Reputation in a Request for Proposals Electronic Platform

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Abstract

Faced with increased pressure to reduce costs companies in every industry are placing emphasis on procurement as it represents the single largest expense at most organization [1]. Procurement can mainly be performed in three ways: through catalogs, auction or request for proposals. RFPs are seen as the most effective way to identify the price of non-standardized goods but also as a time consuming and costly process. E-Commerce solutions are being developed to help reduce inheriting coordination costs as well as to increase competition among suppliers. In this later case, results are however not as brilliant as one could foresee in comparison with the millions of companies using the web on a daily basis.

This paper reviews evaluation mechanisms and reputation indexes. It also presents the solution retained to help companies minimizing their business risk by developing a collective memory that will be shareable among and outside the organization to help find new suppliers and evaluate current ones.

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1. INTRODUCTION

Request for proposals (RFP) is seen as the most effective way to qualify the price of a non-standardized goods and services – in quantity or specification. But to guarantee the efficiency of this rather complex process, it is necessary to have a minimal level of competition by ensuring that enough suppliers take part to the bids. This search for additional suppliers has a cost that can be rather high when suppliers are geographically decentralized. For governmental agencies, this search for new suppliers is in most cases legally compulsory, implying additional constraints that increase the costs of the overall process.

To reduce costs implied by the use of RFPs as procurement process and to ease the search for new suppliers, few companies such as Linkom SA have developed RFP specific Internet based solutions.

These helps significantly reduce the coordination and information flow costs, but don't provide the expected competition increase among suppliers, as most buyers are reluctant to deal with foreign or unknown companies. This lack of information reduces the ability of the electronic platform to attract new suppliers and therefore reduces the competition in the bids. In this paper, an electronic platform is defined as a 1-to-n relationship enabler, by opposition to an electronic market place where n-to-n actors and buyers can meet.

To solve the lack of information problem and ensure proper competition among suppliers, reputation and trusts mechanisms must be put in place. This will allow to share experience among companies and to develop a collective memory. In this paper we will investigate:

- How a buyer in search for new suppliers can use the Internet
- What trust and reputation can bring to help managing the risk
- What information should be used
- How we are implementing this into the RFP platform at Linkom SA.

But first of all we need to quickly present the general issues regarding request for proposals (RFP).

2. REQUEST FOR PROPOSALS GENERAL ISSUES

Request for proposals is a specific procurement process involving a buyer - the one issuing the RFPs - and a seller - the supplier making proposals. It is mainly used to purchase complex products or services (construction of an airport, purchase of an information system…) that cannot be found "as is" in catalogues. It is therefore a very long and tedious process which lifecycle - electronic or traditional - can last over months and can be schematized as follows:

1. Writing the specifications of the good or service and the offer template to be used for the bids.
2. Publication and dissemination of the request for proposal
3. Interested suppliers receive the documents
4. Information exchange based on questions and answers
5. Reception of the bids
6. Evaluation of the bids
7. Selection of the winning offer
8. Contract negotiation
9. Contract execution
10. Payment

As in most bilateral exchange there is always a temptation for the second mover to defect from the agreed upon terms in ways that result in individual gains for it [5]. In addition, the further you are in the RFP process, the higher the cost of cancellation is – for the buyers or the sellers. It is therefore crucial to establish a trustworthy relationship as early as possible to avoid extra costs for both parties. To clearly understand what risks both parties take; this is a list of the top concerns collected in a survey [14]

- Retrieval or cancellation of the RFP by the buyer without adjudicating the market to any supplier
- Adjudication of the market to a supplier that has provided false or inadequate information
- Goods or service doesn't match with the requirements
- No or delayed payment after delivery

To encourage unrelated buyers and sellers to do business together, it is therefore important to provide both with the necessary information to reduce the risks.

Some will argue that brand names are sufficient to help buyers to do their choice. This was perhaps the case in the past, but in an economy where for the first time SMEs can sell on a global basis their products, fortune 500 and alike only represents a 0.1% of all suppliers.

Others will say that legal frameworks for commerce have been put in place to reduce risk. Although they exist, the confidence in legal resources is not the only solution, as they often don't avoid the problem to occur.

To do business together, buyers and sellers need to gain trust. Traditionally this would be done by face-to-face meetings and by communicating experience from person-to-person. But how do you formalize this on the Internet where the combination of sellers-buyers is infinite and distance unlimited? This is the question we try to answer in the trust and reputation sections, but before we will briefly describe how buyers can find sellers.

3. SEARCHING FOR ADDITIONAL SUPPLIERS

To ensure the competitiveness of an RFP, companies and administration relies on the ability to find competent and cost effective suppliers. This can be fairly easy in areas with only few sellers, but can rapidly exceed the competence of a professional purchaser if the product is complex or the number of suppliers is important and geographically dispersed.
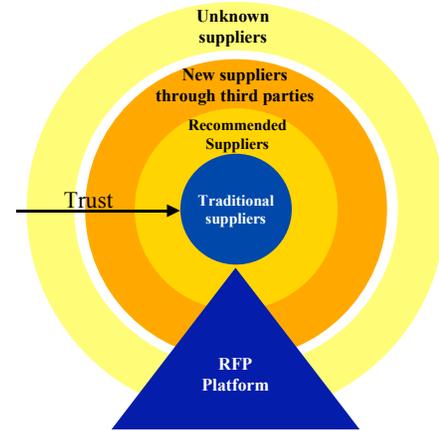

Figure 1: the four types of suppliers

To solve this problem buyers have three different possibilities:

- Recommendations: recommended suppliers – by friends or colleagues - is certainly the easiest and cheapest way to reduce risk. But the geographical scope can be rather limited and evaluation criteria being not structured a good reputation is not necessarily a synonym of success.
- Third party company: Companies such as Dun & Bradstreet or Kompass sell directories composed of indicators (mostly financial) covering multiple business and geographical areas. But as they are hard to keep updated, they are not free and provide only limited description of the firm services and products. Again, they will help reduce the risk but will not ensure the success.
- Search for unknown suppliers: companies found on the Internet will provide much more information as can be found in directories but without any warranty. In addition, search on the web requires special training and can be extremely time consuming.

To solve this last issue, some research at the University of Lausanne and Neuchâtel [9] [10] [2] is investigating the ability to automate the creation of company directories using web pages and advanced text analysis and concept signature. This technique uses robots to automatically scan the web searching for company pages. Once a page is found, it is analyzed and the content is classified using its concept signature [9]. Each company using this type of technique can start searching automatically the web for new suppliers and obtain a dynamically updated directory of areas of interest. This help reducing the costs of maintenance, improve the exhaustiveness of the directory.

All presented techniques are helping buyers to find new suppliers. In addition, recommendations and directories help to reduce the initial risk. But their

impact is limited as they are difficult to propagate, are not precise enough and not always objective or up-to-date.

To answer efficiently to the following question "How do I ensure that this partner is trustworthy?" you need data for the first encounter, but also along the entire relationship to decide who is and who isn't trustworthy. To achieve this, we will challenge two concepts - trust and reputation - and try to identify what type of data could be useful to collect to minimize business risks with external suppliers.

4. TRUST

"Trust is the grease in the wheels of commerce"; fortunately most buyers and sellers are both trusting and trustworthy [12]. But what is exactly trust?

Today, "trust" is increasingly used by those concerned with information security and electronic commerce. The most popular domain for its usage has been research regarding authentication and the infrastructure for public key technology in a networked environment. In a recent study [15], Professor Sabo defines the three trust barriers as:
- privacy: uncertain to what degree information privacy and data integrity is protected (60 percent)
- authentication: unsure of the true identity and credentials of communicating parties" (56 percent)
- security: fear that technology infrastructure is not robust enough to prevent unauthorized attacks" (56 percent)

Trust as defined above, as well as electronic contracting, electronic payment and all e-substitutes to legal procedure are certainly limitations to the development of B2C or B2B e-commerce, but as long as paper and other related means exists, they are certainly not the major problem:
- Trust can accelerate transactions between associates.
- Trust can lower transaction costs in alliances.
- A company or individual's breach of Trust can affect your business.

In addition, although the legal framework for commerce is important it is not fail safe especially for international transactions, but commercial exchanges still take place.

It is therefore our believe that before having to face this type of support or environmental problems, companies will already have a much larger concern: do I trust this company? Trust meaning this time: do I believe that this company:
- Is providing valid information?
- Will be fair and will not defect from the agreed upon terms?

- Will have the necessary competencies and quality to deliver a product or service in due time and meeting my requirements?

At the core of this question lies the ability to communicate the experiences from businesses to businesses to reward trustworthy behavior and penalize untrustworthy ones, or if you prefer, the ability to manage "reputation", a highly subjective and volatile currency.

5. REPUTATION

Reputation is defined as follows in dictionaries "overall quality or character as seen or judged by people in general" or "recognition by other people of some characteristic or ability". As you can see, the foundation of reputation lies on the judgment of others. To help insure objectivity and propagation, reputation can be formalized and amplified by trusted third parties or various mechanisms that we will describe further down. These organizations can be chamber of commerce, private companies and communities. In this paper we will consider that the buyer's platform is the community. We will then focus on how reputation can be formalized and what type of information should be captured to support an electronic platform for request for proposals. As a conclusion, we will briefly suggest a solution to make these communities (all different buyer's platform) exchange information and help circulate the reputation of suppliers and buyers.

By formalizing sellers and buyers reputation and sharing it among all member of the community we will reach three goals:
- Ease the creation of new business relationships as reputation will be shared among communities thanks to formalization and standardization
- Ensure a proper control over time as reputation will follow a company along its history
- Obtain a clearer view of the reasons that laid to believe that such or such company is good or not

Before going into this, it is important to determine on what sellers and buyers rely to determine the reputation of a business partner.

SELLER's REPUTATION

Sellers on a RFP electronic platform are the suppliers making proposals. They usually reply to a strictly and well define schedule of conditions. But replies are not error prone and can lead to delay in production, cost increase, unexpected termination of work…

To manage this risk, buyers tend to prefer working with known suppliers even if they are not perfect. A seller's reputation will mostly depend upon the following elements:

- Goods or services are delivered in compliance with the schedule, quantity and quality
- No hidden costs
- Coordination and information flow between supplier and buyer are manageable

Naturally other criteria, subjective or affective aspects can be added to compose the reputation, but in fact they all directly or indirectly impact the final cost of the product. If a supplier is not in schedule it will have a direct impact on the overall supply chain leading to extra costs. Quality problems, for example, will require additional controls.

Instead of evaluating suppliers with stars or grades for their timeliness, quality,… we suggest using the value of economic prejudice as reputation. Converted into an index, this value will allow calculating the estimated final cost of a purchase. This value will defer from the initial price depending on the real supplier's performance and not only subjective estimation of satisfaction.

BUYER's REPUTATION

RFPs, perhaps more than other procurement mechanisms, put the power in the buyer's hands, as he/she defines the requirements and conditions.

To make their offer, sellers have to go through a very tedious process that can rapidly become time consuming and costly in money and resources. To minimize the risk a certain set of conditions must be present. They can be summarized as follows:

- Does the market really exist or is the buyer only issuing an RFP for pure information?
- Is the adjudication process fair or does the buyer systematically prefer a set of well-identified suppliers?
- Will the requirements change other time?
- Will the payment be done in due time?

As for the sellers, buyer's reputation is linked to an economical value. The reputation will therefore be a numeric index that multiplied by the production costs will give an estimate of the final cost.

EVALUATION MECHANISMS

Evaluation can be performed in numerous ways. We will briefly present the most commonly used and their potential weaknesses. These evaluation mechanisms are mostly used in human resources to evaluate employees and employers performance [11].

Self-evaluation

It allows a good flexibility and to rapidly collect the information. But it certainly has the lowest validity as it lacks coherence and requires a common referral system or self-evaluate test to allow comparisons.

External certification

Validation by a third-party such as Kompass, D&B, SGS… have good acceptance. But they are limited in time, too general/generic and most of all their validity hasn't been proved. It can also rapidly be time consuming and is never free.

Peer evaluation

This type of evaluation consists of using companies from the same business area to evaluate their peer. This ensures precision and good understanding, but can be costly and time consuming, making it difficult to find peer evaluators. In addition, objectivity doesn't go without saying.

Single evaluation

Unidirectional evaluation (seller vs. buyer, buyer vs. seller) is certainly the most commonly used evaluation mechanism in electronic commerce. It is easy to put in place and to use. But it is highly subjective and requires a common referral system to allow comparisons.

Mutual evaluation

This evaluation is easy to use but requires some coordination between buyer and seller. It keeps the ease of use of the *single evaluation* but reduces subjectivity. It still requires a referral system to ensure homogeneity in the evaluation. One of its drawbacks is the tendency to obtain higher evaluations as it is in both players' interest. Evaluation must be made at the same time to avoid favoring the second mover.

Multi-source evaluation

This type of evaluation provides the best objectivity, homogeneity and is certainly the most precise as it takes in account all types of expectations. In return, it is the most costly and time consuming to put in place. It also requires statistical controls to identify collusions.

Conclusion

Although the multi-source evaluation mechanisms should be preferred to the other ones, its needs for a heavy infrastructure and also high consumption of resources (time and money from all parties) makes it impossible to put in practice on an electronic platform.

Self-evaluation could provide a nice start, but due to its extreme subjectivity it is not sufficient.

As evaluation mechanism we therefore suggest the mutual evaluation where buyer and seller evaluate each other simultaneously, meaning the results are visible only once both have completed their form. The final goal is to obtain an aggregated index which doesn't need to be weighted as the values are added together and no average is computed.

UNFAIR RATING AND DISCRIMINATORY BEHAVIOUR

The predictive value of reputation reporting systems can be compromised in situations where conspiring users give unfair ratings [4]. For examples, buyers can intentionally under evaluate sellers to put indirect pressure on price, delay… In return sellers can discriminate on the quality of service they provide to different buyers.

On electronic marketplaces, "cluster filtering[1]" or "controlled anonymity" can help reduce bad-mouthing and negative discrimination [4]. In addition, normally only the buyer evaluates. In our case, the buyer is the owner of the platform. Collusion is therefore unavoidable as there is only one assessor.

Seller evaluation will be more representative as it encompasses multiple companies. The impact of collusion could be significant:

- seller will raise their prices to incorporate the additional cost - and lower the attractiveness of the platform
- seller could avoid responding to RFP's if the reputation index is too high especially if due to the lack of real market.

But again, it is nearly impossible to identify collusion with traditional statistical methods (such as cluster filtering), as there is only one buyer to evaluate.

Our answer to ensure a correct level of objectivity is to request the approval of the evaluation by the other party. In case of extended conflict a third party (a peer) will be called. The third party will then be responsible to analyze the situation and provide a new evaluation.

By combining mutual evaluation with autoregulation and peer evaluation as corrective mechanism you can lower the cost and ensure a proper objectivity.

GROUPING COMMUNITIES

To unveil the complete power of a reputation mechanism, it has to be shareable. But as already stated, the Linkom solution is a platform (by opposition to a market), which is by definition autonomous. To solve this, RFP Platforms should be able to communicate reputations between them.

Sharing buyer's reputation is not necessary as they are only acting on their own platform as buyer, but supplier's one is certainly an issue.

Reputation and the related index is based on specific situations and condition that will in most cases

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[1] Clustering filtering searches for similarities in evaluations between actors. It therefore requires numerous different combinations with the same set of actors, which is impossible when you have a 1-n relationship (see Figure 3)

be different from buyer to buyer. The ability to exchange reputation information will therefore only be useful for new suppliers to obtain a gross overview but it will need to be replaced as soon as a business relationship is started. The major advantage of being able to circulate reputation is that cheaters will rapidly be identified and banned from the business, as the collective memory will trace them anywhere.

PRIVATE OR PUBLIC REPUTATION

The level of confidentiality of the seller's and buyer's reputation is a very sensible issue. Being dependant from the environment, reputation is difficult to aggregate and to compare. In addition, companies will never accept to have this type of information openly published [14] as they have only a limited control over it. But in return, having access to this information would be very helpful for managing the business risk.

To obtain equilibrium between the positive and negative forces, we have made the choice to make the reputation:

- Private to its owner – the company who is concerned by the reputation – and the assessor
- Usable as a referral if accepted by the owner

Avoiding the dissemination of reputation among actors of the platforms will certainly reduce the "collective memory" effect, but in return, it will ensure the acceptance of the system. Allowing suppliers to use their reputation on a platform as a referral system when dealing with an unknown buyer will allow reputation to be shared among platform and therefore help disseminate the information. Some will argue that "bad" company will not use their reputation as a referral. But as some will do, not using the reputation as a referral will undoubtedly give a strong warning to the other business partner.

TRANSITIVITY OF THE REPUTATION

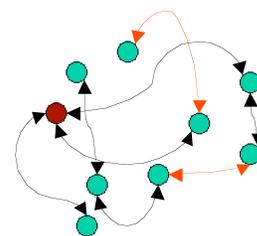Reputation often works on transitivity: my friend friends are my friends.

Figure 2: with reputation transitivity

In the B2B environment, most companies are both seller and buyer depending of their position in the overall production process. However, the Linkom solution being a platform as described in the

introduction (a 1-to-n community), you have only one level of reputation.
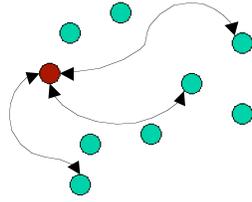

Figure 3: without reputation transitivity

The only way to allow transitivity is to group the communities as explained in the previous section, but this is out scope of this paper.

6. PROPOSED REPUTATION INDICATOR

As suggested in the reputation chapter, we are willing to use the value of the economic prejudice as reputation. The goal is to end up with an index that multiplied by the reference value gives an estimated of the final price.

After reviewing the existing literature, we ended up by selecting the Total Cost of Ownership (TCO) as indicator for the buyer and the Total Cost of Sales (TCS) for the seller. These two indexes will allow estimating the final purchase price for the buyer (including the extra costs due to problems with the supplier) and the final production cost for the seller (initial production cost and extra delivery and proposal costs).

TCO AS SELLER's REPUTATION INDICATOR

The TCO index will provide a multiplier to apply to the purchase price to obtain an estimated final price. As for all ratings the key element is the criteria that will be used. For this we will use the work performed on measuring suppliers performance [1]. Once these performance metrics are defined, they will then be cumulated to obtain the final TCO index. As performance index, we will use the one suggested by OpenRatings.com a company partner from Dun & Bradstreet specialized in performance evaluation.

- **Reliability**: unreliable suppliers will require more supervision and control over the products and service
- **Accuracy**: non respect of the specifications will have direct impact on hidden costs as the goods or services will not be usable
- **Delivery/timeliness**: products delivered outside schedule will have an impact on the supply chain
- **Quality**: if quality is not respected, products need to be returned, implying extra costs and delays
- **Business relation**: if the relations between the supplier and the buyer are strained it will require

more resource to sort out problems and to communicate

- **Personnel**: competent personnel will be the best warranty for proper decision and therefore reduce the risk of errors.
- **Customer support**: the ability to support the sale allows to reduce cost
- **Responsiveness**: this is the warranty for short response time and therefore cost control in case of problem.

These categories may appear too large to some readers. In fact they are perfectly well designed to categorize all types of problems. The goal being that each time an extract cost is incurred it is added to the corresponding category. As for example, if the starting price is 500'000$:

- As the shipment will be made by boat, a special insurance has to be taken – 2'000$ to be added to the *delivery* category.
- Too many defects in delivery - 10'000$ extra cost to review each item and 20'000$ for delay in the production of the final good - to be added to the *quality* category.
- Error in the implementation of the backup server: 3'000$ to recover data to be added to the *personnel* category.

This makes an additional 23'000$ equivalent to a TCO index of 104.6

THE TCS AS BUYER's REPUTATION INDICATOR

For the buyer's reputation indicator, we use the same principle as for the seller, except that the information taken in account must be adapted.

By opposition to the sellers, where a lot of studies have been performed to measure their performance, buyers in B2B are mostly ignored. To establish the categories of criteria, we based our choice on a survey made in 1999 [14] when developing the RFP Platform:

- **Market**: if the market is never awarded, sellers are just wasting their time and resources
- **Fairness**: a subjective adjudication process increases the risk of not being selected
- **Reliability**: a reliable buyer will minimize the changes along the project requiring less modifications
- **Payment**: the longer the payment takes the more money you lose
- **Complexity**: some buyers have rather complicated processes that requires more time and resources to go through

As you can see, this excludes the cost related to the work of producing the offer. It only takes in account

the extra costs due to the misbehavior of the buyer, as for example:

- Documents must be in 3 samples printed in colour: 500$ o be added to the *complexity* category
- Contract negotiation takes longer as expected, a lawyer is required: 3'000$ to be added to the *complexity* category
- The specifications of the product are changes just before production is started: redesign of the template: 6'000$ and delay for the production of other goods 10'000$ to be added to the *reliability* category.
- Payment received 2 months after schedule: requested a loan to ensure proper liquidity in the company: 5'000$ to add in the *payment* category

In this case, with an initial production cost of 360'000$, the TCS index would be of 107. For a sale price of 450'000$ the final margin would be of 14.6% instead of 20% for the initial cost.

7. IMPLEMENTATION

As mentioned in the introduction, this reputation mechanism is in implementation on the RFP Platform developed by Linkom. Results are starting to be collected and client's first impressions seems to confirm that this innovative approach is well accepted because:

- It is based on a true economic value
- It helps buyers and sellers to take objective criteria in account and to formalize them

As no other platform and third party does use or collect the TCOs and TCSs, new suppliers are still coming without references on the platform. But using the same categories, it is possible to perform an estimate of their performance by performing site visits or using external sources as federations, rating companies…

Before presenting the interfaces developed to collect the reputation, it is important to understand the entire process. As explained above, we have selected a mutual evaluation process where parties cannot see the other evaluation before both are finished to avoid favouring the second mover. Once the evaluation is done both parties have to agree upon it. If they do, then the evaluation is stored in the system and the process ends. If one or both actors don't, they can either find a solution and update their evaluation or ask for a peer evaluation. In the last case, the third party will provide the new evaluation without any additional control from the concerned companies.
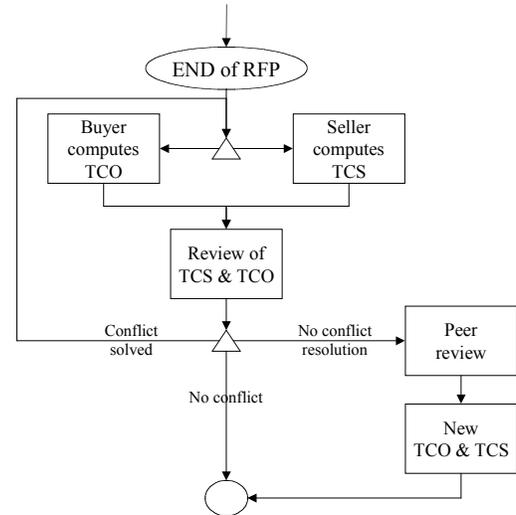

Figure 4: Evaluation process

This process being ease to represent and to understand, its acceptance by the users is also higher, which is the requirement number 1 for the success of this type of system.

SUPPLIER AND BUYER INTERFACE

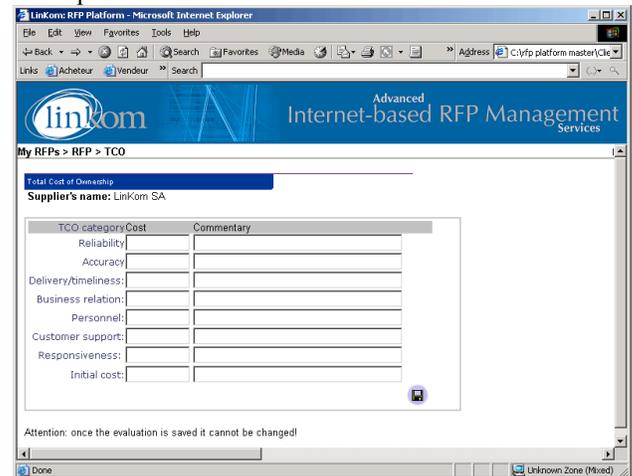As an illustration of the interface we are providing the following screen capture from the web pages in development.

Figure 5: TCO evaluation form

Figure 6: TCS evaluation form

8. CONCLUSION

Request for proposals platform have been around for some years now and focused on attracting new suppliers. But experience shows that if a company or government agency is not forced to change its habits, it will always favor known suppliers to minimize risk and related costs.

To give more incentives to do business with unknown companies and have a better tracking of suppliers performance, we have developed a reputation mechanisms that is implemented on each buyer's RFP Platform and can be exchange with other communities. Its use is simple, the criteria clear enough and the combination of mutual evaluation, validation and peer review is receiving positive feedback from the users.

Regarding the exchange of reputation among platforms, its effectiveness is dependant on the number of RFP Platform sold. As a result Linkom is willing to promote the use of TCO and TCS on other systems to extend its use.

ACKNOLEDGEMENTS

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