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**“RIGHT-SOURCING” OR OBTAINING THE CORRECT BALANCE BETWEEN
IN-HOUSE ACTIVITY AND THE PURCHASE OF EXTERNAL SERVICES**

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Abstract

During the last few years, and more particularly to face the LHC construction, several Information Technology activities of the ST Division have been outsourced. This concerns various domains such as desktop support, application software development, system maintenance as well as turn-key control systems.

Among other motivations, this tactical approach was seen as a way to achieve higher product quality and service rationalization. The outsourcing success of IT activities resides in the mastering of a complex process that includes amongst other specification, purchasing, negotiation, contract management skills on top of advanced technical knowledge. The perception of the success of outsourcing differs also from one stakeholder to another. Nowadays, as CERN encounters a cash-flow issue, in-sourcing is investigated as an alternative path for savings.

From this experience and the survey of current practice in industry, this paper analyses various parameters that should be considered to find the correct balance between in-house activity and the purchase of external services.

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1 INTRODUCTION

In the beginning of this new century, where CERN faces the challenge of financing the LHC, its staff is particularly willing to provide savings and new work organisation in order to reach its goals. Amongst the buzz-words that very often circulated in the corridors of the organisation during the nineties were “Out-sourcing” and “Farming-out”. In 2003, “In-sourcing” became more fashionable. What is behind those words, how are they applicable in the ST Monitoring and Access group?

The ST/MA group is responsible for the monitoring of the CERN Technical Infrastructure as well as the design, installation and maintenance of personnel protection systems such as access control system, fire and gas leak detection, safety alarm monitoring systems and radiation monitoring systems (in collaboration with TIS). Several contracts to carry out the maintenance and the new development of the above mentioned activities have been placed. However, this paper focuses mainly on the ST Information Technology activity.

This paper investigates sourcing principles that prevail in Industry and put it in perspective with our current sourcing experience. It proposes a reflection on tactical parameters that should be considered to succeed in both options and highlights areas where we succeeded and proposes improvements.

2 OUTSOURCING

Only by understanding the processes and outcomes of both outsourcing and in-sourcing can a comprehensive understanding of IT sourcing results.

2.1 Definition

Information technology outsourcing is usually defined [ref 3] as: “ the practice of transferring IT assets, leases, staff and management responsibility for delivery of services from internal IT functions to third-party vendors.”

2.2 Motivation

Outsourcing may be a preferred option for some organisations for various reasons such as returning to core competencies. In the nineties, the literature [ref 1] seems to demonstrate that cost reduction was the major objective. However, according to the statistics [ref 2] senior executives realized their expected cost savings only 40% of the time. So what are the major benefits and actual motivation for out-sourcing?

In industry, where the business must keep up with the pace of change of the IT industry, the following practical reasons for outsourcing are mentioned [ref 8]:

- Lack of available internal resources
- Lack of internal expertise
- Rapid development
- In-house skill shortage
- Higher level of service and responsiveness with consultants.

Cost reduction or predictability is no more frequently mentioned as an outsourcing reason. Outsourcing may avoid also services to remain in a “complaisance” situation.

During the year 2000, ST Division signed “the software support for industrial controls” contract with a Spanish company. The scope of the contract was the maintenance and the development of monitoring and control system applications [ref 7]. The main motivations were to rationalise software maintenance and to achieve higher quality in terms of documentation, delivery time and conformance to specification [ref 4].

At the same time, in order to modernise the monitoring of its safety infrastructure, CERN has outsourced the CERN Safety Alarm Monitoring (CSAM) project. The decision to outsource the system came from the conclusions raised by the “LHC Alarm-of-level-3” working group gathering the requirements of the future LHC alarm system expressed by the LHC and experiments safety responsible and was endorsed by the management of the LHC project.

The principal reasons were to obtain on time a quality product that suits exactly the firemen’s needs in terms of reliability, maintenance, availability and that will satisfy the requirements of the French INB authority.

The motivation for outsourcing was to achieve higher quality in terms of:

- System performance (reliability, stability)
- Rationalization
- Documentation
- Delivery time
- Compensation for the lack of internal resources
- The purchase of a turnkey proven industrial solution requiring no specific software development.

2.3 Lessons learned

The quality of the CSAM system and its documentation, are expected to be of a higher quality than what can be achieved by internal development. Nevertheless, it has required a substantial effort in the follow-up of the specification, design and test of the product. The difficulties encountered can be summarized as the following:

The CSAM product had to be designed according to the strict principles of “functional safety”. During the Market Survey, vendors meeting the qualification criteria were selected. Consortia, made up of large scale companies, distributed all over Europe, met almost de-facto the criteria. At the end of the tendering phase, after all the necessary verifications, the lowest bidder meeting the specification of the product has been selected. At this stage, the project leader faces a system architecture proposal and a contract. It can be defined also as the “consortium promise” to deliver a system by coordinating the work of software and safety experts belonging to different companies geographically spread in Europe. In the CSAM, it took almost one year to have the project team working together, requiring several interventions at higher managerial levels.

Fortunately, the commercial strategy of the contract, designed in collaboration with SPL, had enough incentives to carry through successful negotiation. The project was made of 3 work packages:

- WP1 system design and installation, ending with the successful validation of a pilot zone
- WP2 system deployment all over CERN
- WP3 maintenance and operation

Several “Exit Points” were foreseen within WP1 and between each work package, including also the necessary bank guarantees.

WP3 being on a “fee-for-service” basis, was designed as an incentive to have an initial quality product, requiring little maintenance and easy remote configuration.

With those outsourcing experiences, we learned to master the sensitive purchasing procedure and more particularly to develop commercial strategy using appropriate payment plan, incentives or penalties to reduce the failure risks of the contract. A change in our working habits was also necessary,

considering particularly the formal systems specification, the project development methodology and its follow-up. It appears also that incentives works better than penalties

However some outsourcing objectives such as delivery on time and quality were not always achieved!

2.4 Partnership

In the IT context, another way to approach outsourcing is the partnership with the outsourcing vendor. To succeed in partnership, large scale studies highlight the following success factors [ref 1]: individual excellence, key relationship for long-term plans, interdependence, investment, communication, integration, relationship institutionalisation and integrity.

3 INSOURCING CHALLENGE

3.1 Definition

“In-sourcing is the practice of evaluating the outsourcing option, but confirming the continued use of internal IT resources to achieve the same objectives of outsourcing” [ref 3]. In-sourcing is not re-affecting staff to a task or project, it is the submission of internal bids in competition with external vendors (fig.1)

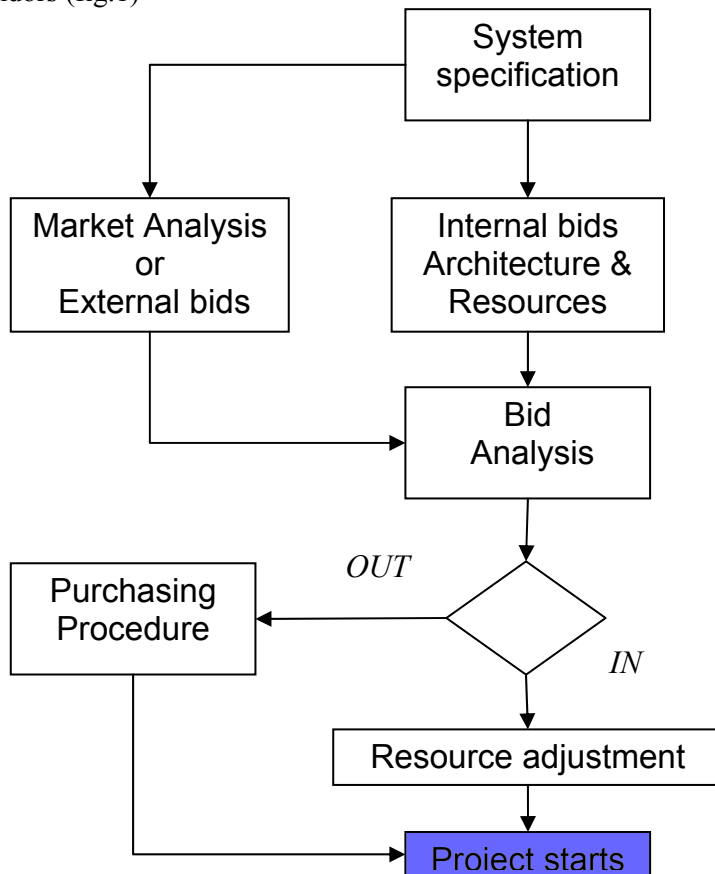


Fig. 1 – Sourcing process

3.2 Motivation

The reasons for in-sourcing are:

- Cost savings (eliminating purchasing and contract management overheads)
- To avoid the extra-cost of loosely specified items.
- To retain know-how
- The development of custom-tailored application

- The staff emulation

3.3 Lesson learned

In-sourcing helps to lower the price proposed by the contractors, this is due to the contractor’s price comparison with internal bids and the ability of retained in-house experts to evaluate in depth the offers and to understand the technical details of the projects.

Internal developments are more flexible but have more difficulty to deliver on time software product and documentation. The project milestones and control are usually not followed with the same rigor as in a client/provider relationship. This difficulty can be overcome by reinforcing the project structure and by setting-up a supervisory authority in charge of controlling the project phase deliverables.

4 DISCUSSION

From the experience of the different contracts and internally developed projects, the factors summarized in table 1 should be considered when determining who will execute the project. In-sourcing would be recommended for applications requiring high level of expertise where know-how should be kept over time, supported by the necessary human resources. Outsourcing seems to be a better option for the development of large scale system particularly when considering the contract cost overhead, with well defined requirements, supported by the necessary financial resources. However the success of both options resides in the strict adherence to standard project management practice. A competitive IT department should be able to do both In and Out –sourcing, with the following benefits:

- Obligated to master all aspects of service/projects
- Keeps competition (fair price)
- Promotes new ideas
- Avoids service “complaisance”

	IN	OUT	
Type	High level of expertise	Commodity Market	Type
Critical	Yes	No	Critical
Size	Small	Large	Size

Table 1 – Decision factors

5 CONCLUSION

Successful outsourcing resides in the mastering of a complex process that includes: purchasing procedure, advanced technical knowledge, negotiation skills, and ability to specify a system or a service. It also requires effective teamwork between IT specialists, purchasing officers and managers. To master the purchasing process, a procedure has been established in the ST Division and collaborative reviews are a recommended practice. The reasons for outsourcing are numerous but real cost savings are not often demonstrated. Outsourcing works well when the requirements are clearly defined.

On the other hand in-sourcing allows cost savings, staff emulation, the retention and development of technical knowledge and offers more flexibility to face unstable requirements. A competitive IT department should be able to do both In and OUT –sourcing.

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