

« From Data Blockchain to Business Process Blockchain »

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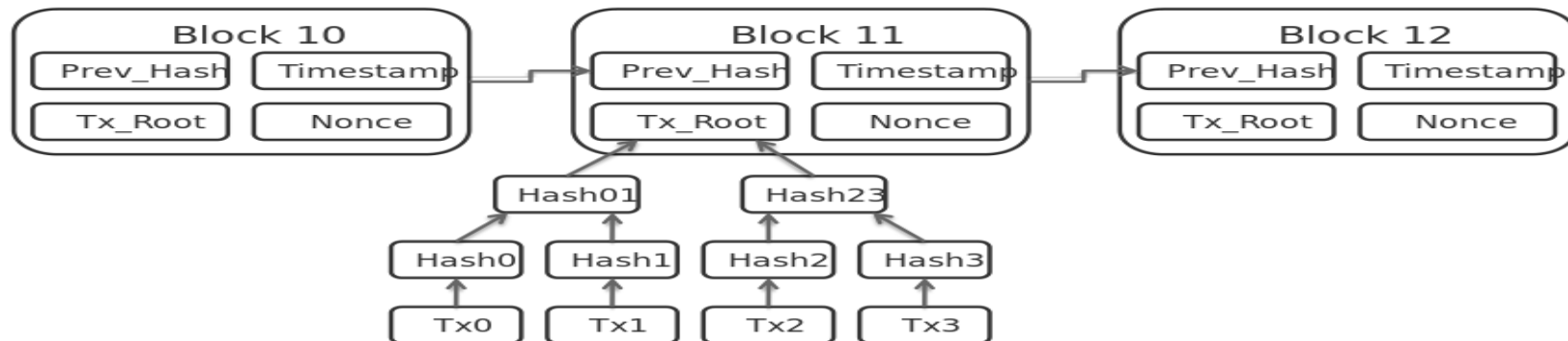
Biography

- Computer Engineering degree.
- Masters in Computer Science in INSA Lyon- France
- PhD INSA Lyon in collaboration with university of the Ryukyus, Japan.
- Research fellow: University of the Ryukyus, Ritsumeikan University, UKM Malaysia
- Invited professor: Beijing University of Technology, South China University of Technology, and the Institute of Visual Informatics in Malaysia.
- Since September 2010: associate professor in EFREI, a French engineering school located in Paris.
- President of Olab-Dynamics Association for Interdisciplinary Scientific Cooperation and Technology Transfer.
- Main topic is Collaborative Information Systems. This involves many topics including IS Architecture, Security, Semantic Web and semantic SOA.....

Blockchain

- Distributed Data Base in which the data, « stored » by the users, are verified, grouped and stored as blocks.
- The Blocks are linked and secured using Cryptography.
- Blocks are then are formed as a chain.

https://commons.wikimedia.org/wiki/File:Bitcoin_Block_Data.png



Intrinsic advantages?

- More **sharing**,
- **Trustful**,
- **Transparency**,
- Anonymity,
- Less authority,
- **Integrity**,
- **Decentralization.**

Smart contract

- *Smart contract*: a computer program that includes a set of transactions triggered when some conditions are verified.
- Updating Blockchain data can be done automatically by computer programs !
- Smart contracts are diffused and stored in the different nodes. Once called, a node can decide to execute them.

En bref.....

Blockchain can be seen as a **connected System of Systems**.

The choice of adopting Blockchain is done with regard to its **intrinsic** advantages for a given application or Business Filed

Smart Contract facilitates the collaboration, but:

Limitations of Blockchain

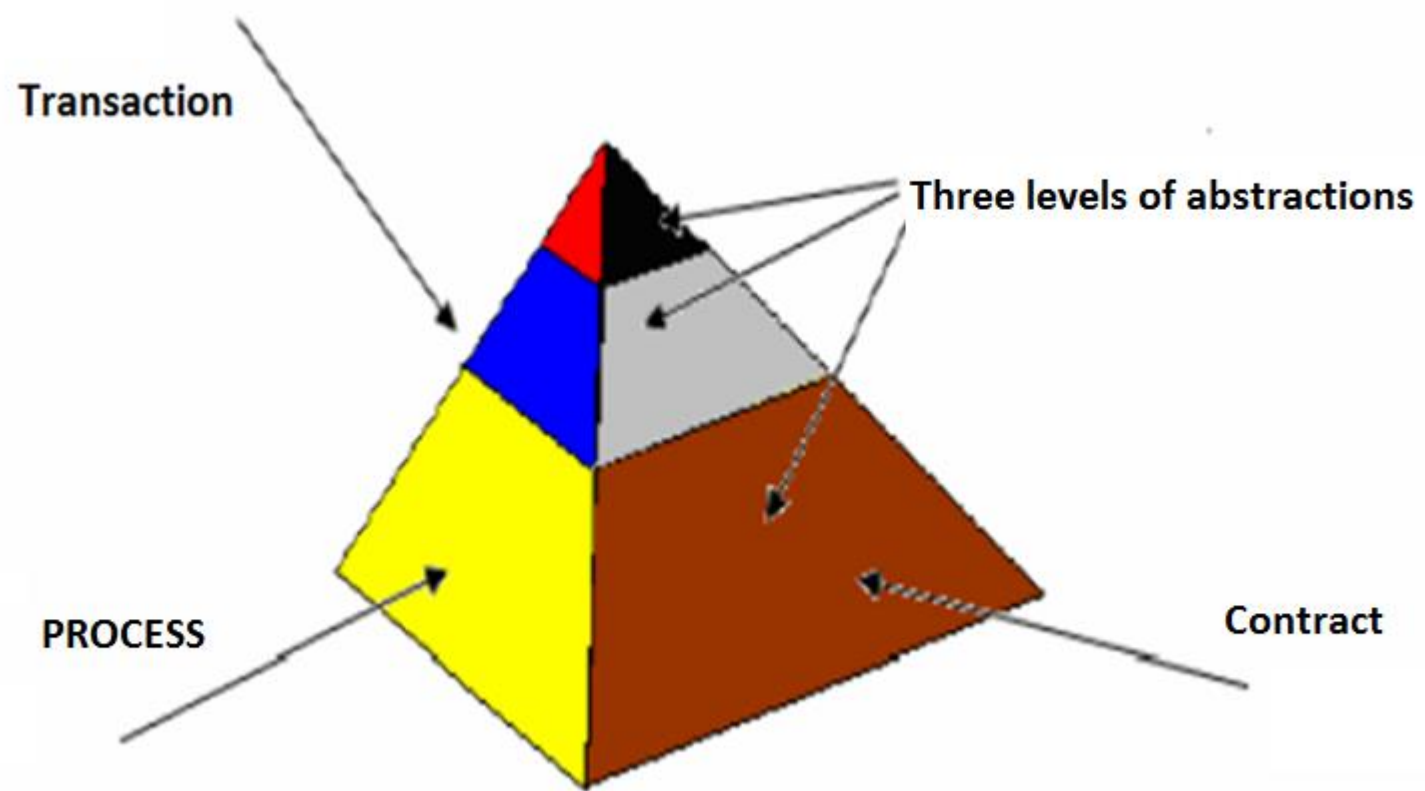
- Mining and consensus are time and resource consuming.
- Hard to define Smart contracts to align with Business needs.
- So far, no standards to help describing a SC as a service.
- No mechanisms for Searching/Matching,
- Hard to implement as BP (composite smart contract): maintain the distribution of the roles between partners of a collaboration, Multi-Stage validation.
- No **contractualization** framework.
- **No Adaptive or Late Binding**: no possibility to change the behavior after triggering the contract.
- How to trust transaction when it is necessary to relay on an external third party (**Oracle**)?
- Languages of smart contracts: technical (neither natural, nor Business).
- Relation with local and global parameters (e.g. time).
- Quality of Service.
- Confidentiality vs. Transparency

Motivation

- in a globalized marketplace where customers and service providers are on the Internet,
- lack of trust is a major obstacle to the “**On demand**” collaborative business → losing opportunities.
- need to collaborate with partner companies without prior knowledge or trust.
- the need of “disintermediation” (removal of intermediaries) while maintaining **Governance**.
- Anonymity vs. Identification.....

Solution Spec.

- Contract: the contract should be written to be a guarantee of legal security, financial constraints ... etc. So:
 - the contract must be written in both natural and business language.
- Business process: Blockchain Validation vs. Business Level Validation.
- Collaboration: the technical aspects of execution and process control in the definition of collaboration contract,
- Ambivalence: management of ambivalence at all levels, organizational, business, technical, legal.. etc. for each and all parties (Transverse.)
- Governance: we need a real governance framework for collaborative processes.



Process Facet

Generic level (conceptual level)

This level contains the generic features of the collaborative process : this model is independent of external use and internal execution.

Inter-organization Process level

takes into account the elements related to the cooperation in the process, like the monitoring and the inter-company coordination and control (control points, tests, integration ... etc). In this way, the partner only exposes the aspects of the process that he has to reveal.

Intra-organization model

This model is the detailed version of processes execution in the context of an individual organization (this concerns each partner). This model is obtained by translating descriptions of the part of the generic model associated with the partner concerned by associating detailed specifications of its process.

Contract Facet

The generic level

Provides guidelines for the contract components. It contains the legal, financial and regulatory, time-related and quality guidelines as well as actual goals and rules used for the verification of contractual promises (expressed in business clauses).

The cooperation level

It contains the main elements of cooperation as details of the contribution of each party the conditions according to which the processes will be monitored, how the incidents will be dealt with: the rules of consensus for example.

The implementation level

This layer makes it possible to refine each of the formal business clauses in terms of execution clauses. An execution clause is expressed in terms of rules, sufficiently specific and clear enough to form the executable contract.

Transaction facet

Generic level

Transactions from the business process of the collaborative project are seen here. This layer describes the models of the final macro-TRANSACTIONS made by each partner.

Composite transactions level (inter-organization)

This layer is responsible for inter-company transactions. Such an inter-company workflow takes into account the rules decided and accepted by all the partners to allow the satisfaction of the contact.

Atomic transactions level (intra-organization)

This layer forms a set of micro transactions of each company involved in the collaboration.

“They did not know it was impossible so they did it”

Mark Twain