Introduction to "The Transformational Impact of Blockchain" minitrack

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Once known for being the technology underlying the Bitcoin cryptocurrency, Blockchain has since drawn attention for the possibilities raised by its intrinsic properties and mechanisms. The ledger at its core is shared across a network of peers, promoting resilience. Data can only be added (cryptographically) by a consensus of those peers, and, once written, are virtually immutable, promoting transparency, auditability, and increasing trust. Additionally, smart contracts – pieces of code that are executed automatically once predetermined conditions are met – further reduce uncertainty and promote confidence among stakeholders, to the point of dispensing with intermediaries.

The impact of these qualities is such that traditional business models – both in the private and public sector – are being challenged. From financial services to the electric grid, from supply chains to intellectual property rights management, from notary publics to personal identity mechanisms.

Nevertheless, we are still in the early days of Blockchain, and its potentially disruptive changes must be studied with traditional academic rigor, to avoid ill-conceived uses of the technology that may cause significant damage.

For this 2019 edition of the "The Transformational Impact of Blockchain" minitrack, 14 papers were submitted, and six papers were initially accepted for presentation, but one of them was withdrawn by its authors.

The first in the line-up is about a core subject in Blockchain: trust. It goes back to basics and looks at the role of trust from the user/consumer perspective, contributing to a deeper understanding of the role of trust in Blockchain adoption.

The very timely second paper comes in the wake of recent data breaches, abuses of personal information, and the fact that EU's General Data Protection Regulation (GDPR) came into effect. It discusses how to use Blockchain for managing personal data and identity, transferring control over own data back to the users and ensuring a high-level of security, trust, and transparency.

Paper number three addresses another situation where Blockchain fits well: mediating data exchanges among multiple stakeholders; in this case, pertaining to the lifecycle of a car and involving importer, retailer, road-traffic authority, insurer, and a car-sharing company.

Paper four goes deeper on Blockchain implementation specifics. It uses a design science research approach to improve efficiency of Ethereum smart contracts in an existing application designed for conducting microtransactions of electricity in a nanogrid environment. A set of general guidelines are ultimately provided for optimizing efficiency of Ethereum smart contracts in any application.

Finally, paper five provides a framework of application areas of Blockchain technology in supply chain management (SCM). It was developed and validated using cases from a systematic literature review and data about Blockchain-driven innovations in SCM. Five emerging areas are identified that extend the scope of what is normally mentioned in the literature.