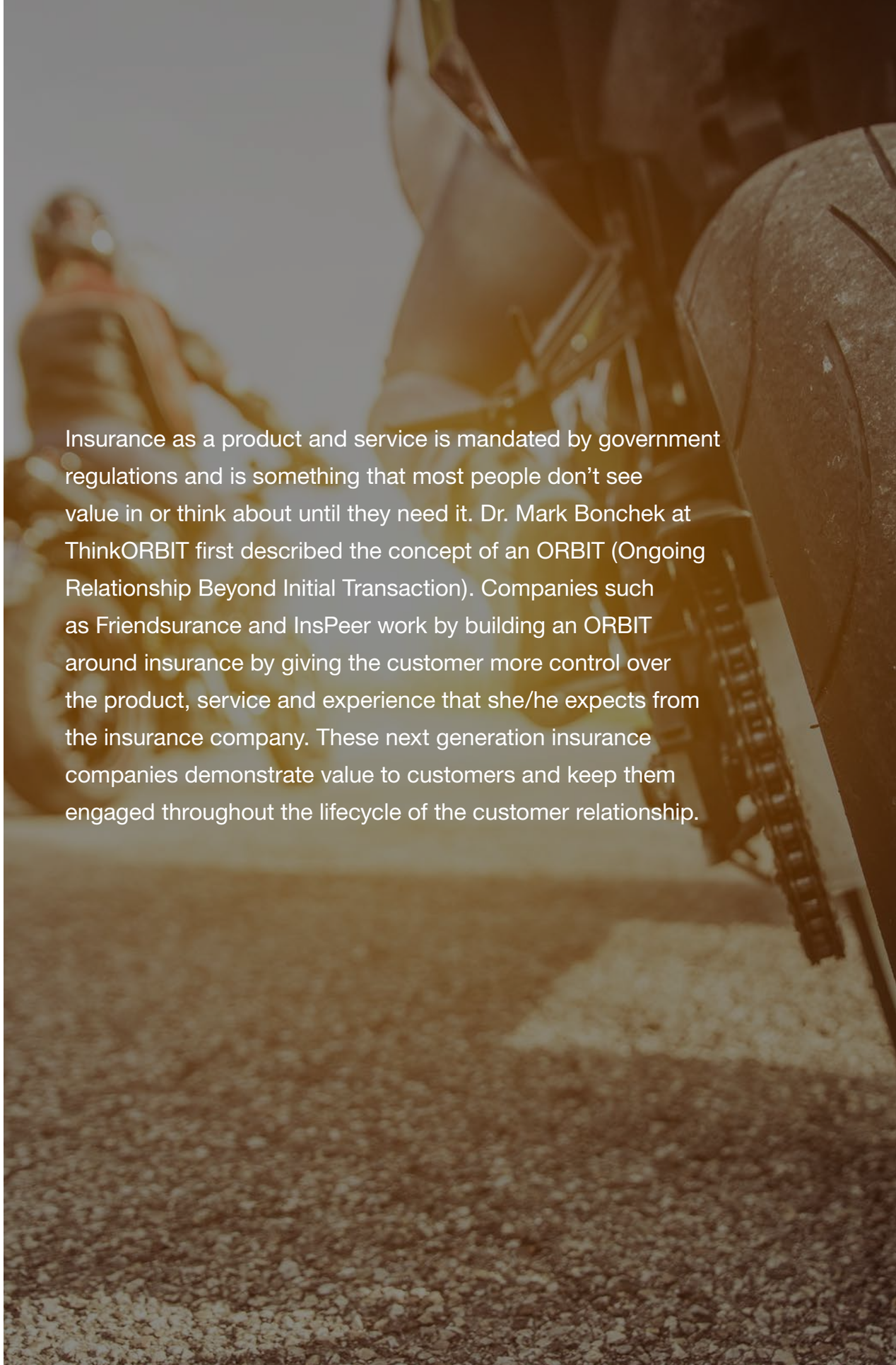


those customers who have a lower risk profile. This model makes the policyholder a co-creator by allowing them to form small groups online. The basic premise is to more efficiently replicate a risk pool within a group of friends the same way in which traditional insurance carriers create risk pools among a large number of strangers.

Social Insurance can be more affordable by insuring the deductible and making sure policyholders can create self-selected and self-monitored risk pools. One of the best examples of Social Insurance in action is the German insurance company called Friendsurance.

Friendsurance operates in a market where P&C and personal liability insurance are mandated by government rules and regulations. Their model allows their policyholders to band together to create small self-selected groups. Since the policyholder chooses to be in the group and the group accepts them, the implication is that the individuals in the group will have a similar risk profile and behaviors. So how does this work? Take an example in which 10 neighbors group together to buy a personal umbrella policy and pay around $200 each annually to insure damages up to $2 million each.

- A portion of this $200 premium goes into a shared pool.
- If there are no claims in the year, then each policyholder in the group will get a refund from the pool that is equal to the portion of premium that was set aside.
- Even if there were several claims, the policyholders will still get a refund from the shared pool as long as there are funds left in the pool.
- The rest of the earned premium goes to fund larger claims, investments and normal insurance operations.



Insurance as a product and service is mandated by government regulations and is something that most people don't see value in or think about until they need it. Dr. Mark Bonchek at ThinkORBIT first described the concept of an ORBIT (Ongoing Relationship Beyond Initial Transaction). Companies such as Friendsurance and InsPeer work by building an ORBIT around insurance by giving the customer more control over the product, service and experience that she/he expects from the insurance company. These next generation insurance companies demonstrate value to customers and keep them engaged throughout the lifecycle of the customer relationship.

Why can the model of Friendsurance work?

A group of individuals who know each other and have similar lifestyles tend to be more honest with each other and exhibit similar behaviors, which makes fraud less likely. These closely knit-groups are less likely to apply for very small claims, while they will monitor behaviors and mentor and coach their peers. These small claims proportionally cost a lot as the high touch experience and the rigorous quality control that many traditional insurers use tend to be expensive and overkill for these small claims.

The ‘friendship-based’ model of Social Insurance offerings such as Friendsurance also impacts the way that customers are reached in an almost ‘viral manner.’ New customers are acquired through digital channels and word of mouth, with current policyholders acting as marketers, advocates and underwriters of these policies. This has the added benefit of reducing customer acquisition costs that has historically been one of the largest drivers of the high cost of traditional insurance. Additionally, customer retention is higher, as policyholders tend to stay within their group of friends.

Friendsurance is now expanding its concept of Social Insurance to existing policies by partnering with other traditional carriers. Today there are several Social Insurance companies including Friendsuarnce in Germany, Guevara in the UK, PeerCover in New Zealand and InsPeer in France.

Social Insurance, similar to the Insurance On-Demand model, builds on making the customer an integral part of the product life cycle. It relies on a loosely coupled value chain where there is a high degree of cohesion and affinity between the individual components. And by making customers a co-creator of the service, it provides them with a unique value added experience on an on-going basis.

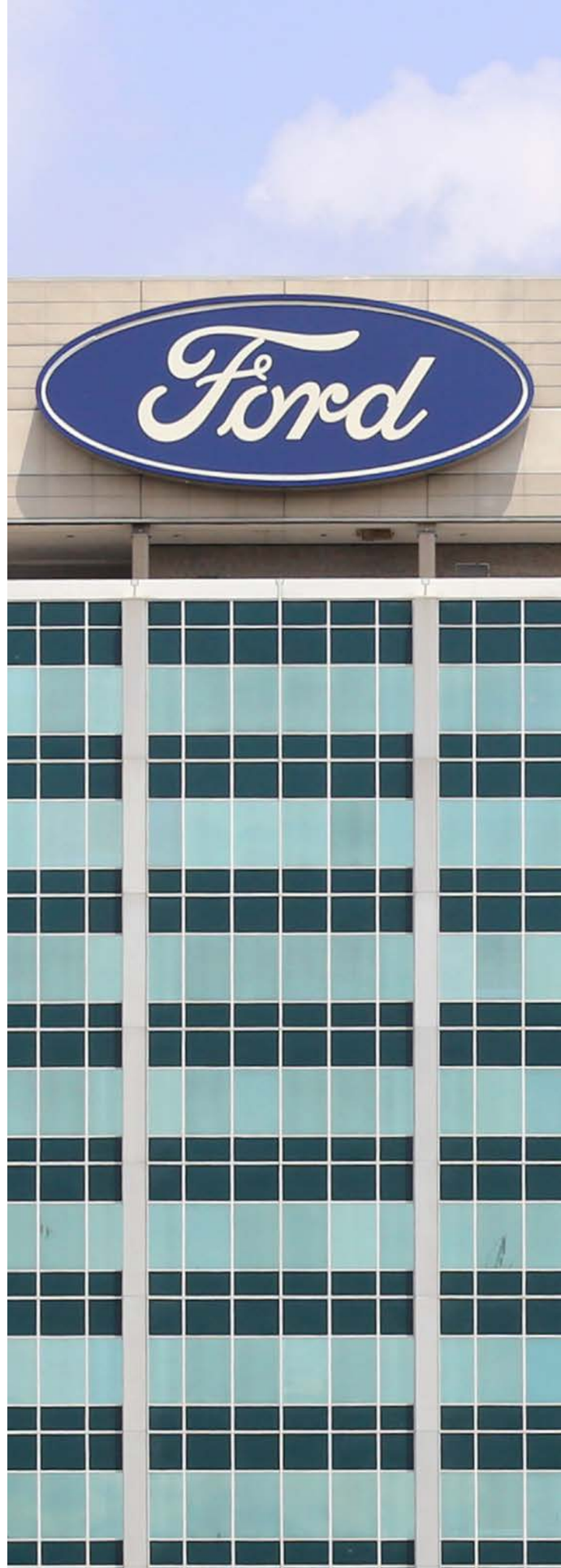
THE RISE OF MOBILITY SERVICES - FORD GETAROUND

In the US, the number of 'zero-car families' has been growing since 2007, and now accounts for nearly 10% of households. There is clearly a new class of mobility customer that prefers on–demand, utility- driven choices around transportation. In response, Silicon Valley startups are growing businesses of high valuation and customer base, while some of the major auto OEMs are establishing divisions, partnerships, and investments to explore the space with more limited rollout into the market.

A number of economic and social factors have contributed to the interest in mobility services, including the 2007-2009 recession, increasing urbanization, and the influence of Millennials and their digitally-driven social preferences. Technology is also playing its role, by providing a scaling advantage to those companies with agile technology and app expertise, and without legacy systems – namely Lyft and Uber. Many traditional leaders from the automotive industry such as Audi, BMW and Mercedes have entered this market through services such as DriveNow and Car2Go.

Ford recently entered this market by partnering with Getaround in the US and easyCar in the UK. Unlike mobility services offered by other auto manufacturers who maintain their own on-demand rental fleets, Ford's program enables those customers who have purchased a Ford using Ford financing to add their personal vehicles to Getaround's fleet of ride sharing vehicles. This provides a way for car owners to share their vehicles with pre-screened customers and offers new insurance opportunities similar to the Metromile-Uber partnership.

There are several factors in play in this rapidly evolving industry. Technology has fuelled the scaling of these services and the economies are trending towards a tipping point of broad adoption. Government regulations, employment law, and social policy are still up in the air in terms of result and impact. For insurers, this represents a shift in these services, risk and liability moves over to the providers of these services whose fleets of vehicles are covered by commercial policies whose profitability and level of automation lags behind personal lines. Traditional insurers should think like a startup to see how they can craft new policy products that can integrate into and supplement these policies.



GOOGLE SELF-DRIVING CAR PROJECT

Exploring What It Means to Have an Autonomous Vehicle

Google's self-driving vehicles have been on the road for years, starting with modified Lexus and Prius cars. Now the technology that powered those models is in Google's first purpose-built custom cars that hit the road in July 2015.

Why would one of the biggest technology companies in the world - known for search, Internet advertising, and a smart phone OS - get into the car business? If you think about the company's extensive experience with making sense of vast amounts of real-time data, along with its penchant for putting some stakes in the ground with socially relevant moonshot initiatives – then it makes a lot of sense.

Google's vehicles have driven over a million autonomous miles to date. That's equal to 75 years of driving for the typical American adult.

What would be possible if a vehicle could be built that could shoulder the entire burden of driving? Could a vehicle that takes anyone from point A to point B at the push of a button, transform mobility for everyone?

These are very different questions than those about sexier design, better mileage, or more premium options. And with different questions, will come different results.

There are some important premises about mobility (as opposed to just cars) that are the foundation for Google's exploration.

- Safety:
  What if you could reduce the 94 percent of accidents that are caused by human error?
- Human productivity and creativity:
  What if you could reclaim the billions of hours of human potential wasted in traffic?
- Accessibility:
  What if everyone could be mobile, with everyday destinations and new opportunities within reach of those who might otherwise be excluded by economics or disabilities?

Google's Self-Driving Car Teaches Us That

- The ability to capture and translate data may be the most important driver of mobility in the future.
- For an important group of customers, mobility is about utility over design.
- Car ownership may no longer be required to get on-demand mobility for anyone.
- Rapid experimentation and prototyping within a niche of unaddressed customer need may change the trajectory of an industry more quickly than ever before.

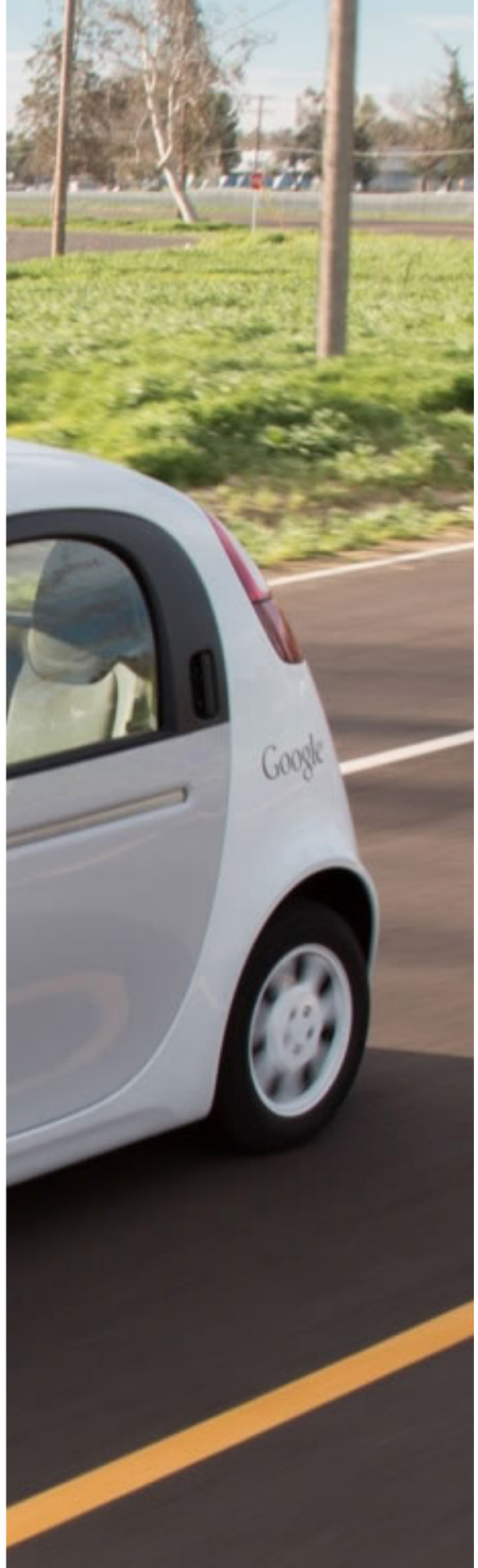
In the World of Technology, Form Follows Function

Why design a self-driving vehicle from the ground up? If the concept of safety is the starting point of the investigation, then re-imaging what a vehicle should look like in relationship to how it needs to perform when it's built for self-driving – is essential. The result is a rounded-shape prototype vehicle with an unobstructed 360 field of view for sensors that can capture visual data from two football fields away. That's essentially the distance required to safely stop an average car going 60 mph.

When Experimenting, Learning is More Important than Luxury

Google's design aesthetic has always been on the side of minimalism. So it is not unexpected that its approach to prototyping and experimenting with autonomous mobility is about designing for learning and not luxury. While the creature comforts and luxury finishes are absent, the functional needs of passengers (two seats), safety (seatbelts), urban cargo (space for passengers' belongings), and user interface (start-stop button and a screen that shows the route)—are what's included beyond the extensive built-in network of technology.

While this is a very Google approach to consumer-product experimentation, it may not be that far off from what the new mobility customers, particularly those in urban environments, are demanding. Basic utility is gaining priority over the value of envy-inducing design. Given that trend, Google may know more about the new mobility customer than the auto industry may have given them credit.



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"We've been bolting things onto cars for a long time and started to realize that that's very limiting when you are working within the constraint of an existing vehicle. We wanted to rethink a vehicle from a fresh sheet of paper, and what that vehicle needs to look like when it is custom built for self driving."

– Jaime Waydo,
Systems Engineer,
Google Self-Driving Cars

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Technology Must be Married with Purpose

Like Tesla with its software approach to the car, everything in the Google project is custom-made. Nothing is borrowed from other uses or purposes, which can result in limitations. Since it’s the software that makes the car self-driving, and it must therefore function flawlessly with handshakes between sensor and software, Google created their own computer. Designed to withstand the specific vibrations and temperatures of the driving environment, it’s fundamentally very different from someone’s office desktop.

With this kind of technology in place – other form-function issues are resolved such as no need for a steering wheel or the kind of brake pads that a conventional vehicle requires. And then extend that to what kind of insurance models this needs – such as lower rates and pay as you go insurance for non-owners, or even insurance premiums paid by car manufacturers and not riders.

Security and Privacy - the Two-Headed Monster

With data and safety at the core of the functionality of Google’s self-driving car project, cyber-security is a more critical issue than in your “normal” connected car with functionality focused on navigation and entertainment. Having your streaming media interrupted is a very different concern than hackers taking control of your vehicle. And with greater concerns around data and security often comes increased discussion around privacy. If you don’t own the car you are driving in, who has access to the information about your various destinations? Who will own the data from the many thousands of riders associated with a single on-demand autonomous vehicle?

What if the Future is Only 3-5 Years Away?

If self-driving cars quickly become mainstream, what might this mean not only for auto manufacturers, but also supply chain partners and service providers?

- What happens to the suppliers of safety equipment such as airbags if accidents become mitigated by sensors and software?
- What happens to the revenues from parking garages and meters when you never need to park?
- What happens to the number of cars that need to be manufactured each year if car utilization rises from its current 5-10% up to 75%? And if fewer people decide to own cars versus calling for an always available self-driving vehicle?
- How and who gets charged for insurance and do “premiums” fall?
- What happens to the energy industry if most self-driving cars are electric?

What Do Self-Driving Cars Mean to the Insurance Industry?

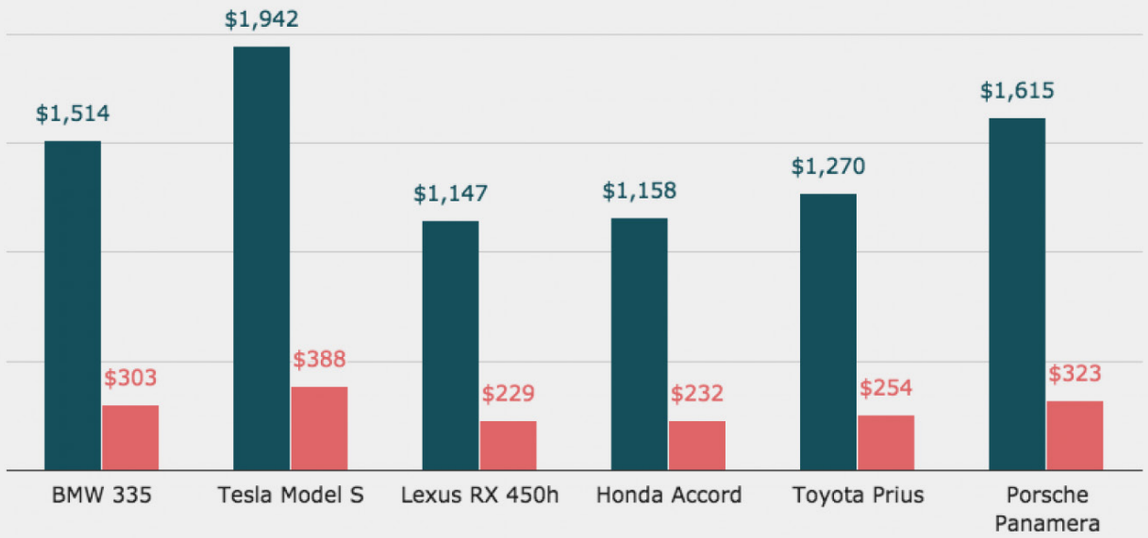
Self-driving cars have a near-perfect driving record in the past few years of road trials. In the few instances that they are involved in an accident, it is typically a result of human error. As the auto industry and technology companies continue to work through key challenges around the role of machines, regulations, ethics and liability, there is no denying the fact that this technology will challenge the status quo in the industry.

In addition, car manufacturers such as Tesla and insurers such as Metromile are introducing technologies that can segment periods of time where they can identify if the car is controlled by a human or a computer. These technologies help the industry make significant progress towards solving issues around whether liability rests with the driver or the manufacturer.

While many pundits are comfortable predicting the end of personal insurance, the more likely outcome is that self-driving cars will restructure the current insurance product and dramatically reduce the cost of insurance. Policies that protect self-driving cars will have lower premiums associated with Property Damage due to the near elimination of collision-related accidents (estimated at a 90% reduction) and lower costs of repairs resulting from different car designs. However, these policies will still need coverage insuring for uninsured motorists, break-ins and other weather-related incidents.

According to a recent research paper from The Fernstein Wire that collaborated with Metromile to develop an insurance pricing model which predicted that consumers who who travel 12,000 miles a year would pay an average of $250 per year with an annual savings of $1,000.

Estimated Auto Insurance Costs: Self-Driving Vs. Human-Driven Cars Of Same Model (Self-Driving Price In Red)



(Credit: Ferenstein Wire / Source: Metro Mile)

SOFTWARE IS EATING THE WORLD

- MARC ANDREESEN , WSJ, AUG 20, 2011

This famous quote from Marc Andreeson has proven to be true in many industries. While this has been slow to show up in the insurance industry. That is about to change and change quickly. As every industry depends heavily on technology, the use of digital technologies, software development and data analytics become core capabilities of the business. Insurers have to work hard to grow these capabilities organically or pay a lot of money to rent these capabilities from high priced consultants. As software continues to eat the world, companies such as Apple, Amazon, Google and Tesla that were born digital and have the core capabilities to succeed in this marketplace.

As the world converts everything analog into digital, technology also lowers barriers to entry and allows these enterprises that are Digital Natives to move into other industries through horizontal integration across their value chains. Tesla is a good example of an enterprise that is fundamentally a software company that makes a state of the art electric automobile. This has allowed them to expand with relative ease into other domains such as energy storage and distribution. Google is another example of a software company that has made several forays into adjacent markets. Google recently announced a comparative rating and shopping site for Personal Lines insurance in 21 states and using their search and data analytics capabilities to shake-up how insurance products are distributed in the United States. It is not a big stretch to imagine the largest retailer in the world, Amazon taking similar steps to challenge and radically change key components of the insurance value chain such as Distribution and Claims.

Over the past 3 years Apple and

Google have built on their strong expertise in smartphones, software and data to roll out platforms that are gradually entering our cars, our homes and even on our bodies. Apple has rolled out several components on their devices such as CarKit, HomeKit, HealthKit and ResearchKit that provide the platforms and APIs required to deliver secure, seamless, context-aware experiences in an always-connected world. In doing so they open up several interesting opportunities for hardware manufacturers and software developers to build a very robust ecosystem for the hyper-connected world. Apple (and Google) now have extremely accurate information about what we do on a daily basis when we are in the car, at home, at play and at work. They also have good information about our buying habits, how we exercise and the places we visit. This data can be aggregated to provide a more accurate, timely, comprehensive and complete picture of every customer instantaneously. For insurers this represents a potential threat as the gravity of data shifts to these technology providers. In other words tech companies like Apple, Google, Tesla and AirBnB who understand the customer better, have better actuarial and underwriting data and have the capabilities to exploit these opportunities better than insurers. It presents a scenario where insurers are dis-intermediated and relegated to less profitable portions of the insurance value chain. This is not a unlikely scenario as we have seen this happen to other services industries such as Telecommunications where Apple has taken substantial profits away from the likes of AT&T and Verizon by getting wireless carriers to bear a significant portion of the upfront costs of expensive phones.

CHAPTER 6

Insurance 3.0: building the new value chain of customer-centered innovation

RETHINK VALUE

REIMAGINE THE CUSTOMER EXPERIENCE

RECONSIDER CULTURE

REORIENT PROCESSES AND OPERATIONS

RE-ENGINEER IT

As we move into the next stage of evolution in the insurance industry – a time that is expected to be unlike any that has preceded it – there are important questions that the established industry leaders need to be considering.

For individuals and companies to begin to explore their own strategies and answers to these questions, we suggest a model for looking at the digitally driven forces reshaping the Insurance Industry.

- How do we build a more customer-centric approach, proactive advocacy and value delivery that is reflected throughout the entire value chain?
- How do we begin to derive value from the growing Sharing Economy, rather than be disrupted and made irrelevant by it within the next decade?
- How do we look ahead and see what non-traditional companies may become disrupters in the world of insurance, as well as how we might be disrupters in other adjacent industries?

RETHINK VALUE

REIMAGINE CUSTOMER EXPERIENCE

RECONSIDER CULTURE

REORIENT PROCESSES AND OPERATIONS

RE-ENGINEER IT

RETHINK VALUE

The Innovation Spectrum

With the exception of a few recent newcomers and skunk works teams in established companies, the traditional concept of innovation in the Insurance Industry has historically been relatively narrow in its view of the world. If the industry is to evolve into a truly digital business, there must be a pairing of a new view of innovation and the delivery of value. This pairing must generate discussion and progress that goes beyond the boundaries of the industry's current base product, mobility, asset ownership and personal risk – and into examining the values that can jumpstart the bigger and more dynamic concept of mobility.

Digital Business Drives Innovation

As technology and cultural changes continue to shift the way business is done on a global scale, companies can no longer thrive simply by being the best at delivering one form of value. No one approach to innovation is competitive for very long anymore. The new economic and social leaders will be organizations that are effective at tapping the entire spectrum of innovation. They will be those that are able to leverage their own 'native genius' while simultaneously collaborating with other firms, leveraging major cultural trends and entering into more value-driven relationships with their customers.

Understanding Value and Innovation

If we are to rethink value as a means to drive innovation, then this new viewpoint must be one focused on a fully reciprocal exchange of value with customers and partners. Value-driven relationships must break out of the boundaries of more traditional models of extraction with the 'consumer.'

A digital Insurance Industry will flourish only when the nature of competition has shifted from a focus on product features to delivering individualized consumer experiences.

Full-Spectrum Innovation and the Insurance Industry

Full-Spectrum Innovation is an important concept in framing new value propositions for the auto industry. At its core is the idea of creating value in every possible place, at any defining moment, and during all critical touch points—from culture and society to government to partners to end users. By rethinking what value should mean today and in the future, insurance companies can let go of long held assumptions, practices, and metrics - and create the next generation digital systems and experiences that will not only lead to new products, but jump start a new mobility industry.

What will it mean for the Insurance Industry to rethink, create, and measure value with customers, partners, suppliers, channels, influencers, and government agencies?

The Innovation Spectrum

- Framing new value propositions and digital experiences

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When social and economic forces shift and begin to change the way we see and relate to individuals and the world around us – the time is ripe for innovation.

Digital business strategy moves the focus from individual products to the creation of platforms and networks.

Technology changes both large and small companies' ability to quickly concept, prototype, pilot, manufacture, and launch products.

Understanding customer value and engaging in customer-centric activities defines innovation.

CULTURE	GOVERNMENT & LEGAL	BUSINESS MODELS, PLATFORMS & LEADERSHIP	MARKETS	DISTRIBUTION & PROCESSES	PRODUCTS & OFFERINGS	RELATIONSHIPS & COMMUNITY	BRAND & EXPERIENCE

Without the right legal frameworks, balancing the needs of the commons and the capacity for innovation can come to a standstill.

Markets ignored by traditional companies often become fertile ground for disruptive players.

Products can morph and add additional functionality overtime - through software, partnerships or complimentary services.

Brand and experience innovation reflects customers' values, desires, and world views.

The Innovation Spectrum in the Insurance Industry

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CULTURE

- On-demand services
- Social media
- Millennials and Digital Natives
- Sharing economy

GOVERNMENT & LEGAL

- Regulatory models for flexible pricing
- Public policy
- Privacy and security

BUSINESS MODELS, PLATFORMS & LEADERSHIP

- Aggregation and brokerage of vast networks of data
- Rise of new and decline of old revenue sources

MARKETS

- Millennials and previously "unprofitable" customers
- New form of marketing and PR
- Niche trumps mass to enter new markets

DISTRIBUTION & PROCESSES

- Freemium distribution
- Mobile apps
- Social networks
- White-label personal lines products

PRODUCTS & OFFERINGS

- Personal risk policies customized for asset-light lifestyle
- Simple mobile and Web products
- Continuous updates
- Customization of offerings

RELATIONSHIPS & COMMUNITY

- Co-creation and authentic relationships with customers
- Crowdsourcing
- Leverage public data
- New technology and industry partnerships

BRAND & EXPERIENCE

- Hip, urban branding
- "Word of mouth" outreach
- Accessible UI/UX
- Individualized experiences
- Experiential marketing
- High tech high touch

REIMAGINE THE CUSTOMER EXPERIENCE

The Need to Embrace Design Thinking and Human-Centered Processes

Innovation is about quickly transforming ideas into action. Successful companies of all sizes embrace small experiments and make "little bets" to create speed and reveal insights around the innovation they need to stay ahead of disruptive trends and have a chance to lead change in their industry.

Design thinking is a human-centered process that frames an approach to innovation seen through the eyes of the people who need and will use it. This is a multi-disciplinary team sport that brings together elements of art, engineering, business, anthropology, and technology in the service of solving problems that matter.

Teams need to embrace traits of creativity, collaboration, experimentation, left and right brain thinking, and user-centeredness. This enables:

- Fostering empathy with the people for whom you are designing.
- Generating volumes of ideas.
- Building multiple iterative prototypes.
- Sharing work in process with the people you're designing for.
- Shepherding new innovative solutions out to test in the world.

"The mission of design thinking is to translate observation into insights and insights into products and services that will improve lives."

– Tim Brown, CEO, IDEO
in "Change By Design"

Moving from Questions About Insuring Assets to Insuring Risk in the Sharing Economy

Leaders in design thinking are reframing questions and discarding the current architecture, structure and design of insurance products and services. They are taking a more systems thinking view of the concepts of mobility, personal risk, fractional asset ownership and the changing nature of risk in a digital world. Questions are then naturally reframed from:

"How can we protect assets?"
- to –
"What is the concept of personal risk?"
- to –
"How do we let the customer define and control the parameters that drive risk"

New technology investigations can also drive new ways of framing explorations about the nature of the customer-driver experience and cars. What if you believe that new autonomous car technology (such as that from Google) may create a world in which at least some vehicles no longer require a steering wheel and the various dials and controls of today's cars. The question about driver ergonomics might then be reframed into one around the values of multi-functional personal space in a mobile environment. Discussion about streaming media services may no longer be about a balance of media access with driver distraction, but be reframed into one about making the mobile experience more like the in-home experience.

Human Relationships and Digital Transformation

Digital business requires a fundamentally different and transparent relationship with customers and partners. Old ways of defining relationships as “360 degree views” or “share of wallet” need to be replaced with an emphasis on a model that helps customers get the value they desire from their relationship with the company. This relationship needs to be built upon characteristics of empathy, relevance, and respect.

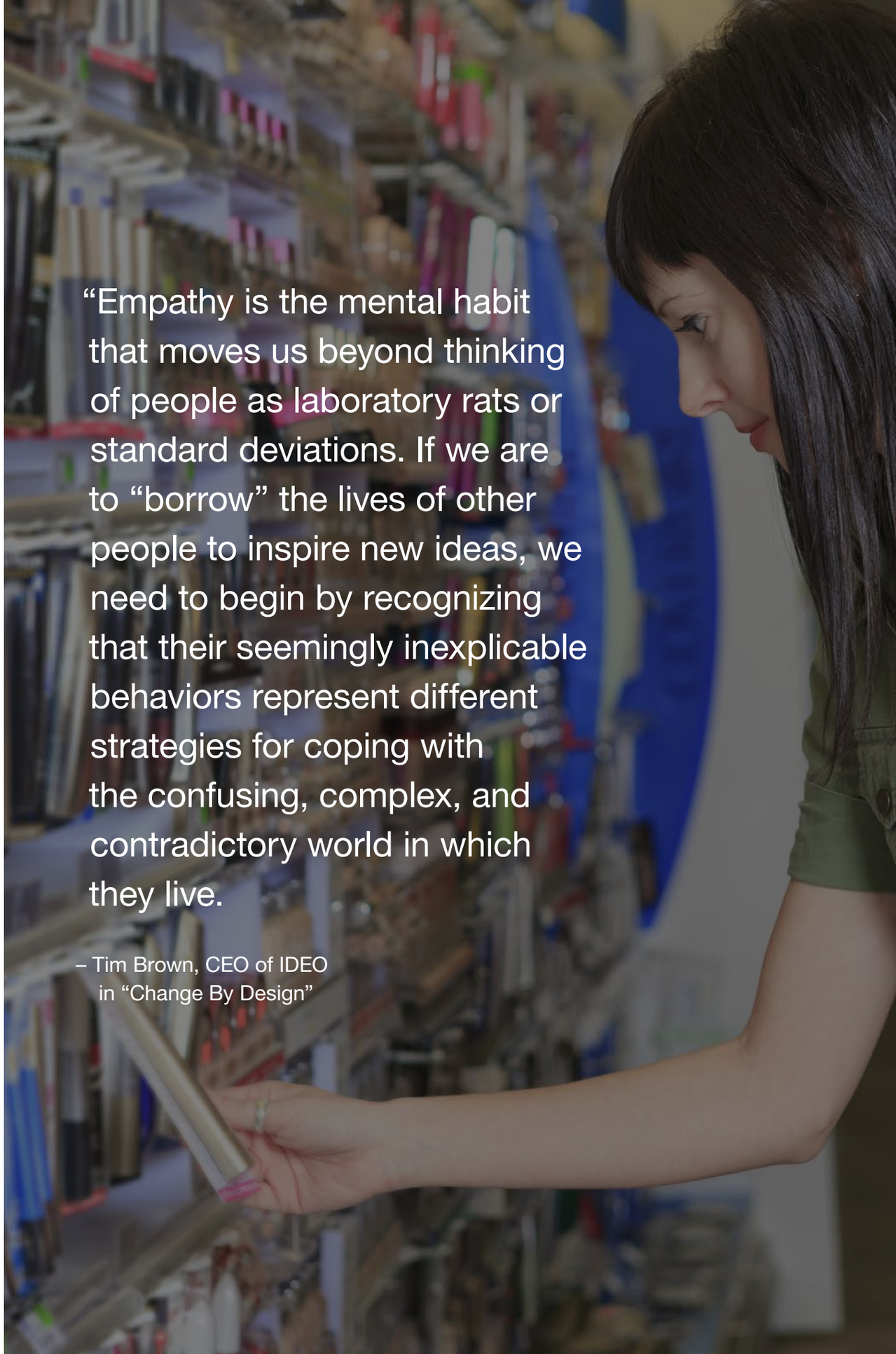
Empathy and Relevance

Digital business’ relationship to the customer experience represents a shift from focusing on what’s best from an enterprise’s viewpoint to the end user’s perspective. Today’s customers value personalization, customization, and even co-creation of their experiences. Companies must start by deeply understanding the context in which their product or service is used— why, where, how, and by whom—in order to create a design that meets the demands of today’s customer.

At the core of understanding the human-centric user experience is the concept of design thinking. Design thinking focuses on concepts of empathy and relevance—asking questions to reveal how the product or service provides value to the customer.

Respect for the Customer

Digital businesses must know their customers, understand their preferences, and act on their behalf. The digital-savvy individual has very little time or patience for the exploitative tendencies of traditional companies – intent on extracting value from them. Digital companies need to acknowledge the importance of earning customers’ trust and the difficulty of regaining it.



Nurturing Cultures of Innovation and Sustainability

Culture change is one of the most difficult things to effectively define and generate in an organization - particularly in large, established ones. Culture needs to be seen as a complement to the more formal, well-articulated rules of doing business. Yet many of the rules and guidelines of historic corporate success—including hierarchy, processes, and the elimination of risk—often stifle culture change and the innovation that can accompany it.

Embracing the tenants of the cultures of innovation and sustainability are necessary if the Insurance Industry is to successfully transform and succeed in a competitive digital marketplace. A company must look at its values, how it sees customers, and its internal culture to determine what it can change.

Embracing a culture of innovation and sustainability might entail broadening efforts from focusing on government mandated CO2 emissions levels to rethinking the manufacturing process, supply chain, and even recycling of vehicles themselves.

Innovation Culture

- Embraces design thinking and human-centered design.
- Measures what's meaningful.
- Looks outward, not just inward.
- Fosters learning more than knowing.
- Understands the value and parameters of risk and failure.
- Values the unstructured.

Sustainability Culture

- Moves the discussions from moral obligation to opportunity.
- Emphasizes execution as much as ideals.
- Integrates the discussion into the strategy and operations of the company.
- Eliminates competing priorities inside the company.
- Sees sustainable materials and processes as part of brand differentiation.
- Empowers teams that morph as new processes and ideas unfold.

"We love big bets. Our company culture encourages experimentation and the free flow of ideas."

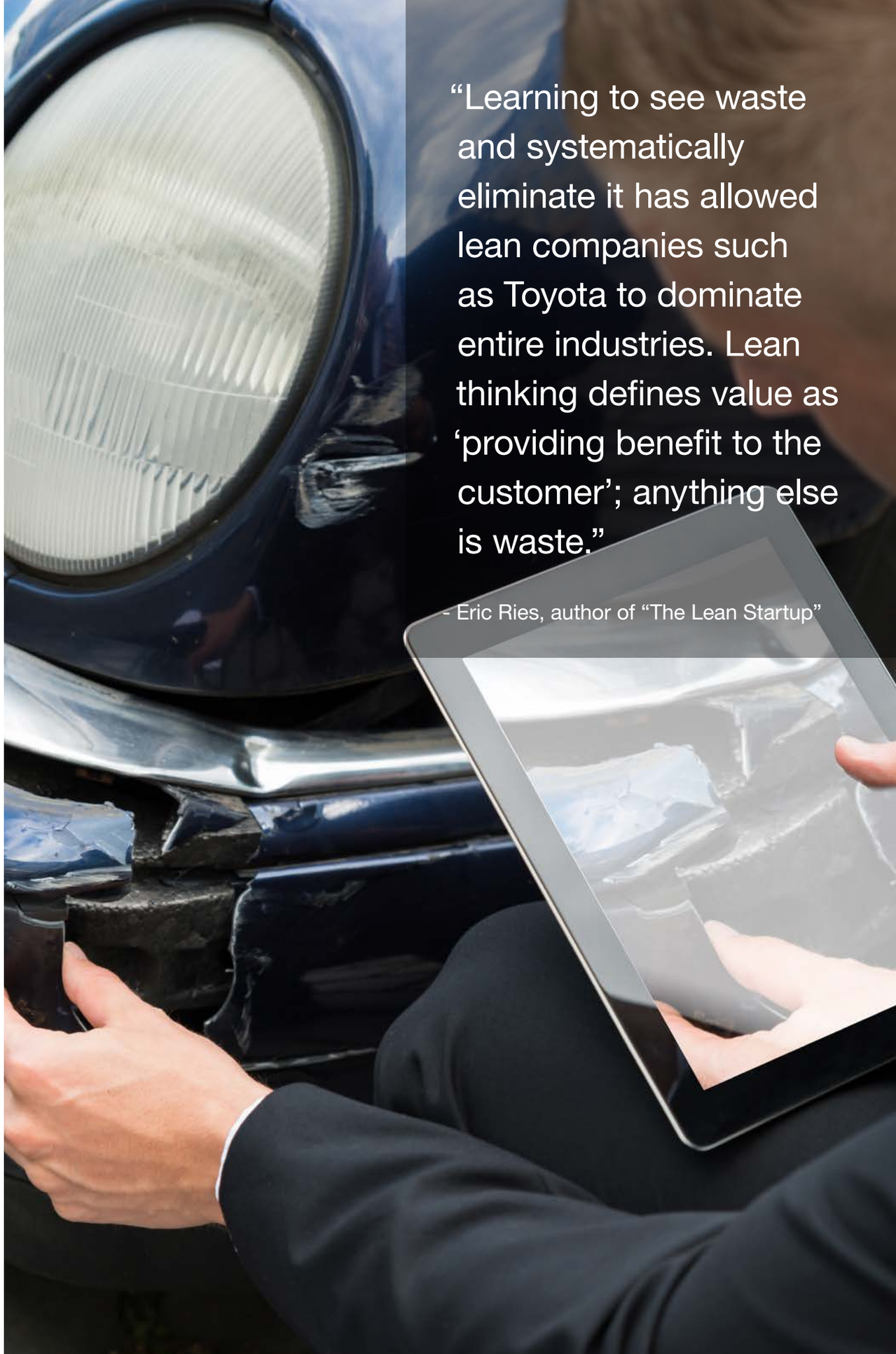
– Larry Page, CEO , Google

REORIENT PROCESSES AND OPERATIONS

Creating Organizations that Facilitate Customer Value and Engagement

The need to reorient processes and operations is a natural outcome of the exercise of rethinking value to map to customers' needs, and then building an appropriate culture of innovation around that. Historically, the organizational structure of the insruance industry has been driven by a need for internal efficiencies, resulting in vertically oriented functional structures. Customers, however, usually need to interact and have visibility with a company across vertical functions, given their desire to be able to access various groups simultaneously across the company. Customers want and need to engage horizontally.

In the digitally-driven company, where that which adds value to the customer experience reigns supreme, it would seem that insurance companies need to begin to rethink they way that they are organized, at least to the level that they present themselves to customers. In thinking about processes and the structures that follow them, insurance companies would be wise to begin with the question: "What is relevant to the customer and how do they want to access it?"



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RE-ENGINEER IT

The companies of Insurance 3.0 will thrive or stumble in a new dynamic global marketplace with rules of operation that are constantly being rewritten by changes in the surrounding social, cultural, economic, political, and technical landscapes. Digital technology and the information infrastructure that supports it are driving the sea change in values, customer experiences, operations, and technology. Historic competitive advantage, market valuations and reputations that took decades to create are susceptible to being displaced at any moment of time – from forces inside or outside the industry.

The key to success for businesses in this exciting and sometimes chaotic marketplace is Business Agility. Business Agility is the ability to sense changes and respond quickly and efficiently by adapting products, services, and operations to address emerging opportunities and challenges. Companies with business agility have technology in their DNA and the organizational capability to use it as a source of competitive advantage - to experimenting with options, proto-typing potential solutions, gaining insights from internal and external data, and quickly executing to drive meaningful business outcomes.

The successors in this new digital era of the insurance industry will be the companies with both the technology and cultural DNA that can imagine and implement the flexible IT systems and teams the world of business agility now demands.

Some of their most innovative and formidable future competitors of the leading auto OEMs "were born digital" – Tesla and Google for example. Unsaddled by legacy systems and practices, they have a significant structural advantage that allows them to rapidly enter markets and scale by leveraging new information technology infra-structure and processes. These structural advantages give them incredible business agility that they can effectively use to out-maneuver significantly larger and more established competitors.

As established insurance companies begin to evolve into the successful digital organizations of the future, they need to begin with the realization that the road to becoming a digital business goes through their IT functions. The challenge that many of them face is that they are saddled with IT that has organizational structures, management models, operational processes, workforces, and systems that were built to solve the "turn of the century" problems of the past.

The new insurance company IT environment must be a hybrid IT environment where Agile IT coexists with the well-established information systems of record. IT can no longer be limited to a 'come and fix it' utility within a business. Insurance companies must shift their focus from IT as an isolated department-centric utility to IT as a strategic capability deployed across the company. Creating this kind of environment will, by definition, require a flexible, extensible and reliable bridge between systems of Agile and traditional IT.

The new equation for IT success in the evolving digital insurance company:

AGILE IT + PLATFORM THINKING

Historic Barriers to IT Evolution in the Insurance Industry

- Perceived requirement that all information services be on premise
- Lack of acceptance and trust in cloud environments
- Focus on technology for internal purposes and not in collaboration with suppliers, strategic partners, and customers

The old industrial IT model focused ruthlessly on standardization, implementing command and control based management structures, and centralized teams designed to drive economies of scale and optimize unit costs. While providing success in addressing long-term projects or repeatable, recurring problems, this approach to IT has been accompanied by increased time to market, reduced flexibility and stifled innovation.

Agile IT is about building a new sustainable model for managing the “Business of IT.” It is purpose-built to be adaptive and extensible to meet the evolving IT needs of digital businesses. Using systems thinking, it addresses the skills, process, technology, systems, and organizational dynamics that are the underpinning of today’s digital businesses.

Agile IT focuses on how to implement new technology and processes in a faster and less capital-intensive manner. It provides the ability to achieve minimum efficient scale in any process without requiring the volume, size, and scale that used to be required to drive efficiency in the old industrialized IT model.

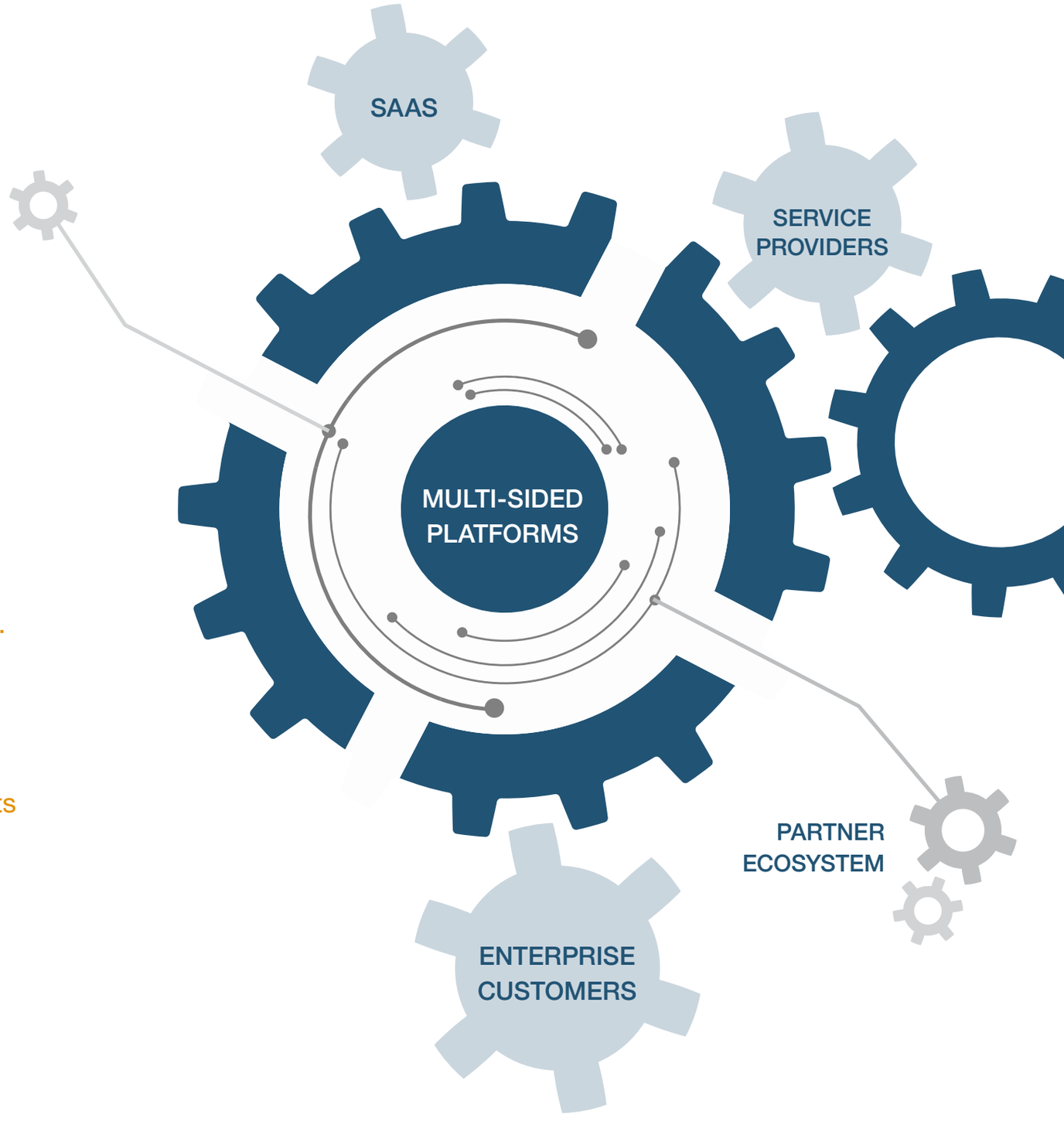
The digital insurance company that demands business agility requires an approach to IT that fosters experimentation and innovation at a rapid pace. Today’s IT organizations can adopt the new Agile IT model in an incremental and iterative way.

Platform Thinking

In order to build the Agile IT systems required by the emerging digital generation insurance company, robust and well-designed technological and strategic platforms must be put into place, often in parts of the company outside of the traditional IT domain. Platform Thinking focuses on creating more throughput and output for IT without resorting to traditional approaches to achieving scale.

Around the approach to Platform Thinking, the most important concerns for IT leaders will be to:

- Create scalable, secure, and extensible systems.
- Construct a highly cohesive set of services.
- Build with an ecosystem of partners.
- Loosely couple internal IT systems with partner systems.
- Consume IT as a service.
- Take advantage of open APIs.
- Provide value to all participants a cross the company.



How Multi-Sided Platforms Power Digital Business

IT-enabled insurance services involve players from two key groups—insurance institutions and their users—both of whom generate and use data. This set of interactions predated digital technologies. When IT was first implemented, it was to support existing business needs by use of computerized tools like networks, databases and support for statistical analysis.

As those systems grew, supported by their IT infrastructure, the complexity level increased exponentially.

Such systems, having not had the luxury of being designed from scratch, reflected analog business paradigms and were shaped by the presence of multiple, incompatible legacy systems. Because of their vulnerabilities and how difficult they were to understand, these systems were closed to each other, proprietary and difficult for end users to access and manipulate. These limitations meant that IT was applied to accelerate analog business offerings, but did not create opportunities for new value.

The major opportunity for technology to create new value in the Insurance Industry lies in creating and expanding digital platforms. Digital insurance platforms enable multiple, interlocking systems to connect with each other. It is in their overlap and interconnection that we can see entirely new opportunities to create value—along with new implications for technology tools and business decision makers.

In the insurance world, players might include end users, reselling agents, banks, regulators, underwriting data, claims management providers, outsourced customer service groups, APIs (application program interfaces) for custom apps, open source software and hardware, external app developers and networks of sensors—among many other functions.

New digital insurance platforms allow organizations to quickly provide or tap into crowdfunding, credit scoring, payment systems, individual data profiles (or little data), big data (the collection of all that little data), risk management, adjacent opportunities (like cross-selling related products much more effectively, or highly-automated investment of cash float), social media listening and conversation, social identity schemas and reputation management. Some might currently be their own systems, but it's important to see how so many of them stem from—and then drive—digital business platforms.

This combining and splitting of a new kind of platform allows parties to take advantage of their strongest innovation capabilities—for example in branding, or gathering new users through community-building, or process and data optimization—letting partners take on the other important parts of value creation, like stable, scalable back-end systems and legal or regulatory evolution.

Where traditional business strategy focused on creating a solid product, new business strategy is increasingly focusing on this concept of platforms—especially an exponentially-valuable model called a multi-sided platform—an extension of the concept of a two-sided market.

The multi-sided platform is perhaps best modeled by Apple's expansion of their shiny, well-designed iPhone (and iPad) to the entire platform which supports it (iTunes, iCloud, the iTunes Music Store) and then, the broader App Store, CarPlay, Apple Pay and developer/accessory ecosystems—among many others—which make the iPhone and iPad what they are today. It is not that Apple creates all of the value in its ecosystem, but that it enables creation of value by multiple parties—whether various product groups inside its own company or external vendors, developers and partners. It is this hosting of value creation that allowed Apple (and subsequently Android) to transform existing markets and create entirely new ones.

APPENDIX

ABOUT NTT INNOVATION INSTITUTE, INC.

NTT Innovation Institute, Inc. is the Silicon Valley-based, open innovation/applied research and development center of NTT Group. NTT i³ builds platforms that are transforming today's enterprises into the digital businesses of the future. Our platforms help clients engage with customers and markets in exciting new ways by pushing the boundaries of cloud computing, information security, machine learning, and the Social Network of Things. NTT i³ builds on the vast intellectual capital base of NTT Group, which invests more than $2.2 billion a year in R&D, with an extensive network of technology partners, engineers, and scientists.

NTT i³'s Core Platforms for Agile IT

In order to build the agile and hybrid IT systems required by the emerging digital generation of insurance companies, robust and well-designed technological and strategic platforms must be put into place, often inareas outside of the traditional IT domain. Legacy systems must be modified and integrated in a way that acknowledges complex privacy, speed, and reliability needs that were inconceivable at the time of their original design. And all of these IT systems need to be integrated and orchestrated in a way that makes the management of a dynamic hybrid information environment possible.

NTT i³ offers three platforms to help IT departments tackle these challenges:

Cloud Services Orchestration Platform

that allows IT departments to understand their application portfolios, migrate the most suited applications to the cloud and provide a seamless way to manage this new hybrid environment.

Global Threat Intelligence Platform

that brings real-time data-driven insights into the identification and understanding of cyber-security threats and needs.

An Elastic Services Edge Platform

that leverages network function virtualization (NFV) to push virtual network functions (VNF) to the edge of the enterprise's network, bringing agility, security, and flexibility into the infrastructure.

OTHER BOOKS FROM NTT INNOVATION INSTITUTE INC.

NTT INNOVATION INSTITUTE, INC.

The following books can be found at:
www.NTTI3.com/publications

Digital Business Transformation

The Social Network of Things

Agile IT: Today's IT for Tomorrow's Solutions

The Automotive Industry as a Digital Business

Insurance as a Digital Business V1.0

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