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## **Risks of IT-Developments when contracting IT Suppliers**

Austrian Country Paper

(LEAD PAPER: Why IT projects fail)

Abstract: The outsourced project “database design and development” includes a wide potential for errors before, during, and after the system development and implementation. The well-known outsourcing problems of contract definition, project management, project responsibility, reliance on external support and loss of knowledge are compounded by technological and organisational difficulties within the IT department and the supplier. The reason for outsourcing, that is the lack of personnel and/or skills, appear to be the base of future problems in project definition and project guidance.

The general course in personnel policy holds the staffing levels of IT departments in the public administration frequently at a low level, so that the department can just maintain their IT systems working. This tendency arises partly by the current increase in number of applications and new technologies of a still constant number of personnel. Partly the number of staff is intentionally held quite low in order keep staff expenses low. This trick is helpful in showing low manpower budget, as external project costs will count as material expenses.

Subsequently there are no personal resources to start new IT projects or developments of new applications. Furthermore there is no time for continued education resulting in a lack of knowledge of new technologies.

This kind of personnel strategy requires outsourcing of any IT development to external IT suppliers resulting in multiple risks in the fields of

- I. Internal project risks within the IT department
- II. Outsourcing risks and
- III. Risk embedded with the external supplier.

Each of these risks has consequence effects on each other, so that every failure impact multiplies and increases the probability of project failure.

All risks presented furtheron are based on case studies of database design and development by IT suppliers.

### **I. Internal project risks**

The internal project risks come into being by the formal authorization structures, by the use of external suppliers to design this concept as a basis of a competitive procurement or by the quality of the database design made by the IT department.

#### Ia: Formal authorization:

Public administration is using multiple approvals throughout its hierarchical structure. Every hierarchical step takes long time to get permission to start the project. Sometimes not only the first project authorization, but each change during project realization has to be considered.

#### Countermeasure:

IT projects should get their approval by the IT manager, the budget-manager and the head of the IT department (not being the project

manager). Changes in project costs or time within a specific limit should be in the responsibility of the project manager.

Ib: External elaborated technical concept as base of a competitive procurement:

see lead paper, chapter 3.2 to 3.

European and Austrian legislation call for competitive procurement procedures when the estimated project costs exceed 72 000 Euro in Austria or 200 000 Euro throughout Europe.

The invitation to tender relies on a well done and already finished concept of the whole IT project. As the work out of the technical paper needs time, experience and knowledge of the desired new technology, the lack of these resources partly obliges the IT departments to use external suppliers.

The philosophy of an externally elaborated concept is often fatefully combined with the idea that the whole work of the concept is done externally.

This strategy has caused project break off several times. The external supplier is not able to choose the real important users, to check their requirements for necessity or to limit demands. Furthermore the structure and work flow in the public administration cannot be investigated by the supplier in detail during the usually short time scale. This results more often in a technical concept which is not well balanced with respect to the business of the specific department under investigation.

Countermeasure:

Even with an externally elaborated technical concept as a basis for the public invitation to bid, the IT-department has to take a strong part in the design phase. This includes collecting the requirements of the users and

limiting them for necessity. The actual work flow has to be investigated, optimized and transferred into the design concept. At last the IT-department has to check the technical paper of the supplier for the logical sequence of the newly created work flow and whether it meets the objectives of the project.

Ic: Database design by the IT-department:

In spite of an outsourced development of a new database application the concept of the application is partly designed by the IT department.

- User demands:

see lead paper, chapter 3.4 to 5 and 3.8 to 9.

After the definition of the project objectives and the permission to start the requirements of the users will be collected. Frequently the demands are neither rated with respect to the objectives nor limited due to necessity. The wish to meet all requirements usually ends in a concept which will never be realized because of its complexity.

Countermeasure:

Limitations of the requirements are essential due to funding restrictions and possible time scales. Besides, every demand has to be reviewed as to its necessity.

- Data queries:

The outsourcing of the database development entails the design of the datamodel by the supplier. Whereas the model is usually based upon an extensive list of the required data, the kind of queries will not be recorded in that comprehensive way. Numerous projects have been delayed by changes of the data relations due to late demands for essential data queries.

Countermeasure:

The IT department should list the important data queries and design the data structures and relations.

• New requirements after project realization startup:

Requirements after the design phase can never be avoided. But changes during the phase of development or implementation endanger the whole project outcome as every modification will disturb an already balanced and well-examined concept.

Countermeasure:

New demands during programme development have to be considered as to their necessity. Important requirements show that there has been a lack in preparation of the concept and should be taken into account. Every other demand should be postponed to maintenance.

• Tools and programmes:

see lead paper, chapter 3.6 and 7.

New technologies, tools, and programmes are often chosen to overcome the danger to invest in dying technologies. A lot of projects had run through enormous delays because of lacking experience, some had to be broken off due to malfunction of the new products.

Countermeasure:

The selection of state-of-the-art technologies, tools, and programmes entails experience and a high probability of a successful project, when choosing a widespread technology and a total project time below three quarters of a year.

If utterly new technologies are unavoidable, the project responsibility should be transferred to the company even at higher costs.

## **II. Outsourcing risks**

The outsourced project database design and development includes the well-known standard risks of any outsourced project. These are

- Contract definition:  
see lead paper, chapter 3.16 to 19 and 3.8

It was found that the preliminary studies for a detailed well-balanced contract usually result in a succeeding project. Whereas a contract which describes the formal regulations of co-operation is just for use in court after project break off.

### Countermeasure:

The contract should be used to define the objectives and the utility of the project a second time and to compare it with the actual concept. It should define the co-operation, the team, the responsibilities, the time scale and emergency actions.

- Management with respect to outsourcing and project responsibility:  
see lead paper, chapter 3.10 to 15.

“Successful projects run by itself, all others quarrel about responsibility or lacking management”.

### Countermeasure:

The management approach depends on the outsourcing approach. IT projects defined by the IT department, where just the programme is created by the supplier, should be overall managed internally. In that case the IT department is responsible for the project.

When the company carries the whole project from the design phase to implementation, the company is responsible for management, organization, cooperation and for project finish in time.

- Reliance on external support  
Outsourcing is mainly driven by the lack of personnel. This paper focuses on the development of new applications by external companies. In this case, reliance is of lower importance compared to the reliance on the maintenance of current production systems.
- Loss of knowledge:  
Every external IT project entails an increase in loss of knowledge. This tendency becomes critical when the IT department loses the ability to design the concept or to examine the external results.

### **III. Risks embedded with the external supplier**

There are several main causes for project failure when using external IT-suppliers for the database design and development:

- Lacking skills of the supplier  
Lacking skills of the supplier in the chosen new technology and its implementation have frustrated the efforts of projects several times.
- Tools:  
The database and tools selected by the supplier should already have proven their quality and usability on market.
- IT supplier personnel:

Any change of team-members being already familiar with the project will delay the time scale by additional time needed to prepare and to get into contact with the project team.

- Product lines:  
Changes in product lines and service strategy forced by the ultimate parent company of the supplier will disrupt project progress and will influence the quality of service after implementation.
- New technologies:  
see lead paper, chapter 3.6 and 7.  
To avoid that a well managed project becomes outdated by the advent of new technologies the project time table should be less than one year.
- Misinterpretation:  
Even under the assumption of a clearly written design concept and close co-operation between the IT department and the supplier, misunderstandings and misinterpretation increase with time and project complexity.
- Change in specifications:  
The requirements of the system-users have to be taken into account in the project design phase. It is essential to avoid any further change of specifications during database development and implementation.
- Time table:  
see lead paper, chapter 3.6 and 7.  
A well-defined time table to prepare, develop, implement, and to test in order to ensure security of realization stands in opposite to a compact project, which will not be outdated by new technologies.

Countermeasure for the risks embedded with the supplier:

The risks in the fields of technology can be avoided by choosing widespread programmes and tools and a supplier experienced in that technology. The risks in co-operation should be minimized by a step-by-step development and implementation and by a contract with well-defined time scales and responsibilities.

**SUMMARY**

The definition of the key database issues like data modelling, data relations, structure of the database, and the kind of required data queries relies on highly sophisticated knowledge of the local IT department. This is not only essential in the design phase but during development, implementation and testing. Even with the outsourced project database design and development, the IT department has to be a strong partner in the project. The lack in personnel and knowledge endangers the success of the project, beginning with the definition of the objectives and ending with the examination of the results.