

Foreword

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In J.P. Dardayrol, editor of the special issue *Blockchains and smart contracts: The technology of trust?* of *Réalités industrielles*, 2017.

For its issue editor and the editorial board, preparing a thematic issue of *Annales des Mines* always tends to be an adventure.¹ As we wend our way, fleshing out the topic chosen a year earlier, this exploration becomes a rich learning experience. Sharing what we have learned, the surprises encountered during this adventure, will prepare you for a structured reading of the articles in this issue devoted to blockchains and its uses. We propose an exploration along two trails: the one, among the players active in this new digital technology; the other, in the realm where this technology is being developed.

As for the players, we are forced to recognize that the organizations (firms, administrations, academic institutions, etc.) busy with this topic have mostly adopted a dynamic “pro-active” position. This positioning of players has, it seemed to us, to have occurred earlier and to have a wider scope than that of digital innovations in the past, such as the cloud. Is this evidence of our society's increasing appropriation and mastery of digital technology?

A second observation: all sorts of players are devoting thought to blockchains and applications of them; but two groups are especially busy: the big firms already implanted and start-ups. It is worth pointing out that more than a third of the articles in this special issue come from firms and institutions founded before 1900; and another third, from start-ups. Higher education is represented by a variety of institutions and persons (professors, researchers and students), whose articles focus on a range of subjects.

Looking more closely at projects and realizations, we, and some of the authors, have noticed a difference in terms of generations. The youngest persons and organizations adopt a position toward blockchains and, even more, smart contracts that might be described as a direct appropriation “without any complex”, whereas the organizations historically endowed with assets and processes generally adopt a more exploratory approach but one that reflects bold, innovative policies. With the advent of blockchain technology, we already observe, beyond this generational difference, the determination to reinvigorate innovation and competition between services and economic agents in several branches of the economy.

The second trail takes us into the realm of blockchain technology. We immediately realize that the word “blockchain” refers to neither an innovation nor an object. It refers, instead, to an intelligent, novel combination (variable depending on the players) of existing services and platforms for “jointly managing a distributed ledger/register”, a system for creating “confidence” among the parties involved but without a centralized organization or governance vested with broad, extraordinary powers.

¹ This article has been translated from French by Noal Mellott (Omaha Beach, France).

This innovation is radical in the world of trust and data bases, both characterized, for several decades now, by the stability of their models and concepts. It lies outside existing know-how, legal arrangements and business models and beyond the scope of the widely available platforms. As these articles evince, this innovation raises questions about several relations or processes of varied sorts: business-to-business (B2B) and even more business-to-consumer (B2C), administration-to-consumer (A2C) and consumer-to-consumer (C2C) — questions about trust or confidence, about efficiency and effectiveness, about making data reliable and traceable, about internal and external controls. Given the current state of experimentation and testing, it would be reckless to predict who will be among the winners and who will not.

The topic of smart contracts deserves special attention. Built on blockchains, these “contracts” are not actually contracts. They are software programs for assisting the preparation, execution and supervision of contracts. They bear the promise of a proliferation of contractual relations. According to several authors however, these smart contracts have to be better understood and further tested before being placed in operation. As much can be said about “oracles”, sources of information external to blockchains, since crucial questions are still hanging about how to make them secure and develop interfaces with the “physical” world.

This special issue looks toward “new futures”; it is rich with information and thoughts, a fortunate coincidence since it is the last issue of *Réalités Industrielles* to be devoted exclusively to digital technology. The series *Annales des Mines* does not intend to forsake the digital realm however. Quite to the contrary, it will renew its interest in this domain by launching in March 2018 a new quarterly, the fourth in the series, dedicated to digital technology: *Enjeux numériques (Digital issues)*. The first issue of this new quarterly will focus on artificial intelligence; the second, on the regulation of big data and the economy. A new layout has been worked out for publishing *Enjeux numériques* both on paper and on line in French; and on line in English under the title *Digital issues*. The editorial board would like to hear from you about our new project.

May the reading of this chain of articles stimulate your sense of adventure!