Building a DW successfully with the SAS System

The Dutch PTT Post approach
This presentation consists of:

• a brief introduction of the authors and the companies they work for;
• the context in which the case is set;
• a description of a small sub-project within the before mentioned context;
• an extraction of the CSF in the case, working towards a general applicable model;
• conclusions.
John van Woudenberg works for PTT Post. As application group manager he is responsible for the development and maintenance of application software for the commercial department of the business unit Letters within PTT Post in the Netherlands. Before transferring to PTT Post, he was employed for more than 11 years by several software houses in the Netherlands.

Stef Lagomatis works for VLC, a young consultancy in the Netherlands specialised in Data Warehousing (DW) and management information. Stef has many years of experience in DW and the SAS System. Hired by PTT Post to participate in SAS projects as a project manager, he has been involved in several projects, one of which will be discussed as a case study in this presentation.
History

PTT Post is part of TPG, the TNT Post Group. PTT Post was originally a public service. In 1989 it became an independent organisation and part of KPN, the Royal Dutch PTT. In 1994 KPN was privatised and since then shares are publicly traded at the Amsterdam stock exchange. The New York Stock Exchange followed in 1996.

In 1996 PTT Post had 53000 employees, turnover was 6.7 bln NLG and profit was 636 million NLG.
Track record: productivity

Productivity
Post volume per employee

Country
NL  SE  GB  FR  DE

Productivity
0  50  100  150  200
175  113  90  86  85

113 90 86 85
### Track record: quality

#### Quality of service

(% delivered within 1 day)

<table>
<thead>
<tr>
<th>Country</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>NL</td>
<td>95.50</td>
</tr>
<tr>
<td>SE</td>
<td>94.00</td>
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<tr>
<td>GB</td>
<td>85.90</td>
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<tr>
<td>FR</td>
<td>76.30</td>
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<tr>
<td>DE</td>
<td>91.00</td>
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</table>
Track record: rates

Postal rates
(letters max. 20 gr.)

<table>
<thead>
<tr>
<th>Country</th>
<th>Postal rates (Dutch cents)</th>
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<tbody>
<tr>
<td>NL</td>
<td>80</td>
</tr>
<tr>
<td>SE</td>
<td>105</td>
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<tr>
<td>GB</td>
<td>79</td>
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<td>FR</td>
<td>95</td>
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<td>DE</td>
<td>111</td>
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The WAN connects 60 LANs that together comprise more than 650 servers and 8000 workstations. This entire infrastructure is serviced from a central site in Leidschendam, near The Hague.
Management information systems comprise the core business of VLC, an ambitious and dynamic organisation that has been active in the IT marketplace since 1996. In the broadest sense, VLC has focused its activities in the conception of Management Information Systems, with the more specific focus of activities on the design and construction of data warehouses utilizing the SAS System. Because of this specialisation, within a few months after VLC started its business, SAS Institute in the Netherlands recognised VLC as a quality partner.

Growing steadily, VLC’s business expanded to include clients such as PTT Post, ABN AMRO, Cargill and Nationale Nederlanden.

The realisation of management information systems is obtained with the use of up-to-date methodologies, techniques and tools. These services include all phases in a project: from the initial launch, through development and implementation, and into the maintenance phase.
PTT Post is in the middle of a process of transforming itself from a product-oriented organisation into a customer-oriented company. This process required the company to restructure business processes to meet new customer demands, such as shorter time-to-market for new products and more accurate information concerning specific services provided for customers. To meet these kinds of requirements, internal processes have been analysed and assessed. When necessary, they were redesigned.

Naturally, major changes have taken place in the organisation. The shift of focus from product to customer has resulted in a change of attitude among the employees.

Information technology plays an important role in supporting these changes. Maintaining and improving service levels towards customers can only be achieved with the use of IT. Often, improvements are only possible with the use of sophisticated software tools.

To implement these changes, a major program was initiated which included a complete restructuring of the main application architecture within the key business process areas such as marketing, sales, collection & distribution, product development, invoicing, accounting and, of course, management information.
One of the main objectives was to redesign the systems with the following benefits for the customer in mind:

- Develop and describe products in a customer and user friendly way;
- Make tailormade instead of standard invoices;
- Facilitate the delivery of mail and parcels to PTT Post collection points;
- Quicken the availability of contracts for the collecting and delivering of mail to the organisation;
- Diminish administrative procedures;
- Increase the possibilities for customers to temporarily operate outside agreed contracts;
- Gain experience with the possibilities of DW.

Business objective of this project was to gather information concerning types of contracts, regional differences in customer demands, recognize trends and adapt to them, develop new products and recognize products which are at the end of their life cycle.

The program was carried out in phases, starting with the applications that form the heart of the application group. After that, the next application in the administrative chain of PTT Post was developed. This meant starting with product maintenance and development, followed by contracts, orders, invoicing and accounting.

The first step was to develop a small application (containing contract data) within a data warehouse concept. This pilot project was intended to both gather expertise in implementing this type of application and to assess the benefits.
In this program, besides the systems that were designed to support processes as product development and sales and billing, a separate system was defined to support management: MRS (Management Reporting System).

When finished, this system will produce reports for management at group board level, at district level and at Business Unit management level. The system will, also, be able to produce files that will be used as input for existing reporting tools.

To be able to produce reports about for instance the distribution, the amounts and the revenue generated of post supplied, the revenues per customer per product and the number of exceptions from contracts, data from various systems have to be integrated. One of the goals of MRS is to facilitate answering such questions that defy system boundaries.
Information needs very often arise in an unpredictable way, making it extremely difficult to describe current and anticipate future needs. As a result, traditional Management Information Systems have very often not been designed as coherent systems, but rather emerged as separate subsystems that use available data from other (MIS) systems, culminating in an “architecture” as shown above. Some of the typical problems inherent to such an architecture are the lack of:

- timeliness
- completeness
- correctness
- consistency
The MRS was designed to prevent a situation similar to the situation shown on the previous slide. By implementing Management Information Systems that use a shared data source, the data warehouse, the mentioned problems will either not occur at all, or be much easier to solve. As shown on this slide, Data Marts are conceived to facilitate application(group) specific needs.

Instead of building this entire data warehouse in one project, and conforming to the guidelines given in the Rapid Warehouse Methodology of SAS, a relatively small, and well-defined subsystem of the DW was designed, built and implemented as a first step in building the DW.

This subsystem comprises of only one transactional system as source of data, no data marts, and only one application to access the data warehouse. The project was named Kactus, which is a Dutch acronym for Client and Contracts Query System.
The main goals of the Kactus project were to:

- allow users to query a central database from up to 35 locations;
- allow for extension from a small scale query tool to a corporate DW;
- allow for integration with other transactional systems.

To meet the goals, the project was structured conforming to the engineering approach: take a complex problem, partition the problem in smaller pieces until the sub-problems are easy to solve, look for ready-to-use modules that provide solutions to the sub-problems or, when the sub-problem is very specific and no ready-to-use module can be used, build the solutions and finally integrate the partial solutions.

Some of the challenges that we overcame during the project were:

- the possibility to make ad hoc queries over a WAN;
- the use of “off the shelf” functionality to successfully implement data warehousing.

Too often, a system is built without planning for implementation and deployment. Factors that greatly contributed to the project’s success were the careful design and implementation of the batch and monitoring systems. Other critical success factors are well-trained support staff and users.
Certain characteristics of the Kactus project were, in retrospect, very important to its success. PTT Post plans to use the project approach used in Kactus as a standard in future data warehousing projects.

Every project, implicitly or explicitly, is part of a larger context. Taking this context into account from the start of a project, assures that its products (such as automated systems), will, with a minimum effort, be expandable, conforming to a well-designed architecture.

Often, projects are much too large to be well manageable. It is very important, after the larger context has been defined, to deliberately limit the scope of a project, so that results will be delivered within six months to end-users. Setting out clearly defined project goals is also imperative.

Instead of tailormade software solutions for every problem, it is very rewarding to try and find general applicable off-the-shelf functionality such as SAS/Warehouse Administrator. When designing and building the front end application, prototyping and RAD-like approaches work very well.

Last, but not least, when planning a project, even a small one as we advocate, plan for implementation and deployment, because these phases ultimately make or break the success, as perceived by the organisation of a project.
So how does PTT Post benefit from these first steps towards a company DW?

With the Kactus tool, PTT Post can now answer such questions as:
- to what extent can we keep agreements we make with clients;
- what exceptions can we observe from contracts;
- how does business develop in time and geographically.

As sketched earlier, the Kactus tool is merely a first step towards a companywide DW. Such a DW will defy traditional system boundaries, making it possible to generate management information that combines data about orders, payments, contracts, clients etc. Ultimately, this will result in a better understanding of the processes involved, and better control over them.