



# Can the insurance industry afford to ignore computable contracts?



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As the insurance industry is deeply engaged in its digital transformation, one key element has not evolved in years: the contract. Written by lawyers for lawyers and hardly understandable to customers, it has been resisting innovation for years, and has been a significant roadblock in streamlining processes. Could it be the next significant step in the innovation path for insurance players? More importantly, can they afford not to take it?

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**T**he insurance industry has undergone a series of profound changes in recent years because of the digital revolution. It has evolved in many ways all along the value chain, gaining in efficiency and making the customer journey easier from underwriting to claims management. However, one instrumental part of the insurance business has resisted this evolution so far.

## Contracts are the product

Whereas contracts simply regulate the delivery and payment for products or services in most industries, they serve a much more important purpose in insurance: they stipulate how customers will be compensated if certain events occur. In this, they are the central element of the insurance business. But this cornerstone still relies on an archaic medium. Unstructured data, stored on paper, unreadable by machines. Paper-based contracts require people to be involved at every step of the customer journey from underwriting to claims management. These human resources could be used to handle more valuable tasks instead. This is true in most industries, but particularly problematic for insurance where contracts are a critical component.

This has been a roadblock from the industry's perspective, and more importantly, it has been

a pain point for many customers. Many of them fail to understand their insurance policies and find it difficult to compare products.

## A new paradigm

A contract is an agreement between parties creating mutual obligations that are enforceable by law. A computable contract is one that includes enough detail and provides sufficient clarity as to provide unambiguous answers to any question related to its terms and conditions. Computable contracts can be represented in different ways for different purposes – as documents in “legalese” written by and for lawyers, or as computer programs. From a practical point of view, computable contracts are capable of automating execution.

They operate on a standardized digital model that can be easily readable by everyone, from legal experts to regular customers – and, of course, computers.

Potential benefits include automation, with nearly instant coverage checks and streamlined claim administration; transparency, by reducing information asymmetries between consumers and insurers; predictability, by reducing the ambiguity of some paper contracts; reflectivity, since a computable contract “knows” what input and output are

required; and product personalization thanks to coverage standardization.

The traditional contract is a major roadblock for the insurance industry. Making contracts computable is part of a significant push for innovation fueled by emerging technologies. It enables the contract to fit in a global modernized customer-centric ecosystem alongside other services, products and features, ranging from machine learning to satellite imagery and human speech recognition.

## The theory behind

The concept of Computable Contracts is a long time in the making. The idea dates to the 1990s, when Ian Grigg proposed the “Ricardian Contract”. This is defined by the fact the data elements of a contract exist digitally, separated from its textual template. Around this same time, Nick Szabo further defined how automated contracts would work. The principle of Computable Contracts is based on a fascinating and very active field of research: computational law. This specific branch of legal informatics aims at studying the mechanization of legal analysis. Stanford University, a trailblazer in this topic, has been working for years on pushing the frontier of legal technology through its dedicated research center, CodeX. By focusing on formalization of governmental regulations and enterprise policies and development of automated reasoning procedures for compliance checking, Stanford aims at bringing legal understanding and legal tools to everyone in society. Achieving this, according to the vision of scholars, will be instrumental in enhancing

access to justice, improving the legal system as a whole and bringing new levels of transparency and efficiency. “Computable contracts are sufficiently clearly defined as to get answers easily whether certain situations comply with its terms. It is therefore easily operationalizable, automatable and monitorable”, says Roland Vogl, Executive Director of the Stanford Program in Law, Sciences and Technology and Lecturer at Stanford Law School (see interview below).

This theoretical foundation is an integral part of what makes computable contracts a unique proposition. It is needed, as this technology stands at the conjunction between the very practical reality of an insurance contract that will have a direct impact on customers’ lives, and abstract notions. In order for computers to process the parameters of a claim automatically, computable contracts require achieving a comprehensive mathematical representation of real-life events. The challenge in successfully deploying this technology largely lies in bridging these two worlds flawlessly through a binding document.

As Michael Genesereth writes in “Computational Law – The Cop in the Backseat”: “One technical problem with Computational Law, familiar to many individuals with legal training, is due to the open texture of laws. Consider a municipal regulation stating «No vehicles in the park». On first blush this is fine, but it is really quite problematic. Just what constitutes a vehicle? Is a bicycle a vehicle? What about a skateboard?” According to him, a solution is to limit the application of Computational Law to cases where such issues can be externalized or marginalized.

## Redefining what an insurance product is

For insurance players, this technology represents significant potential. The different features of Computable Contracts enable a comprehensive value proposition for customers, but also reduced time to market, enhanced coverage analysis and portfolio merger simplification to name a few. More importantly, they represent a game-changer for customers.

In addition to enabling better services, increasing transparency and reducing ambiguities, it opens the door to **mass-customization through assembling standardized micro-guarantees**. This could open a new era in terms of customer experience, revolutionizing the financial industry by providing an unprecedented level of personalization **and transparency**.

## Computable Contracts in real life

There are already numerous different examples of successful deployment of this technology. AXA partners recently leveraged it to automate the application of contractual clauses of a portfolio of over 6.000 different insurance and assistance products as part of its transformation journey. When done manually, looking for a clause in a document, reading it, interpreting it and making a decision takes nearly 7 minutes in average. This time was brought down to little more than 2 minutes on average thanks to computable contracts.

Another striking example of the potential of

this technology happened during the Covid-19 first wave in 2020. Before the pandemic, the AXA Switzerland call center had relied on experienced agents with a strong background in contracts and an understanding of rarely changing travel restrictions to handle travel insurance claims. When an agent received a travel claim by telephone, they would work slowly through a static questionnaire to check what could be claimed for. However, when borders closed with immediate effect because of the Covid crisis, flights were cancelled, and people had to go into lockdown. The number of calls grew six-fold, and information constantly needed updating. This situation generated significant stress for call-center agents in Switzerland.

In a matter of weeks, a state-of-the-art Computable Contracts solution was deployed to replace the static questionnaire (Microsoft Forms) used by call center agents for each claim. It required users to have very little background in travel insurance, and this was a major bonus as additional call handlers had to be drafted in overnight. Additional functionalities include the possibility of providing callers with an immediate estimate of their payout.

## The road ahead

In spite of these successful proof of concepts, specific challenges have to be overcome before we can unlock the full potential of this technology and deliver it at scale. It requires additional research, but also long-term efforts in engineering and execution all along the

value chain, from software development and data management to marketing and sales.

An additional significant challenge is the matter of standardization. Insurance companies do not exist in a vacuum. They are part of an ecosystem along with customers, reinsurance companies, brokers, IT, regulators etc. Computable contracts bring value in solving local problems, but they will only deliver their full potential through industry-wide adoption. Just like any other groundbreaking financial service, Computable Contracts require for all industry players to unite around a shared representation of insurance products by agreeing on a set of universal standards. Those would also need to be adopted by financial institutions and regulators around the globe. This trend has already started in recent years as a community of innovators started organizing around initiatives such as CodeX.

There is still a long road ahead, but one thing we know for certain is that this technology is not just an idea anymore. It is happening now, and it has already started transforming our

business. The players who lag behind run the risk of losing their competitive edge by missing a strategic opportunity.

## Contacts



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## And tomorrow?

In the next 5 to 10 years Computable Contracts could evolve from an emerging tech to a fully-integrated new industry norm. Standardized data models could drive large-scale adoption, defining a new standard for customer experience. This technology could be the go-to for any

financial services legal contracts all over the globe. By that time, early adopters among insurers and other financial industries could emerge with a significant competitive advantage over the players who were late to the party

## 3 questions to...



### **Roland Vogl**

Executive Director of CodeX – The Stanford Center for Legal Informatics and Lecturer in Law at Stanford Law School

### **Why is the concept of Computable Contracts important for us as citizens?**

“As consumers and citizens, each of us has a multitude of contractual relationships. From your financial transactions to the last website you visited: everything is controlled by a contract. Computational law is the automation of legal reasoning. It empowers citizens by allowing for more transparency and control of the legal relationships that govern their lives. It levels the playing field between corporations and consumers by enabling them to understand the legalese. This is why I am personally tremendously excited about this tech.”

### **Why did AXA and Stanford University start a joint research stream in Computable Contracts?**

“Computable insurance contracts are one of the best application areas for computational law. AXA recognized that – in order to accomplish the vision behind computable insurance contracts – we need to leverage so called rules-driven AI and logic programming to generate insurance contracts that are understandable to a computer. We decided to bring together our respective experiences and expertise in the field to tackle some of the challenging research

questions that arise when we turn human-readable insurance contracts into computable contracts. Since the official kick-off one year ago, we have built a first-generation system, we held several workshops assembling a strong community of thought leaders from insurance companies, regulators, brokers, and adjacent industries.”

### **What are important next steps to unlock the value of Computable Contracts for society?**

“The key for it to succeed is to wow the consumers. In order to achieve this, we first need to build a community of developers and provide them with the tools to design products that are easy to use. And of course, we need the business buy-in. An important next step is to implement a shared, open standard that everyone can use to build solutions. This initiative is open to all industry players. The only way we will succeed is by working together. Join us!”

