Brief Discussion on Problems and Countermeasures in the Software Procurement

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Abstract. Different from the computer hardware, the software procurement should not be simply attributed to service procurement and should be entirely bid publicly, its supported file formats and functions are relatively special especially for some special software. They are generally not universal, which puts forward challenges to the procuring entity. The procuring entity or agency company should seriously study the software characteristics, then to select the different procurement methods according to different categories. What kind of procurement methods should be selected? Only when the full functional use is fully understood and applied can the scientific and reasonable reasons for application be put forward to the competent department and can method be approved.

Introduction
With development of information technology, the software procurement by the government is increasing. Many agency companies or procuring entities will select the open bidding for this regard. However, there are also many problems in the process of software procurement, which may be directly affect the effectiveness and use of the procurement, these problems are related to the procurement files and methods selected. Therefore, we need to study the characteristics of software procurement and explore that methods of software procurement are more reliable.

Problems Affecting the Effectiveness of Software Procurement
a) Procurement of software development will take software function module as the technical parameters score
This a common practice, but after careful analysis, we will find out that: there will be major vulnerabilities if this kind of procurement only focuses on the bidders’ response to technical parameters and ignores to investigate their proficiency on the business of the procuring entity’s unit. If the software function module will serve as the parameter standard score, then the bidders will cope the response. In fact, the bid evaluation is not significant to the response comparison, because it does not explain his technical strength, but also can show his understanding on your business at all and is more difficult to verify whether the response can be achieved. The winning bidder is probably the one who won by price if the bidders have such response, but you should pay the valuable time to get familiar with their business or undertake risk of failure to develop.

b) Procurement methods of software transformation and upgrade are inaccurate
The software transformation and upgrade need the familiarity with original data and technical architecture, especially the familiarity of source code, otherwise it cannot be carried out in the open bidding method. How to implement will be a major problem if the winning bidder does not master the above technical data.

c) Open bidding is also used in the special software procurement bidding
The special software refers to software with particular use or unique operation method and special file formats supported. There are less similar market software products, or even less than three kinds. For example, the operating system procurement cannot be simply classified as the procuring operating system, and it should be procured according to its subclasses, because the operating system includes Windows, Unix and DOS, etc., the usage and supported files, etc. of each
subclass are completely different and cannot be universal, these are special software; as another example, the image processing software includes PS and iSee, etc., which have some similarities, but the performance and operation methods are obviously different and cannot be simply described by “Procuring Image Processing Software”. Examples of special software are far more than these, indicating that they have their own unique uses and cannot be replaced by other software. However, the generic name is the same, their operation method, use and supported file format, etc. are substantially different. Then if the open bidding method is used in the procurement, the methods, such as “Procurement of Operation System” or “Procurement of Image Processing Software”, can only be described, which can cause the users who want to buy Windows buy Linux; there is no way of bid opening if the open bidding is not used with less than three suppliers.

From here we can see that the procurement method is also very important in the software procurement in addition to methods of bid evaluation. On the one hand, we should formulate score method; on the other hand, we should also change the concept of indiscriminately and entirely adopting the public bidding.

**Exploration on Methods of Software Procurement**

There are differences between software procurement and hardware (equipment) procurement, and the hardware equipment, regardless of which manufacturers produce, has many common points in the use. Take procurement of computer for example, no matter which brand of computer can complete the same work, including Lenovo, DELL or Acer, and can achieve online office, picture processing and video, etc. However, the same kind of computer (server, PC machine, etc.) has differences among their performance, use and usage method.

And the software is not, some software is universal while others are specific, that their operation methods have their respective advantages is also one of the characteristics of software, because it is not the same as the method of computer mouse and keyboard. We can divide the software procurement into 4 kinds of situations, namely: procurement of software development, procurement of software upgrade and transformation, procurement of mature universal software; procurement of mature special software.

Next, let us talk out the problems that should be concerned in the procurement.

a) Open bidding method should be used in the software development

In views of the nature, the procurement of software development should belong to the service procurement, and is one kind of technical services provided by the supplier to procuring entity. Its essence is the procurement of “Technical Service” and “Business Awareness”, but the technical service and business understanding have public cognitive characteristics, which can be mastered by many professionals. Then the open bidding method should be used, because no matter who develops this software will provide technical services, there is usually no special technology unless some new technologies are not well known by the public. There are many companies that can be competent for software development in Chinese technology market, however the development tools (hardware and software tools) may be different, the unified application product can finally formed.

Although the technology used in the software development is no special, there are also certain business problems in the software development. Because the technology of software development is not difficult, but “Functional Requirements” of the software are the problem, the software must not be written well due to skilled technology, which must also request the developer to fully understand the user’s business and process in addition to technical strength. And the user requirements in each industry which are different are business knowledge ability formed in the department work for a long term, the longer you work in this field, the deeper you understand the industry. Developers must be familiar with each work detail, the developed software will not be applicable and the technical development cannot be completed if they do not master work procedure. Users put forward requirements at the user standpoint while developers understand requirements at the pure technical standpoint, the user standpoint must prevail in case of inconsistency. Many software personnel often intend to impose their own mode of programming thinking on users, for example, they tell users that this is more efficient in operation and works much better, you should adapt to
operation methods of my procedure, etc. But if the operation mode set by you is inconsistent with the users’ habit, then this may not accepted by users and indicates that your business understanding is not in place, or you upset his steps, which will cause users will not use or will not want to use, and the time will be greatly reduced, it is important that this may result in inconsistent work policy.

Gement system of a unit for example: developers must understand this management mode, including registration input method from the staff’s project approval of scientific research → whether to approve the project daily and information recording and processing of the approval → project progress, fund usage and other management procedures → title examination, subsidy adjustment, statistical summary and a serious of work, in order to reasonably design the databases and forms, etc. The forms used normally should be the same as that of programming and printing without adjustment at will. Developers must understand people’s files, provisions and restrictions in the normal work, the information which people can see and can modify, and the time of the information to be submitted to the superior departments, etc. These work procedures and methods which are formed according to the unit policy, superior requirements and years of operation cannot be mastered rapidly by the outsiders, so they must learn and work as the staff and do not try to tell the users who should be changed.

Therefore, it is also necessary to investigate developers’ business understanding on the procurement requirement in addition to investigation of their technical ability in such bidding. The bid evaluation should include the two key contents:

(i) Their related performance should be investigated, namely, the performance of completing the same or similar development task will be used to judge their technical ability.

The same performance is important data to prove their technical ability, if there is the same performance, indicating that he did this work, not the other way around; then this credibility is questionable, because the software development is bid on the premise that there is no evidence and commitment is not equal to achievement. The user’s losses will be irreparable, including time loss at least, in case of failure to completion in the later period.

Secondly, the related software certificates of this unit and all kinds of qualification certificates and work experience of technicians in the project team should also be investigated.

(ii) Link of bid evaluation increases the process of bid description to focus on introduction of this understanding on your business process.

This link is to investigate his understanding degree, because software development is on the premise that he must be familiar with the business process which is not simply mastered in a few days, unfamiliar with business can make the development cycle longer and produce time cost.

When engaging in the software development in the early stage, I thought the task would be completed in 2 months, but ended up more than 1 year. Because the user requirements seems simple, but you need to understand many links, some links that is introduced at the solidified working mode of the user cannot be clear or cannot be completely understood by developers temporarily and cannot be completely notified by the users to you, because most users cannot make clear. Should you understand each link of work procedure in the actual development, you must deeply study and regard yourself as this unit staff to practice one by one. Only in this way can you gradually understand the business requirements, only by understanding requirements can you use technical means to complete the development work.

The bid description by the bidders is to show their mastery on your work process, all kinds of factors involved in the system and required all kinds of forms and styles, etc. You can design problems or ask questions in real time in the link to judge his understanding of work process in the process of asking and answer.

Please note that the bidding documents of software development should not serve the functional module as an important basis for scoring, because as long as the overall architecture is reasonable in the development process, it is not difficult to add some functional modules. The understanding on technical ability and business of bidders should be as an important investigation. Because these two contents can show his technology and business so as to determine whether he can complete tasks faster and better. But your requirement module should be provided to the developer as the appendix.
and the functional requirements may be modified and adjusted in the development process; if the functional requirements serve as the bidding technical parameters, then the winning developers must strictly do according to the requirement module; strictly speaking, the functional requirements cannot be changed.

Here the two key investigation aspects we discuss must be written into the procurement documents for supporting the bid evaluation methods.

b) Single source procurement should be used in the software transformation

The software transformation and upgrade is extensions and modifications to the original software, which needs to be familiar with and master the original data and technical architecture, especially source code, otherwise it cannot be carried out, for example, original data format, field name, type, width and significance, etc., especially the changes in the procedures need the source code, although these technologies and data will have technical documents, new developers’ skilled master takes time. If the technical documents are incomplete or missing, then new developers cannot start at all except as redeveloped according to original function, but this is an unwise decision. Therefore, the best way is to adopt single source procurement, because it meets this conditions stipulated in the government procurement law.

c) Open bidding method should be selected for the procurement of common software

The mature software is divided into common and special software.

The common software should meet: ① the function is the same; ② the operation method is basically the same or very simple; ③ the file format that supports the processing is exactly the same, such as video playback software, data compression software, anti-virus software, etc. There are many such software in the market, but the products from different brands and manufacturers are the same or basically the same in the function, so no matter which product the users purchase can meet the requirements, the open bidding should be implemented for ensure fairness. This is also clearly the case for general securities trading software, the open bidding should be implemented.

d) Special software should not be procured by the public bidding

The special software refers to a software with particular use or unique operation method and special file formats supported. These, such as operation system of Windows and Unix, PS of image processing software, etc. have their own unique use that other software cannot replace, and we have listed some examples above. Someone would say that there are many image processing software, why should not the open bidding be adopted? It is that: there is no a unified standard for some software at home and abroad currently, the initial software is prepared by the developers as per the market requirements, the different software is completely different in the operation method, the continuous improvement in the long-term competition makes the software have many commonalities, but the distinction always exists due to different origin.

Because there are differences in the function or operation method or supported file format of these software, there must be at least 3 brands of products to enter the competition (in accordance with FBK [2003] No. 38 document) in case of the open bidding, this may cause that the users who master PS technology buy the Lsee, and there may be greater troubles at work due to difference in the supported file format; in case of procurement of the operation system, then Windows users may buy Linux, due to different use method and supported file format, the user’s existing software, files and various information technologies cannot be used.

So you can see that if the special software with generic name is bid publicly, so that the original users will be quite out of place, and even will not use, do not intent to use and reduce work efficiency. And similar to the case of buying the Linux rather than Windows, the problem is even more troublesome.

◆ Method of special software procurement

The generic name cannot be used in the procurement, and the specific name must be specified. In accordance with the procurement method stipulated by the governmental procurement laws and regulations and the above analysis, is can be seen that the special software similar to the operating system is most suitable for the single source procurement because the software has only one
manufacturer. But it can be extended to inquiry procurement, competitive negotiation, single source procurement, but as it is relatively simple, it is not necessary to adopt the competitive negotiation.

It should be pointed out that CBK [2003] No. 38 document specifies the government procurement behaviors, including “......Open competition is the cornerstone of government procurement. The competition of governmental procurement refers to the competition between different brands or different manufacturers as per the procurement requirements of the procuring entity. In principle, the same model of products of the same brand can only have one bidder ... ...” After implementation of Government Procurement Law, the bidding documents should clearly specify that the same model of products of the same brand can only have one supplier to attend in order to avoid the phenomenon of multiple bidders in the same model of products of the same brand.

The words, such as “In Principle” and “Should”, used in the paper indicate that this provision is not absolute and special circumstances are allowed. The judicial interpretation difference between “Must” and “Should” is that “Must” is compulsory and “Should” belongs to the principle provision and allows certain flexibility in the implementation.

That we purchase the special software belongs to this special case, so it is unnecessary for three brands to participate in the competition. In fact, the special software has only one manufacturer, and three manufacturers cannot compete at the same time.

Please note that the bidding documents need to specify the software function and requirement for operation characteristics, and even the software name should be clear and multiple suppliers can be allowed to deal in the same software when inquiry procurement, competitive negotiation and single source procurement are adopted.

Brief Summary
Different from the computer hardware, the software procurement should not be simply attributed to service procurement and should be entirely bid publicly, its supported file formats and functions are relatively special especially for some special software. They are generally not universal, which puts forward challenges to the procuring entity. Although we have discussed the software classification above, some software is very wonderful, so that it is difficult to classify them accurately. In the procurement, the procuring entity or agency company should seriously study the software characteristics, then to select the different procurement methods according to different categories. What kind of procurement methods should be selected? Only when the full functional use is fully understood and applied can the scientific and reasonable reasons for application be put forward to the competent department and can method be approved. The procurement of software development and mature common software is suitable for the open bidding; while that of software upgrade and transformation is suitable for the single source; and the mature special soft is suitable for inquiry procurement, competitive negotiation and single source procurement.

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