



## Blockchain: the truth is in there



**Dirk Hermans, Blockchain solution owner**

*Based on the involvement in 15+ blockchain cases, what are the challenges of a Blockchain project? It is mostly not about the hard coding work of a typical Blockchain technology, that is not yet mature, both improving very fast. It is the other area's that make or break a Blockchain initiative. It is about the vision and business case, the collaboration aspect, the regulatory environment, standards and the integration aspects in legacy systems.*

### Challenges of Blockchain

A lot has been written and explained about how Blockchain works, and what tremendous benefits it could bring. There are numerous examples of cases described where Blockchain would be adequate. Over time, the same cases come to the front, and not (yet) in an enumeration of production systems, but a company X, Y and Z working together and realizing another Proof of Concept.



Also, we, KBC, participated in a number of Proof of Concepts, and have experience in different stages of a lifecycle, from investigating Blockchain as an idea to running Blockchain in production environment. Business managers will be able to tell what it implied to them for an individual Blockchain case, how hard the work was, and which the added value is to the customers in their business area.

So, I will not jump into that area, nor will I explain how blockchain works. In this article I will, based on the involvement in 15+ blockchain cases, try to explain what the challenges are of a Blockchain project. It is about the vision and business case, the collaboration aspect, the regulatory environment and the integration aspects in legacy systems. So, not about the hard coding work of a typical Blockchain technology. Skills are at hand for that. It is the other area's that make or break a Blockchain initiative. This is an analysis of the last 2 years, and the environment will change. I don't predict how. We learn from every project and bring this experience to the table when launching a new blockchain initiative.

### Vision and business case

It is easy to say that blockchain will disrupt a business domain, or that you can disintermediate a party in your domain. Bringing that into effect is not that easy. What are pitfalls and reflections on how to avoid them?

### Traps

Performing Proof of Concepts not only brings learning to the technology, but as well as to approaching a Blockchain project. Despite all techniques such as Design Thinking, Scrum, Agile, and SOFORT, there is no methodology that guarantees a Blockchain project to be a success. As many other new fields to discover, there are things to be approached differently.

A lot of the early blockchain projects was about building a prototype, as to see whether the technology would do what it promises. This was mainly in the year 2016 and 2017. To come to these prototypes, collaboration was present between the participating parties. Some with business capabilities, but most of the participants where ICT oriented as it was the technology to be discovered.

The Proof of concepts were successful projects. The technology proved to do what it promises, and it was done with multiple, often competing parties. Great achievements, with 2 main lessons learned:



1. The technology still has to mature a lot. It evolves a lot, and although the Bitcoin Blockchain is already running for almost 10 years, coming to enterprise Blockchain models is yet some bridges away. Enterprise Blockchains are still new, and open permission-less blockchains would not be usable by banks. We don't take Ether or Bitcoin on our balance sheet, which is needed to run on a public network and for privacy reasons, we will not put encrypted or client data on a blockchain (GDPR was going into effect as of May 2018).
2. After the Proof of Concept, the effort started to further have these POCs evolve into projects that would be industrialized. This didn't seem to be so easy. It would still take considerable effort to have production grade Blockchains and to set-up a cooperation model with more parties. Who would bear the costs? When will it be profitable? Will we start building a blockchain with a competitor? A company that looks at its customers is not immediately compelled by a solution that would also bring services to customers of competing banks. What will our competitive advantage be when we are on a platform for which all banks use the same solution? It would take some time to figure out how we would approach blockchain projects from a business perspective.

And as the technology was still maturing and a Proof of concept was not needed to test a technical hypothesis, the focus at the start of a project shifted to the alignment of vision and a roadmap, and after that a POC could be build. (Unless the POC was needed when the hypothesis was that collaborating parties would not be convinced without a POC)

The parts below provide a more detailed description of these non-technical challenges.

### Earnings models

Customer centricity is very important in our strategy. Projects that we pursue have effect on the customer, direct or indirect. Direct when it comes to new products and services, or speed in execution. The latter comes mainly from the indirect projects, where we focus on efficiency, as well as in front-end processes, as back-end processes. For Blockchain we use the same focus. Or it is about new products or services, or back-end efficiency.

Blockchain is mainly about collaboration. When it comes to improved compliance or risk management processes, blockchain can also be applied on internal distributed systems (we have multiple legal entities and multiple systems, so the distribution aspects could apply. I won't advocate the lack of trust between the departments here, but in essence, they may not all have mutual interests, hence implying some form of lack of trust).

Most of the projects are done with external parties outside of our organization, within the financial industry, or other sectors.



Our main project is the Trade Finance project we-trade (<http://we-trade.com>). Let's see what the different approaches could have been. I give this as an example, and maybe for this case the future model was quite obvious, but for other cases it may not be so obvious what the model would be.

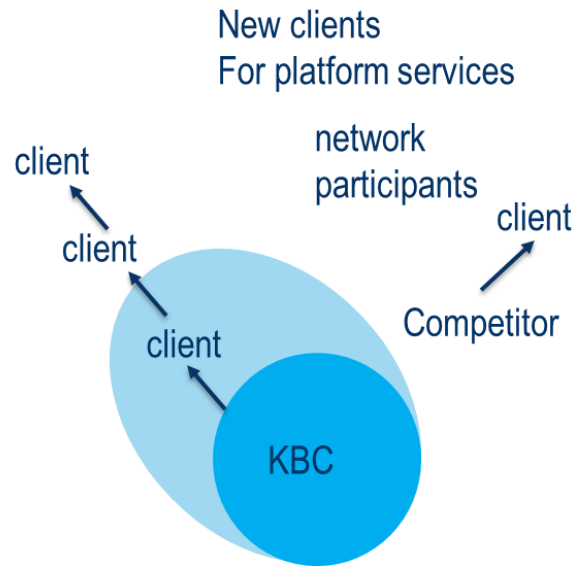
The trade finance model is a real-world physical 'Delivery versus Payment' model. The seller only wants to deliver the goods when he has received the money. And the customer only wants to pay the goods after he has received them. For the global overseas trade, the Letter of Credit brings a solution to this, with both the buyers and sellers bank involved to guarantee the correct execution of the agreements made. For e.g. European, or even local within-the-country trade, this Letter of Credit solution is too expensive. Here, we can bring in Blockchain. Bring buyer, seller, buyers bank and sellers bank onto a Blockchain and register all information on blockchain so that there is a clear trace of actions and accountability. The order, shipping info, buyer's bank's payment undertaking, .... Everything is transparently logged onto blockchain.

Now, who to start such a project with? Clients, banks, transporters, customs agencies, insurers, ...? They are all part of the process today, but you can't bring 50 parties around the table to build this solution. This would be an unworkable governance and no chance for success.

Let's look at different options.

#### *Local Model*

The Seller and the buyer are KBC customers. We wouldn't have to build a platform together with our competitors, or other external parties. So, we create a blockchain between KBC and the buyer and the seller as participants in the network. Transparency is brought in, data is distributed and both parties look at the same version of the data, traceability of what of orders and invoices are brought in. Looks like a blockchain case, not?



*Figure 1 : Local model*

As they both are clients of KBC, this could be implemented on the current KBC systems, where both parties already have access to. Much better knowledge of today's technology, no setting up of nodes, security adaptations in the company, license costs of the blockchain software.

Remember, using blockchain is only one layer in the stack, other parts need to be there anyhow. Is it worth an investment for a system N+1? Would the customer want to pay for it? How much? How much would the benefit be for KBC? Business case calculations which might not be favorable for a Blockchain project.

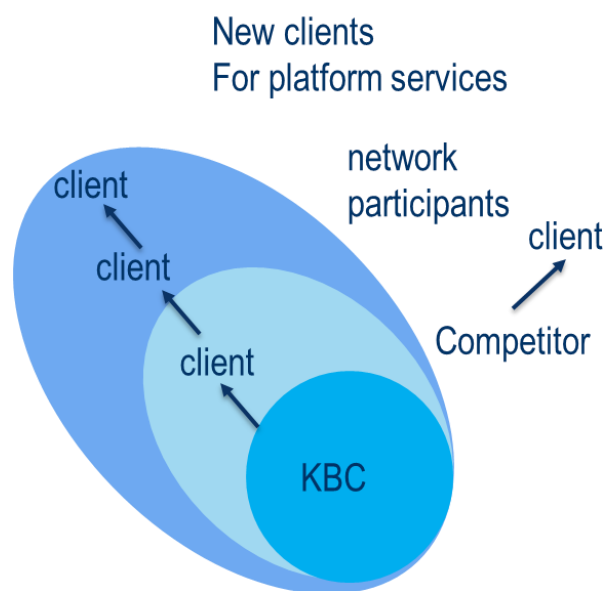
However, building it on Blockchain from the start gives opportunity to evolve the project towards a wider network later on. This means however investing more ourselves from the start. An example of such a case is the Maersk example<sup>1</sup>. Maersk created a Blockchain with IBM to facilitate the Maersk activities with different port authorities. The next step would be forming a Joint venture with IBM to have the Blockchain extended to other participants (competitors of Maersk). There was a lot of negative feedback from the competitors, and the Joint Venture concept has been abandoned.

<sup>1</sup> <https://www.gtreview.com/news/fintech/maersk-and-ibm-go-live-with-blockchain-supply-chain-platform-tradelens/>

This means Maersk has a sunk cost, as the solution will now not be elaborated in a Joint Venture with IBM. Other parties can join the collaboration model via IBM or Maersk, via a subscription model. It is not clear where the subscription fees go to. Maersk took the risk & investment to start with a local model, as this becoming a market standard would benefit them enormously, regardless of the benefits their competitors will have too.

*Value chain model*

With 2 parties we may not have a case for a blockchain network. Let's bring in insurance companies and customs. When they can add their data on the Blockchain, a broader network is created and all relevant parties in the network can work transparently on the same data. It would diminish document flow and increase speed of transactions.



*Figure 2: Value chain model*

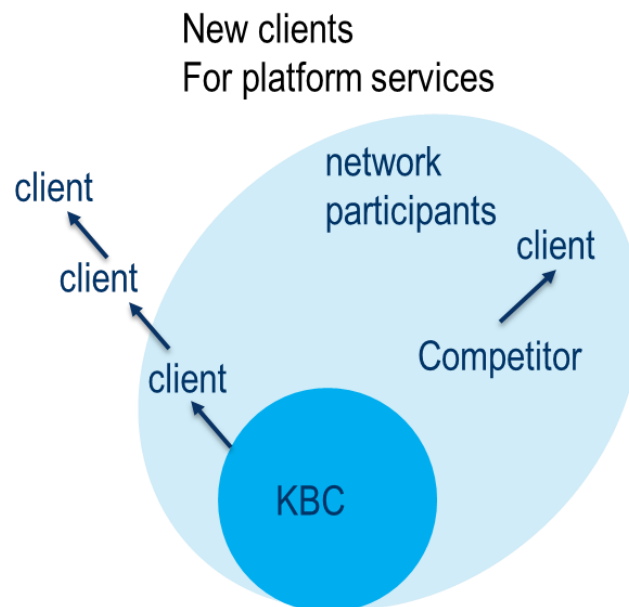
Will all intermediaries run a node? If we will give customs or insurers an interface to the Blockchain via a KBC node, what is different from the first scenario? Do we need a Blockchain? We could run a node for the customs, or the insurer, but what would the cost be, and would they be willing to pay? It also depends on what the added value would be for them.

Off course, if you expand the functionalities, the network can grow to an industry wide trade finance network which could bring in other parties as well, experts, government, .... How feasible is this? How hard do you believe in this dream so that you will fund it, knowing that the ROI will be years later? And what will the revenue model be?

Are participants willing to pay a transaction fee? Or are participants willing to pay a license? A lot of questions, very little answers, as this depends on the industry, the use case and your position in the competitive landscape.

### *Efficiency Model*

A third option is start from another distributed model with more participants: add one or more banks.



*Figure 3 : Efficiency model*



Buyers and sellers will a lot of times be located in another country, and hence will be client of a different bank than KBC. It would then make sense to include other banks to start up a consortium. A buyer A with Bank X can then be in the same network as Seller B with Bank Z. Both banks provide access to the blockchain for the clients via the current access to the bank's network (reusing KYC, Business dashboards, ...).

So, if we build it on Blockchain, we could onboard other banks too under a licensing model and get revenue that will pay back our initial investment. Other network participants that play a role in Trade Finance (Credit insurers, certificate issuers, ...) can also be added to the network for increased efficiency.

Hypothesis to be tested:

- Other banks are willing to pay a license;
- Other banks are is willing to participate in building the solution to benefit from future revenue when other banks using the platform;
- Other participants are ready to invest to be part of the network, and a cost/revenue model needs to be defined. All participants in the network need an added value from the network, why would they otherwise invest in it, if does not bring sufficient benefits for them.

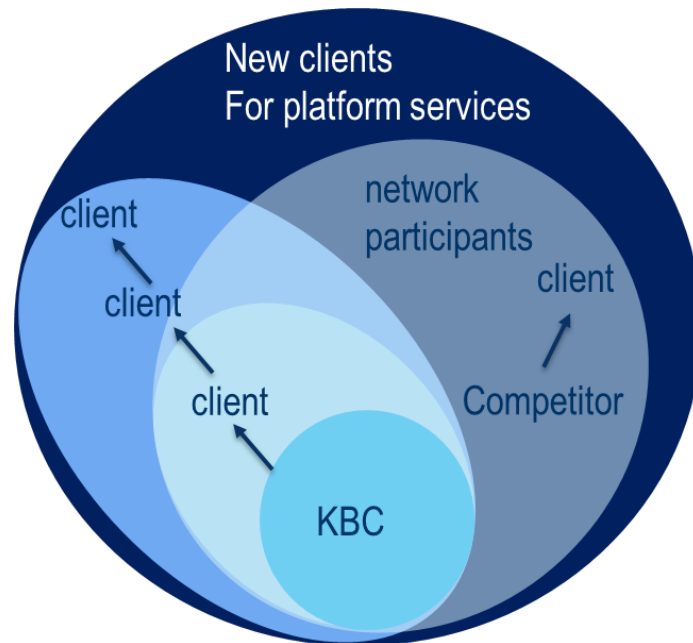
For some business areas it might be the case that they have such a large business between each other that a blockchain investment can be profitable between only a few banks. It all depends on the case.

As KBC, we have to figure out ourselves upfront what direction we want to go, what our vision is, and if we believe it could be achieved. A market scan and talking with possible new collaboration parties can bring insight in the appetite and what direction to take in the project.



*Platform model*

A last option is a model in which new client of the platform can be recognized and services sold to, with extra revenue generation options.



*Figure 4 : Platform model*

Once a network is created with buyers, sellers, banks, insurers, certificate issuers, .... A lot of data is available on the network, based on which maybe new services can be defined. Data monetization could be possible: the (credit)trustworthiness of a buyer might be 'sold' as a positive element for its KYC process to onboard at another bank. The positive rating of a Seller and information on its performance might be useful for M&A activities (respecting Chinese walls off course).

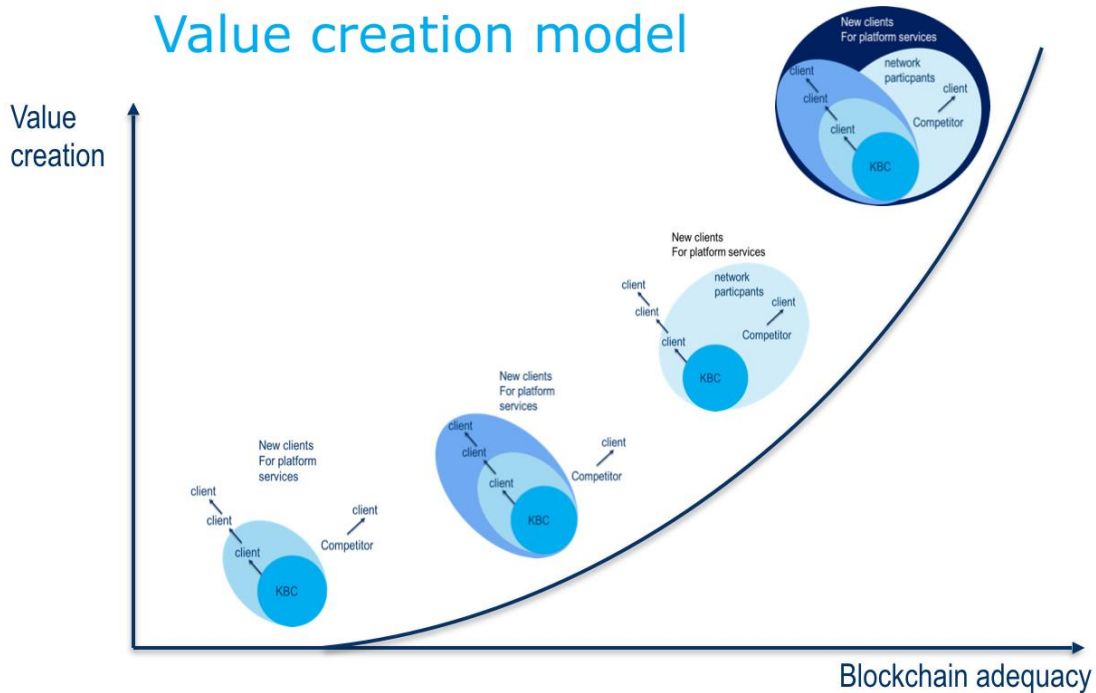
The point is that, by bringing together parties in a same line of business, new opportunities can arise for new services to currently unknown/unreachable new potential customers. A Blockchain platform can give insight in the 'unknown unknown.'<sup>2</sup>

<sup>2</sup> [https://en.wikipedia.org/wiki/There\\_are\\_known\\_knowns](https://en.wikipedia.org/wiki/There_are_known_knowns)

It takes 2 to tango, but even more to Blockchain

As the previous part explained, the more participants involved, the better a blockchain solution is appropriate. More value can be generated in the longer run. It is however not recommended to start a project with 15 or more participants around the table. It will as well dilute the possible earnings but will probably also hamper the takeoff. It is already quite difficult to launch a common project with 2 parties, in which equal stake of the world has to spent, as there is no 3<sup>rd</sup> party in the middle where we all can look too. Especially in banks, we are not used to collaborate. We are always used to rely on an intermediary that has the experience of working with multiple banks. And what is already visible in the Blockchain market, is that current intermediaries start building their offerings around Blockchain (CLS, Swift, Finastra, ...).

The previously explained models can be outlined on a graph as follows. The more parties involved, the more the distributed aspect is of benefit, but also, an (exponential) rise of possibilities there are to create value, and earn in a new business model.





## Roadmap

As said, stepping into a Blockchain project with 15+ parties is not the most adequate approach. In terms of funding, it would also be a challenge to put funds on the table that will immediately create a platform which connects multiple participants. Think big, act small is the adagio that we all know and that we will have to try to fit to our vision. This means that a first deliverable will most probably not be profitable and will maybe not satisfy the needs of the involved parties.

3 to 5 parties will enable a good balance in creating a shared vision, collect the necessary funds and have a governance that works. A typical blockchain track is broken into different tracks: business track, technology track, legal track, governance & communication track. If you know that for each track every party will involve people of their own organization, you will quickly have 20+ people as a project team. And each will have to set up steering committees within their company and will want to align the project with their own company strategy. We know that the latter is different from company to company so you will understand that building a shared vision and keeping it aligned down the road will be a challenge.

Also, expectations towards a Minimum Viable Product, the first version onto the market will be defined by different requirements of all parties. Does there have to be a positive business case from MVP 1? Or is later ok? And how much later would that be? The definition of Minimal Viable Product is also often under discussion. The theory might say that it doesn't necessarily have to be profitable, but at what cost? There are 'fixed costs' in starting up a consortium and starting development, that will drive the cost of the MVP up and which will make it more difficult to sell it internally. If the risk versus reward balance is too skewed, another project with less risk for reward might get the priority. At KBC at least, we have to carefully select investments.

Starting from a MVP towards a 'fullblown product' needs a strong product owner that keeps the hand in the backlog specification to have the project navigating forward steadily, without being disturbed by possible continuous request of parties that want functionality x or y sooner, as it would be beneficial for their company.

Finding the right balance between number of participants, who have a common long-term vision and can agree on a roadmap, is crucial to reach the maximal value creation model.

## Collaboration

As mentioned before, it is difficult to start a Blockchain project with 15 participants. It will be harder to find a common vision, and the creation of a roadmap will be a tough challenge. So, 3 to 5 parties seems like a good balance. You need to decide how to organize. It looks like a non-issue, but it isn't.



### Coordinating party or not?

Ok, so you have gathered 3 to 5 participants around the table. If it is you who gathered these parties around the table, the first meeting everybody will be looking to you. You are then de facto the leading party in the consortium. But that doesn't have to be a bad thing. You believe in the project, so you want to put your shoulders under it.

Maybe it is clear from the beginning that you want to involve a 3<sup>rd</sup> party to do the coordination/project management. Be sure that you have strong party that can clearly move forward the group. This means:

- Create and validate the common vision.
- Have a method to check progress and whether the achievements are in line with the vision. This in an objective way. The 3<sup>rd</sup> party cannot be confronted with inputs from participants that willingly or unwillingly want to change the course of the actions. As for banks, Blockchain collaboration parties are still competitors, how large the willingness to contribute is.
- Be clear in the tasks and have one and only one accountable for the end result, preferably spread across the members. It engages everyone to take responsibility for the end result.

This might seem trivial, and we all know that, but it is best to be clear upfront, as we easily might flow into a modus that everyone is looking at everyone and someone assumes that the other one will pick it up. To be avoided in each project of course, still for cross company collaboration it needs special attention.

### Agreement on resource contribution

How will you get other parties equally involved? Put the question on the table early, as you do not want your resources doing all the work, and the others contributing or validating. If you are ok with that, fine too. Your budgets needs to be high enough to carry that weight.

Some consortia work with lead members, and advisory members, where the lead members engage to put dedicated resources available. But then also claiming a higher stake in the future organization. This is fair, and each participant has to see in which way it wants to be involved in the project.



### Agreement on sub track leadership

A good set-up for having all parties taking their accountability in the project, is to assign each track (business, IT, Legal, governance) to a different member, and ensure that member leads workshops, result production and agreement collection at Steerco level. This way, everybody needs to take responsibility for the outcome.

### Open dialogue

Needless to say that open communication, a trust environment is necessary. Again, this goes for all kind of projects, but I do see this as an extra attention point in a competitive environment. Once a party is upset by a certain direction, or doesn't see its benefits realized enough as expected, friction sneaks in, and the quality of collaboration diminishes, with an effect on the end results.

Hard words should fall on Steerco meetings, on the direction to take, on clarifying participants actions, behavior that jeopardizes the project. An all good, all happy Steerco keeps things unsaid, and will become a problem later on.

## Standards & regulation

### Regulator involvement

There is still some 'chicken and egg' situation about whether blockchain is 'allowed' by the regulator. First of all, regulators are not regulating how you do things, but what you do. If you can prove that you follow regulations and get internal approvals (compliance, risk), then blockchain can be used. An example is not put client data on a Blockchain (GDPR), but using references that are hashed.

Based on the use case, the compliance and risk functions will assess how it is in line with current legislation, and the regulatory bodies are eager to participate in Blockchain projects. They are not against blockchain, as it has benefits for the regulator too (immutable data or being part of a blockchain network is of value to the regulator too). The safer a network, the more trust a regulator has on being in line with the regulation.



Another ‘chicken and egg’ situation might be that you want to disintermediate a certain party, while that party is legally obliged to play a role (e.g. notary, custodian, ...). Do you start without that party and find out all regulatory aspects yourselves? Or do you involve them, but without disintermediating them?

Current voices state that the intermediary of tomorrow in a blockchain network will have a different role than they have today. They can then focus more on the compliance to the regulation, and less on technology development. This can be a good thing too. So, don’t exclude intermediaries from the start.

## Standards

A lot of standards are defined already, albeit on message format level. This is the data level. On the processing level, what to do with the data when received, each party has done its own ‘programming’ and own integrations with back end systems. After that processing, data can be exchanged again to check whether the processing was ok. This is the reconciliation, which can become obsolete when using blockchain.

When participants agree on not only the data format, but also on the logic how the data must be treated, it can be translated into smart contracts, which are common for every blockchain participant. This standardization on process level is much more a challenge than it is on data format level.

Bringing in current intermediaries would be an advantage here too. They are currently the processor for the entities which they are intermediating for and are able to define this common process logic with less effort than multiple parties around the table aligning individual processing logics.

A next, more difficult level is standards for the purpose of interoperability. Different Blockchain technologies exist, and different consortia exist, building the same business solution. It most likely not the case that one Consortium/blockchain will prevail, but that different blockchains have to be able to ‘talk’ to each other; There standards need to be agreed to access another Blockchain platform. e.g.

The we-trade platform is built on Hyperledger. The Marco Polo<sup>3</sup> project is built on Corda of R3. If a Buyer of KBC, working with the we-trade platform, wants to do business with a seller who’s bank uses the Marco Polo platform, all the advantages of the blockchain are not accessible.

---

<sup>3</sup> <http://www.marcopolo.finance/>



Only when the we-trade platform can 'talk' with the Marco Polo platform there will be large market benefit. Maybe customers will be a driver here as they put pressure on the industry. If they can have that leverage, the voice of the customer can be very strong.

## Integration

A challenge that is mostly omitted when performing Proof of concepts is the integration aspect. The POC is designed focused on the new functionalities, making assumptions to the back-end integration and using dummy data most of the time.

Once the POC is finished, and the product moves further into a production grade system, all aspects of running Blockchain in a current production environment need to be investigated:

- Security: opening up a banking environment to the outside world needs thorough investigation.
- Performance: running a POC s mostly with limited data, and a production environment will have other needs. How does blockchain handles these?
- Cost: Blockchain is a N+1 system. We are still far away from having Blockchain replacing current legacy systems. It generates extra operational costs.
- Prioritization: is the benefit high enough to do this project? Given the ability to execute which is limited, other projects might bring more benefits.
- Support organization: Blockchain is still a new technology and competences are not yet widely spread in the IT-department. Will the blockchain solution be integrated in current teams, with needed training, or does a central blockchain team stay responsible for the support, and hence spending less time on experimenting and following up this new technology?
- How much of the application is Blockchain?
  - o Only the persistency layer: storing the data immutable
  - o The logic (smart contracts): moving to blockchain smart contracts requires possibly moving logic from existing middleware layer to the common smart contracts. What with company specific logic? will/can it still exist?
  - o The front-end most likely needs to be separated from the blockchain application/smart contracts.



## Conclusion

Running blockchain projects for 2 years now revealed that the technological part is still important and needs experimentation and research. But it is not the determining factor of the success of a Blockchain project. The Business vision, roadmap, governance of the consortium are factors that define the success of a blockchain project the most. Regulation and standardization is the second biggest challenge. And finally, there is the technological part. Maybe, someday Blockchain will be as standard as the usage of internet is today, but I believe there is still a lot of work that has to be done on the business level to achieve that.

Blockchain is here to stay and has great features and potential to make future systems better than they are today, probably in different business models and other parties that are leaders in their industry today. To prepare for that future, experimenting on the technological and business side is a must. I am still a big believer and with this paper, I want to explain that Blockchain is not a silver bullet that magically will take away today's frictions and drastically reduce costs. It is a transformative technology and, in that way, it can be compared to the internet. First solutions are totally of less added value than the solutions that were built after 10 years. The potential is there, that is for sure.