



Parametrics



The Dawn of Insurtech

“By harnessing innovative technologies through parametric insurance and data science, we provide cutting-edge insurance solutions to meet new and changing customer needs globally.”



— **BENOÎT CLAVERANNE**,
Chief Executive Officer of
International & New Markets

IN RECENT YEARS, NEW TECHNOLOGIES AND THE AVAILABILITY OF DATA HAVE OPENED A WORLD OF POSSIBILITIES FOR BUSINESSES AND THEIR CUSTOMERS, accompanied by drastic changes in customer profiles, needs, and expectations. Actors in various fields such as the banking, transportation, and hotel industries have adapted rapidly to these changes, offering customers disruptive solutions and leveraging the sharing economy. However, the insurance industry, one of the oldest businesses in existence, has a reputation for remaining outdated while others get ahead. Today, however, that is changing: the notion of “Insurtech” is beginning to emerge, encompassing new concepts, new business models, and new insurance solutions.

AT AXA, WE UNDERSTAND THE GREAT POTENTIAL OF COMBINING OUR PRACTICAL KNOWLEDGE, BUILT OVER THE YEARS, WITH THE POWER OF NEW TECHNOLOGIES AND DATA, to better serve our ever-evolving customers. For all types of clients, including governments, international institutions, large businesses, SMEs, entrepreneurs, and individuals throughout the world, new technologies are bringing a plethora of opportunities in terms of more access to insurance and better protection.

THIS PAPER AIMS TO EXPLORE HOW CERTAIN TECHNOLOGIES AND THEIR APPLICATION TO INSURANCE ARE BRINGING BETTER ANSWERS TO CUSTOMERS’ NEW AND EMERGING NEEDS. We will begin by focusing on the customer and marketplace changes taking place, followed by an overview of how technology is impacting the insurer. We will then explore some solutions being developed today that leverage the newest technologies and truly transform insurance for our customers.

The customer

- Market place changes:
The Connected Customer p.4
- New Customers:
The Emerging Customer p.5

The insurer

- New Data to Meet New Customer Needs p.8
- New Approaches to Insurance Leveraging Data:
Parametric Insurance p.9
- A glimpse into the future: Blockchain,
an additional lever to further automate,
secure, and optimize insurance p.11

The result

- Combining data, the parametric approach,
and blockchain technology: the launch of fizzy p.14
- Looking ahead p.15

The customer

Customers in today's digital age are part of a high-tech global economy that is significantly different from that of a few decades ago. Information storage, transmission, and computation has grown a great deal, and customers are shifting how they buy and what they buy. In general, customers are exploring solutions much more adapted to their personalized needs. Additionally, the high-tech global economy knows few geographical borders, bringing improved distribution to and increased demand from customers in developing, emerging, and developed countries alike.

MARKETPLACE CHANGES: THE CONNECTED CUSTOMER

— How we buy

WORLDWIDE, THERE IS A DRASTIC SHIFT IN THE WAY THAT CUSTOMERS LOOK FOR, compare, and purchase their products. Insurance is no exception. With 4,917 billion unique mobile users in the world, or a 66%¹ mobile phone penetration, transactions are increasingly taking place directly from customers' mobile devices.

ADDITIONALLY, CUSTOMERS ARE MORE DEMANDING WITH REGARDS TO THE PRODUCTS AND SERVICES THAT THEY BUY, seeking a much more customer-friendly purchasing process that is simple, quick, and transparent.

THE TRADITIONAL INSURANCE UNDERWRITING PROCESS, which includes systematic use of physical insurers, lengthy questionnaires and delays in responses, is less aligned with modern customer expectations, and is becoming obsolete for a part of the population.

FOR THAT REASON, INSURERS HAVE BEEN FORCED TO ADAPT HOW THEY DISTRIBUTE THEIR PRODUCTS, and the results are quite impressive. By leveraging new distribution channels

and leaner platforms found in connected objects and other technologies, insurers have simultaneously increased customer satisfaction and decreased costs, both for themselves and for their clients.

— What we buy

IN ADDITION TO HOW THEY PURCHASE, modern customers are also changing what they purchase. There is increasing demand for products tailored to individuals and experiences, and this goes for insurance as well.

CUSTOMERS ARE GRADUALLY SEEKING TO COVER PRODUCTS AND EXPERIENCES IN A WAY THAT IS ENTIRELY ADAPTED TO THEIR NEEDS AND ACTIVITIES, with a "pay-as-you-go" approach. Covers are beginning to emerge that protect customers' property and experiences for the time frame that they use them, rather than paying for them the whole year or more.

THIS FINDING HAS LED TO THE EMERGENCE OF WHAT IS BECOMING KNOWN AS "ITEMIZED INSURANCE".

When combined with innovative purchasing and distribution methods, it can lead to a fully satisfied customer with relevant pricing and quick claims processing.

NEW TECHNOLOGIES ARE ALSO BRINGING MORE DEMAND FOR INSURANCE from new types of clients. They account for a vast portion of the world population, yet have previously been uninsured... Emerging customers are one such example on which AXA has chosen to put a major focus.

THE EMERGING CUSTOMER

TOGETHER WITH EVOLVING CONSUMER HABITS, the global economy is also changing, bringing new customers and new needs for insurance. In emerging markets, tomorrow's middle class is rising out of poverty. For example, in India, 21% of the population was below the national poverty line in 2011, compared to almost 31% in 2009. However, the future middle class does not yet belong to the higher income earners who have access to insurance, and who make up around 10-15% of the population in emerging markets.

AXA DEFINES THIS SEGMENT AS EMERGING CUSTOMERS, which can represent up to 70-80% of a given population in each emerging market².

STILL UNSERVED IN TERMS OF INSURANCE, they bring with them an entire new set of customer needs and opportunities for insurance companies. Garance Wattez-Richard, Head of AXA Emerging Customers, explains in the following section how technology is making it possible to offer new insurance solutions adapted to the emerging customer.

— Meet the middle class of the future³

3 bn

LOWER INCOME PEOPLE IN EMERGING COUNTRIES...

> \$15 tr

... INCREASINGLY CONTRIBUTING TO THE WORLD'S CONSUMPTION...

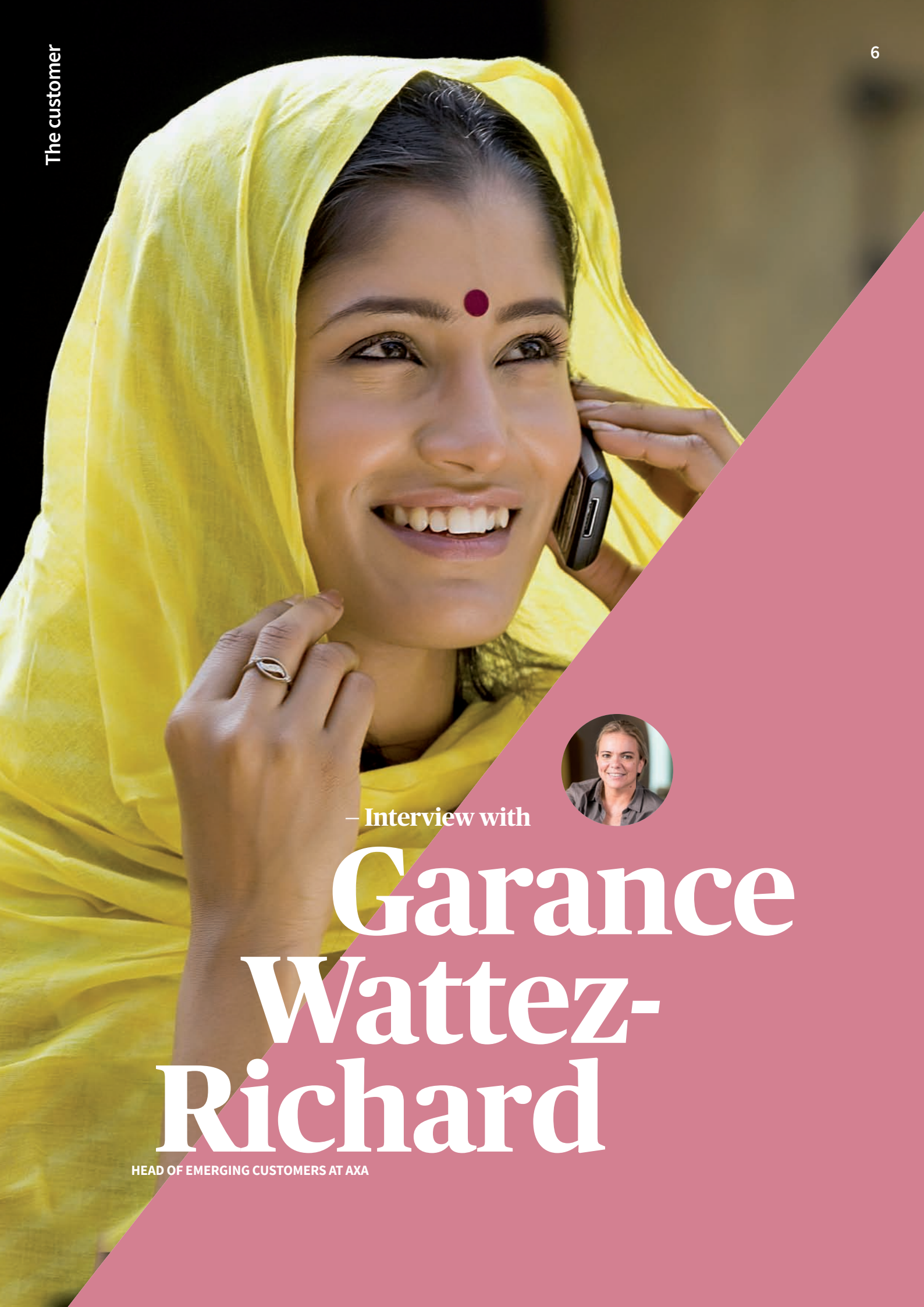
\$40 bn

... AND REPRESENTING ADDITIONAL INSURANCE REVENUES

IN 2015, FOR THE FIRST TIME IN HISTORY, the number of people in the consuming class exceeded the number still struggling to meet their most basic needs.

1_ Digital in 2017 Global Overview, We are Social <https://wearesocial.com/special-reports/digital-in-2017-global-overview>
2_ Information from national income data cited by Garance Wattez-Richard, Head of AXA Emerging Customers
3_ Sources: McKinsey, The Microinsurance Network, Leapfrog Investments





– Interview with

Garance Wattez- Richard

HEAD OF EMERGING CUSTOMERS AT AXA

What and who are emerging customers?

— **GWR:** Emerging customers are customers who principally live in emerging markets. They are the group of people on their way to constituting the middle class of tomorrow, and in some cases, already do today. They are not people below the poverty line, living in scarcity and difficult to address insurance-wise except through government programs. But, they remain unserved and unprotected by insurance. I am wary of defining them in monetary terms, as someone who earns \$3.00 a day in Nigeria will have a very different socio-economic status and purchasing power from someone earning that amount in Thailand or Mexico. As such, I tend to define them in qualitative terms: they can be individuals or small entrepreneurs. They are the bakers, school teachers, construction workers and nurses of the emerging market, urban or rural, and they represent between 70-80% of a given population in each emerging market.

What risks do emerging customers want covered?

— **GWR:** The basic risks that emerging customers seek coverage for do not significantly differ from other segments of the population. They are concerned by the risk of passing away without securing the future of their families, of losing their collateralized assets on which they took out loans, by their health, and by the education of their children. Emerging customers are highly aware of these risks, and possess a very wide array of informal risk management strategies – they multiply the number of people who owe them money, don't collect their debt so that when the time comes they have money at hand, they buy a fridge that is very well taken care of so that they can sell it easily, they are a farmer but have a night job, they are a nurse but have a day job, etc. Essentially, they multiply their sources of risk and manage them.

What type of insurance product do they seek?

— **GWR:** Although they don't differ significantly in the risks they want covered, they do differ in the types of products they need. One of the usual mistakes made is to think that emerging customer insurance is just taking traditional insurance and shrinking it. This is not true on many levels. Indeed, we have very little information about the emerging customer, so we can't design the insurance product in the traditional way, with an accurate risk profile of customer, exclusions, etc. They are also characterized as not being reachable by traditional insurance channels (e.g. insurance agents, insurance brokerage), so to distribute insurance in emerging markets, we must design very simple

products to be distributed with new channels (e.g. microfinance institutions, telcos, or other distribution partners). Many times, the products must be indemnity-based (e.g. "hospicash", an in-patient hospitalization insurance), simple, and scalable.

How is technology helping insurers address the needs of emerging customers?

— **GWR:** The main channel that is used to distribute and scale insurance in emerging markets is mobile. Many times, we inform and remind clients on a weekly basis through SMS that they are insured, under what conditions, and what number to call. We also use WhatsApp to train local distributors through an educational video distributed to a group of agents so that they can ask questions and interact. In certain markets, such as Kenya or India, where mobile payments exist, we aim to settle claims through digital money.

What are some challenges and opportunities?

— **GWR:** One challenge is to make insurance in emerging markets sustainable. Indeed, if customers arrive at the end of the year and haven't had a claim, they can be left wanting. As such, we develop value-added services, where even if nothing bad has happened to the customer, they have access to medical call centers, mobile health services, etc. One opportunity is that the developments taking place with emerging customers are also allowing insurers to innovate, be more agile, and learn from new markets. Essentially, they are allowing us to improve the way we deliver insurance. Finally, AXA has realized that it can't be the world's preferred insurance if it only addresses 3/10 of the people today. Tapping into the 7/10 emerging customers is key.

The insurer

Digital technology is impacting the entire insurance value chain, from new product development, to dynamic pricing and underwriting, to better marketing using Big Data analytics, to smarter distribution, and finally, to optimized policy and claims management. By leveraging this new technology and data, insurers are opening a world of possibilities to meet the needs of emerging and more connected customers.

NEW DATA TO MEET NEW CUSTOMER NEEDS

IN ADDITION TO THE CUSTOMER'S PURCHASING TRENDS, in today's data age, insurers, in agreement with customers, can have access to more information about their risks, and in real time. With the Internet-of-Things (IoT) fast becoming a fixture in some industries, transformative business applications and many opportunities are at hand. As a definition, IoT is the network of physical objects or "things" embedded with electronics, software, sensors, and network connectivity, which enables these objects to collect and exchange data¹. "Smart City" initiatives (cities using data to better manage resources), connected cars, smart houses and wearables, all largely fall under the IoT umbrella. Using this data, insurers can better understand specific client behaviors and thus better tailor their products to each client. Big data also allows us to gain access to information on flight paths, and more.

ADDITIONALLY, WITH SATELLITE DATA BECOMING MUCH MORE GRANULAR, PRECISE, AND ACCURATE, we also have access to much more data about the Earth in real time. We are gathering data on wind speed, wave height, plant vegetation, and more. Furthermore, as drones are becoming more and more common and powerful, we will have the potential to gather even more Earth data.

THIS DATA CAN BE USED TO DESIGN AND OFFER VARIOUS INSURANCE SOLUTIONS for many types of clients in a highly optimized manner, removing the reliance on experts to verify losses on the field. For example, we can now insure a smallholder farmer's crops in a remote location from a decrease in yield caused by adverse weather.

THE KEY FOR INSURERS IS FIGURING OUT HOW TO PROCESS THAT DATA, and how to use it to offer our customers better products. With the use of sophisticated Big Data processing methods, insurers are designing products that truly fit the specific needs of customers, no matter who the customer is, where they may be located, and what they may need. Insurers are also leveraging new technologies to optimize the insurance process, cutting



"New technology helps optimize key phases of insurance, including pricing and underwriting, and allows for significantly faster payouts, which guarantee customer satisfaction from start to finish."

JEAN DROUFFE,
AXA Chief Executive Officer in Singapore

out historically costly and lengthy steps, thus bringing real benefits to customers. One solution that is truly beneficial to customers is parametric insurance.

NEW APPROACHES TO INSURANCE LEVERAGING NEW DATA: PARAMETRIC INSURANCE

THANKS TO TODAY'S SOPHISTICATED DATA PROCESSING METHODS, any exposure that can be measured can, theoretically, be insured. From that finding, parametric insurance was born.

PARAMETRIC INSURANCE LEVERAGES AN INNOVATIVE INSURANCE MODEL BASED ON TECHNOLOGY AND BIG DATA PROCESSING METHODS

that radically optimizes insurance and amplifies the scope of the insurable. AXA Global Parametrics, the AXA Group's subsidiary dedicated to this approach, applies a simple method: the insurance product is built based on an independent parameter that is correlated to the client's losses and claims payments are triggered automatically if an agreed-upon threshold is reached, without a lengthy claims investigation. As the parametric model is based on pre-defined indexes rather than actual losses, it offers customers real efficiency benefits. Additionally, parametric triggers are based on data that is neutral and clear, making it a particularly useful solution in cases such as managing weather volatility and natural disasters.

FOR EXAMPLE, PARAMETRIC INSURANCE IS A REAL GAME CHANGER FOR HOMEOWNERS in areas prone to natural disasters such as hurricanes, earthquakes, and more. If the pre-set

conditions are met (for example, wind speed above 140 km/h), the buyer of a parametric cover would receive their payout within only a few days of the event, and potentially automatically.

This allows the buyer to secure sufficient post-event liquidity to manage the initial cash needs after such an event, such as for an emergency move, to begin repair work, or to meet any other needs. This significantly optimizes the insurance product for the customer, who in the absence of these pre-defined triggers would have had to embark on a lengthy claims adjustment process that could last up to a few months, and wouldn't have the much-needed cash in hand, in time.

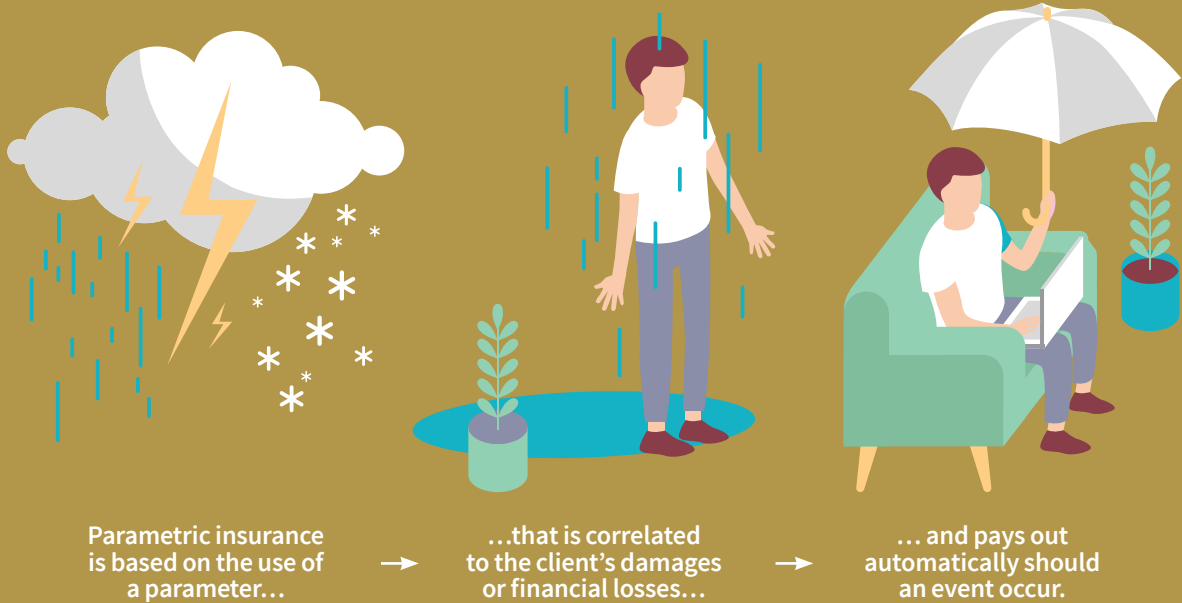
TODAY, AXA ALREADY OFFERS PARAMETRIC INSURANCE IN OVER 35 COUNTRIES ACROSS THE GLOBE, covering numerous risks, and working with clients including governments, international institutions, large corporations, SMEs, and individuals. The focus has mainly been on designing weather-based parametric products, as the availability of weather data is

— CONTINUED P.10

1_ SAS, The Internet of Things: Opportunities and Applications across Industries, December 2015 https://www.sas.com/content/dam/SAS/en_us/doc/research2/ii-internet-of-things-108110.pdf



How does it work?



— CONTINUED FROM P.9

unmatched. However, increasingly, AXA is focusing on developing retail-parametric products, to protect individuals against various risks and in an “itemized” manner. AXA has, for example, created an innovative flight delay product which is described in The Result section.

FOR EMERGING MARKETS

ESPECIALLY, parametric insurance is a very well-adapted approach. With access to weather data on a global scale and in remote locations, pricing is much more economical, as there is no need to send



“Combining parametric insurance and existing distribution channels in a creative way allows us to bridge the protection gap in emerging markets, and bring innovative insurance solutions to all.”

TANGUY TOUFFUT,
Chief Executive Officer of AXA Global Parametrics

a loss adjuster to the field, and there are no claims handling costs. Additionally, as the weather parameter triggers the claims payment, in case of a weather event such as a drought damaging a smallholder farmers’ crops, the farmer receives their payout within a few days (versus months with traditional insurance). This allows farmers to replant, and avoids them having to sell their own productive goods and falling into a poverty trap. By combining parametric insurance with existing distribution channels (e.g. local banks, seed & fertilizer distributors, etc.), parametric insurance is a real means to increase insurance penetration in the emerging customer segment, contributing to food security and a more resilient emerging middle class.

TRADITIONALLY LIMITED TO LARGE-COMPANY CATASTROPHE BONDS, parametric insurance has the potential to streamline risk management, lower costs, and increase customer satisfaction by removing uncertainty. Parametric insurance, combined with emerging technologies such as blockchain, can have a

significant impact on the insurer, as it could allow parametric policies to reach individual customers, cover a wide range of eventualities, and reach a much broader audience.

A GLIMPSE INTO THE FUTURE: BLOCKCHAIN, AN ADDITIONAL LEVER TO FURTHER AUTOMATE, SECURE, AND OPTIMIZE INSURANCE

— Definition of blockchain

THE EMERGENCE OF BLOCKCHAIN, a digital ledger in which transactions are made in bitcoin or another cryptocurrency and are recorded chronologically and publicly, is an important breakthrough

taking place, potentially allowing to scale and secure parametric contracts for a wider public. Blockchain is highly relevant for optimizing insurance as it allows for decentralized insurance, having the power to truly disrupt the insurance industry on a few levels, making it more accessible, more local, and more varied. Laurent Benichou, Director of R&D at AXA Next speaks in the following section about the trends, challenges, and opportunities of blockchain for insurance.



Parametric insurance is a solution that solves main pain points in traditional insurance for both customers and insurers



Customer pain points

Claims payment take too long

Too costly

Compensation perceived as being “influenced” by insurer

Not adapted to my case

Not available in my location

Our parametric solution

Claims payment is automatic and received within a few days

Less costly (no claims handling costs) and adapted to the customer’s budget and risk aversion

Compensation triggered by independent weather parameters

Tailor-made & transparent

Available globally



Insurer pain points

Risk of moral hazard

Risk of adverse selection

Costly distribution

Our parametric solution

As the pay-out does not depend on actual losses, the policyholder’s behavior cannot affect the likelihood of a claim

Parametric insurance is based on third party data, thus reducing the chance that informational asymmetries can be exploited

Parametric insurance easily combines with existing distribution channels, allowing for affordable distribution in emerging markets, for example





– Interview with

Laurent Benichou

DIRECTOR OF R&D AT AXA NEXT

How would you define blockchain in a straightforward manner?

— **LB:** In my view, a blockchain is a database that provides read/write access rights to all contributors. Even though everybody can contribute, the system is completely secured and encrypted, thus all transactions that are written are safe and accurate. It's raw content, transaction block by transaction block.

How does blockchain optimize insurance?

— **LB:** By definition, an insurer is a central authority which acts as a gate between users and investors. In practice, at the beginning of the year, customers will purchase their commodity, creating the capital that will be used to indemnify the customers that have a claim. Meanwhile, the insurer will identify if this is a true claim, how much the customer needs to receive as indemnification, and provide the money to this person. If there is a way to know that one customer has a problem that should be indemnified, blockchain provides all the tools to do that automatically, and potentially with no insurer in the middle, as the capital would have been brought by all customers at the beginning. That's what we could call a threat to the incumbent, but we can get into that later. Additionally, today we primarily have car insurance, home insurance, and health insurance. However, by using data we can create any kind of insurance product. For example, if you have pollution detectors, you create a pollution insurance that is automated using both parametric insurance and blockchain to completely automate the process.

What are some opportunities at AXA?

— **LB:** The first opportunity leveraged at AXA is with parametric insurance. With the parametric approach and algorithms, we have elements of knowledge on whether the customer has had a problem or not, and thus whether they should be indemnified. One example is the flight delay product, *fizzy*, where we plug into the databases and can know whether a plane has been delayed, and by how much. In this example, we have set a delay threshold the system understands and the smart contracts directly indemnify the impacted traveler. With blockchain, we can completely automate the understanding of indemnification needs and the payment. The customer can verify in a public book that if the flight is delayed, then there will be payment, adding a layer of trust to provide a fund of crypto assets. Another opportunity is for asset management teams. Cryptocurrencies are exchanged on multiple networks, with daily volumes of more than \$5 bn and with values that vary as much as daily stock prices. There are markets such as Coin Market Cap

where we see the price of bitcoin and other cryptocurrencies vary a lot every day. Because AXA has financial assets, we can technically create a fund of crypto assets, an investment vehicle that could be provided by AXA Investment Managers for example.

What challenges exist?

— **LB:** One challenge of blockchain is that regulation is vague and sometimes nonexistent depending on the region. In certain countries, bitcoin is completely accepted by regulators, but in others either we do not know, or it is forbidden. Another challenge is that blockchain expertise is scarce. Blockchain is a broad field, there are many types, and no one is an expert on everything blockchain-related (e.g. various cryptography, consensus, proof of stake, etc.). As such, knowledge is limited and there is an HR problem at a global level, which explains the emergence of schools and books wanting to teach about blockchain. Finally, there is the maturity challenge – there is a lot of hype around blockchain but maturity is low. I would estimate that 95% of what you hear is still on an R&D level. Additionally, there is still low maturity of crypto currencies amongst customers, thus a blocking point for automating the insurance process from beginning to end.

What is AXA doing to better understand technology to be able to use it in the future?

— **LB:** The first thing we did was to launch *fizzy*, our flight delay product, to better understand the technology and its pros and cons on a very concrete level. We did that with the help of experts to improve AXA's knowledge on the topic. For example, we are working with a blockchain consortium called *LaBChain* that is made up of two parts. Firstly, a "think tank" that helps us increase our knowledge about blockchain in general, collaborating with banks, other insurers, and startups that focus on blockchain. Secondly, a "do tank" which is a group of projects aimed at designing proof-of-concept and use-cases of blockchain for insurance. This allows us to improve our know-how.

The result

In order to better respond to the needs of new customers, AXA strongly believes in combining the power of new data processing methods, innovative insurance models, and breakthrough technology such as blockchain. Today, AXA has tested this conviction with a real product that combines data, the parametric approach, and blockchain technology: introducing fizzy.

COMBINING DATA, THE PARAMETRIC APPROACH, AND BLOCKCHAIN TECHNOLOGY: THE LAUNCH OF FIZZY

IN 2017, AXA'S INNOVATION TEAMS CHALLENGED THEMSELVES TO REACH AN AMBITIOUS GOAL: design an insurance product that truly responds to the needs of the new customer and represents Insurtech. The teams quickly set out to design a product that leveraged both the parametric approach and blockchain, which was able to reach individual customers, and was scalable. The teams came up with an idea to offer travelers an automatic flight delay product, based on flight delay data from third parties, that would pay out instantly at the plane's landing: no lengthy questionnaire to purchase, no need to file a claim, and no need to wait for payment. About a year of work went into the design of the product, and in September 2017, AXA launched "fizzy".

FIZZY IS THE FIRST LIVE RETAIL PRODUCT WORLDWIDE COMING FROM A MAJOR INSURANCE GROUP THAT COMBINES PARAMETRIC INSURANCE AND BLOCKCHAIN TECHNOLOGY. fizzy offers travelers automatic and secure flight delay covers directly from their mobile devices. fizzy is fast, transparent, secure, and pays out automatically

without the need to file a claim. In summary, this insurance product truly responds to the previously mentioned customer pain points that exist in traditional insurance:

- 1. Claims payments are automatic** and received within minutes in the customer's bank account
- 2. The price is calculated based on data** and adjusted to each customer's specific flight path, as a "smart contract"
- Compensation is triggered by an **independent entity** (the Ethereum blockchain) using **independent flight delay data** (flightstats), thus not influenced by any other party
- The product is entirely tailor-made and transparent
- The product is going to be available **globally**

FIZZY TRULY RESPONDS TO THE NEW CUSTOMER NEEDS IDENTIFIED IN THE PREVIOUS SECTIONS and shows that insurers are able to adapt. It is an

Ethereum-based “smart contract”. This means that while a standard contract outlines the terms of the relationship, in most cases enforceable by law, a smart contract enforces a relationship with a cryptographic code. fizzy is linked to a platform based on Ethereum that will scan data sources for information on delayed flights. If those flights match an outstanding insurance policy, a payout is automatically triggered. fizzy breaks ground not only in the technology used, but also in its focus and market approach.

AXA STRONGLY BELIEVES THAT THE FUTURE OF INSURANCE WILL BE MADE POSSIBLE BY LEVERAGING THIS TYPE OF APPROACH: using the data available, sophisticated data processing methods, and secure payment and distribution channels that automate the insurance process.

LOOKING AHEAD

LOOKING AHEAD, FURTHER APPLICATIONS CAN BE IMAGINED IN OTHER SEGMENTS SUCH AS PROPERTY AND CASUALTY, home, and health coverage. Smaller parametric contracts such as fizzy could end up transforming how customers interact with the insurance sector. This example is AXA’s first live parametric retail product today, but our goal is to offer more coverage of this nature to a broader market.

AT AXA, WE ARE CONVINCED THAT THIS EXAMPLE OFFERS A MERE GLIMPSE INTO WHAT INSURANCE COULD LOOK LIKE IN THE NEAR FUTURE, a happier and simpler place for connected insurers and customers.





[axa.com](https://www.axa.com)