Datawarehouse Administration: An urgent need for Technology to Emerge!
by
Jan J.M. Roording, Dutch Tax Administration, The Netherlands
and
Steven F.M.J. van Agt, SAS Institute, The Netherlands

INTRODUCTION

We live in a dynamic and complex world. We all know that things are going fast and will only further speed up in the future. Our data multiplies itself every other period and we know that there is gold in it,… somewhere. While the amount of data in our systems keeps growing every year, every month, every day, even every hour, we have to realize that the gold in the paramount of the systems is increasing but also increasingly unreachable. We cannot just dig the nuggets out. So we are missing some real opportunities. There is an urgent need for technology to emerge here!

It seems this technology is reaching the market, Data Warehousing, data-mining and other buzzwords abound. It is in my view however still not mature enough to enable the real goldmining promise.

At the Dutch Tax Administration we realized that we had to do something in this area as we have access to incredible quantities of data of all sorts. It might help us better achieve our goal in society: to execute fiscal law as defined by parliament while being as efficient as possible and maintaining the highest level of manageability in our operation.

The Tax Administration today wants to achieve the highest level of compliance amongst all types of tax payers. We do this under the slogan: **We cannot aim to please, but we do aim for ease!**
100% compliance would be when all taxpayers pay their due taxes by themselves without delay. We think we can achieve this by making clear and fair fiscal laws and regulations on one hand and a transparant and as-easy-as-possible process for declaring and collecting taxes.
The rules and regulations are defined by parliament and the government. We cannot really influence this.
The definition and support of the processes however are our specialty. The role of IT in the support of the processes is naturally a key element.

I will introduce you to our view on information delivery and the role of Data Warehousing in it. I will explain what developments formed the basis for this view and how we are already working with similar functionality by giving some examples of projects we worked out some years ago. It's said that these projects could be named "Data Warehousing avant-la-lettre".
This will lead up to a clear view on the need for automated information delivery, as SAS Institute promises us. It will also make clear that from a business perspective there is a clear need for a mature solution for integrated and automated control and management of the total IT environment.
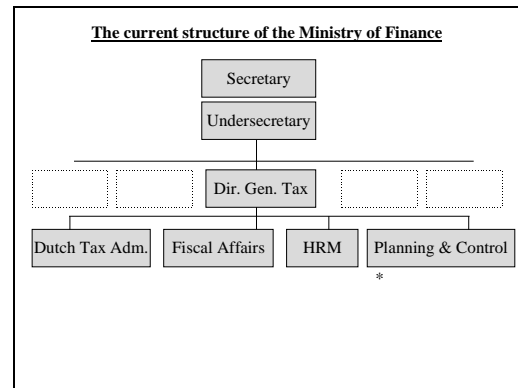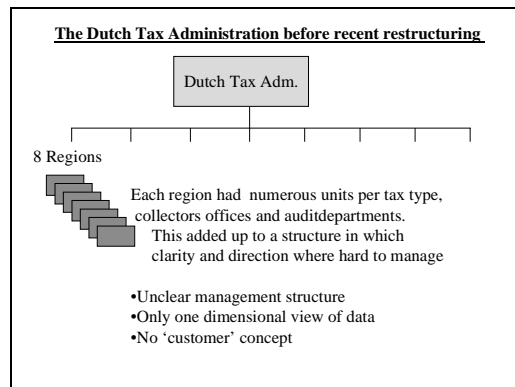

Before that I will introduce myself by giving you a glance of our organization.
Although this paper was put together in cooperation with Steven van Agt, team-manager Public Sector at SAS Institute in the Netherlands, it is put in the first person for reasons of clarity.

THE CONCEPT OF 'CUSTOMER'

Some ten years ago, about 1988, we realized that the operating structure of the Tax Administration did not fit well anymore. When you were a taxpayer in the Netherlands at that time you had to deliver separate tax forms to separate offices for each kind of tax. For example the income tax, the value added tax, customs, the tax on cars and so on. There were and are in the Netherlands about ten major tax regulations, each of them with it's own offices and, more importantly, own computer systems and data.

The Dutch Tax Administration before recent restructuring

8 Regions

Each region had numerous units per tax type, collectors offices and auditdepartments. This added up to a structure in which clarity and direction where hard to manage

• Unclear management structure
• Only one dimensional view of data
• No 'customer' concept

We initiated a huge change in our (30000+ employee) organization. The concept of the 'customer' was introduced. We discussed it and we realized that a taxpayer is also a customer, which should be treated as a customer. Even though a customer has a choice of either Yes or No to go to a supplier at all, and that he can always choose a supplier specifically. Our customers unfortunately do not have all these liberties.

To be able to better serve our customer the first major point to be improved was our structure. A taxpayer should not have to visit several offices to fulfill his duties.
As stated before, our mission is to achieve 100% compliance under our slogan: **We cannot aim to please, but we do aim for ease!.**

You can imagine that one of the main reasons for not already acting this way is the lack of availability of information on all the necessary locations at any time and with the required level of detail. This illustrates how critical IT is to realizing our vision.

Of course the organization also had to go through major changes. In short we tilted our organization from a product focus to a client-group focus. Implementation of these organizational changes took more than three years. At the end we had realized the current customer focused divisionalized structure and changed the job of 30.000 employees.

With this new organization, aimed at our 'customer', we had come a long way in the direction of integral customer management to achieve our 100% compliance goal. What was still missing in this picture is the integral automated support of this approach by information systems.

The Dutch Tax Administration (current structure)
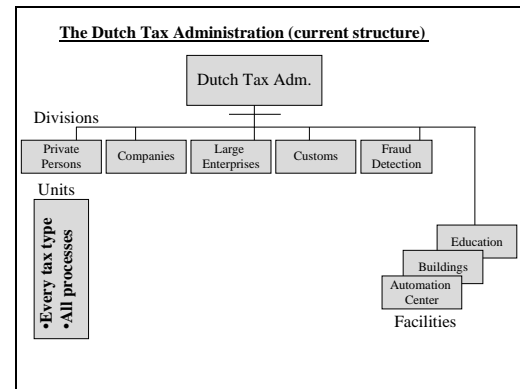
Each of our systems supported just one tax regulation. They still had not changed to support the new way we worked. It was possible that a taxpaying company in each system was known under a different Fiscal number or even another legal-name and address.
So we initiated projects to solve this with technology that nowadays would be called Data Warehousing.

BVR

The project called BVR, which would nowadays be called Customer Relationship Management, started in 1988. It was designed as a centralized system which had the function to be a kind of central address book. We split all our fiscal systems in a specific fiscal part and a generic part, which we removed to become part of the address book.
So here already we learned integrated systems were going to be the future. BVR was realized utilizing standard products from the marketplace (Sybase). This system is still running. We are actually redesigning it for more general use within the Dutch public sector.

BISON

But BVR wasn't enough. BVR gave us a static view on our customers but did not gave us the dynamics of their fiscal behavior. To do that we needed an integrated view on all flows of information from every customer.

To fulfill this need we started the project BISON. BISON is our real data-warehouse-avant-la lettre. Because BISON extracts all the data from a wide variety of systems, transforms these to information, which is relevant for the users of BISON. And provides a user interface to exploit all information in the fiscal systems.

Because normally as an employee of the Dutch Tax Administration you could just see in your functional oriented system just one kind of data, for example the data of the income tax.

But in the new order you want to see also the data from the other functional systems. For example the data from the value added tax.

And most important you want to integrate them in your opinion of the compliance of the taxpayer. Which should have repercussions for the actions to be taken and to the way you treat this specific taxpayer in the future.

The user interface of BISON largely supports this integrated management of the customer.

One of our major benefits in the early stages was the comparison of the data the taxpayer submitted for each kind of tax regulations.

When you buy an expensive car (tax on motor vehicles) but have no income to afford it (income statement) and there are no large bank accounts (tax on capital), questions should be raised.

Decent citizens should be treated decent and fraud must be punished at once. So we realized that we should have a strategy to each degree of compliance based on our knowledge of the taxpayer.

BISON is made on a Sybase platform. Although deployment is successful manageability is becoming an issue. The ability to adapt to the ever increasing demand for change is not as good as it should be. We have to build a better system that supports this kind of systems integration and also works as a decision support system.

The decision support part, which actions should be taken in the future, is now in the implementation phase. But at the same time we realized that we should not only dig in the past and in our databases, but also in the present and in the data marts in our environment.

Pilot studies, like combining the data from the ministry of social securities with our data, made clear that there were lots of opportunities.

Conclusion:

A new challenge for IT to enable the realization of these distant goals.

What we need is a solution that offers real-time access to all available data, giving us a complete view of the present. On top of this broader view

integration with our ERP and Workflow Management functionality will enable better process management. In addition to this the solution should be flexible enough to allow constant adaptation to changing reality, while management and control of the solution is improved without introducing new problems.

This calls for an off-the-shelve solution that operates on any platform, within any topology and with all types of databases and also offers the necessary functionality.

TODAY

All these changes in our structure, strategy and customer-orientation did not go unnoticed in the civil community. In 1996 we won the Consumers Award for the Most service-oriented public organization. In that same year we topped our record of 225+ Billion guilders collected. So thank you from the public in the same year that they paid the most. Thank you very much.

So far so good. The question remains as to whether the technology is available and can be managed to support or even enable this strategy any further. IT seems to be both an important enabler and a major constraint in achieving our goals.

To further elaborate a little bit on the constraints, a few examples:

- The sheer size of our IT Infrastructure and the vastness of the databases, combined with our position in society, demands an unnaturally high level of security, which implicates a major constraint by itself.
- Currently MIS does not think in terms of integration related topics such as re-usability of code, accessibility of functionality, etc, etc.
- The meta data concerning the information in the old legacy systems is absent.
- The deployment of systems in general appears not always to be according to procedure, which leads to data being entered incorrectly into the various systems.
- The maintenance of our current (3GL based) legacy systems demands ever increasing budgets.
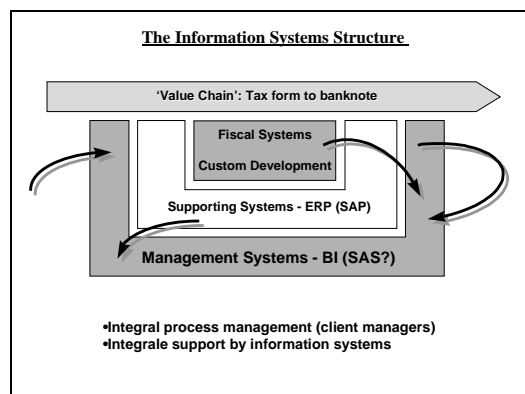
So far **not** so good it seems. The issue is to manage these constraints, how can we make this easier? In short and firstly: by reducing the number of components to manage.

We changed radically from a scenario where we built everything ourselves (including word processors) to one in which we build only systems ourselves that cannot be bought in the marketplace. Because we are a tax administration with national regulations, tax systems are (in theory) the only type of systems we want to build ourselves.

When we looked beyond the systems of our primary processes (fiscal oriented and functional systems) we saw only two other kinds of systems in our portfolio:

- Support systems for the functional area's of personnel, accounting, treasury;
- Systems with a management(-support) oriented perspective.

We decided for a systems-architecture that consists of only three types of components. First the primary fiscal oriented systems, secondly the support systems and third the management systems.

The Information Systems Structure

'Value Chain': Tax form to banknote

Fiscal Systems

Custom Development

Supporting Systems - ERP (SAP)

Management Systems - BI (SAS?)

- Integral process management (client managers)
- Integrale support by information systems

The second and third types should be bought in the marketplace. And to become more resistent to maintenance costs, put in place with only limited

changes to the standard form. We want to be in charge of our systems! Naturally we want to realize this with as little a number of components as possible.

This 'three-tier' architecture helps us link our IT-strategy to our business strategy very directly. Because as mentioned before, the primary system provides us with information upon which actions can be taken. At the same time the support systems provide us with information about for example the availability of skilled people to work on the proposed job.

The management systems help us follow the work in progress on several levels (strategic, tactical and operational). Management wants to combine these views to make better decisions possible.

In fact our approach to an integrated IT-architecture puts the final touch to the organizational changes which I illustrated before. It leads our organization to working in the way that was envisioned with our "Compliant Customer" in mind, while maximizing control and reducing operational cost.

So, what's the message?

So ladies and gentleman this is the job to be done. Make this IT-architecture work, so our strategy is helped not only in an supporting way but even more in an enabling way! To push ahead to the next phase.

It must be clear that as we are the Tax Administration, we consider ourselves competent enough to best understand how a fiscal system can be built, to meet Parliaments requirements. So we will continue doing this ourselves with all the necessary tools etc.

For the second layer, the support systems we decided to implement an enterprise resource planning system: SAP. This choice, in combination with the primary fiscal systems adds up to a situation where an integrated management approach becomes a real possibility.
However this puts specific demand and pressure on the systems for management in the third layer.

For the third layer, the systems for management, we are actually still looking for answers. Where the marketplace saw ERP systems as a generic concept for the support systems some seven to ten years ago, the same development seems to be taking place in the area of business intelligence.

Although the concept of business intelligence is broadly being adopted by the market, in my opinion the products are still in an early stage of their product-life-cycle.
Because describing the three separate layers still leaves out the most important component: The control and management of the integration between the layers. This is critical to **really reducing** the complexity of managing the total architecture and achieving the integrated support of our processes. As long as a clear and deployable answer to this issue has not been given, the compounded value of all systems will not be added.

And we are in a hurry, too!

Where our current focus is on the implementation of ERP systems throughout the organization, followed by definite choices for and deployment of various management information systems, the story still continues.
The rising interest for what is called a "Virtual Society" in the Netherlands, demands even more of the integration between layers of systems.

The SAS System™?

I said before that we want to be in control of our systems ourselves. So manage-ability is the critical point for the products we will choose. Especially in the realm of management information systems, which support decisions that may have very far-reaching consequences.
At this time we are in the process of choosing the components with which we will realize our management information systems. We think along the lines of the SAS Bow Tie, addressing each area separately.

In my view it is only logical to go for an integrated solution (This paper mentions "Integrated" all the time anyway), although some at our MIS department may still want a best of breed approach. Although this is primarily Steven's problem, as a salesperson from SAS Institute.
However, on second thought it is also my problem. As a business manager I am not primarily concerned with the choice of tools used by our MIS department, but I am very concerned about two things:

- Functionality to facilitate processes as explained before
- Deployability, durability, manageability and affordability of our solutions

In the light of manageability an interesting aspect of the SAS System is The SAS/Warehouse Administrator™. This seems to be a product in the market place that has the ability to grow to an extent we think we need now and in the 'near' future.

It is often said that the corporate repository does not exist and cannot be built.
I think we are forced to build one anyway. To implement our strategies, both in IT, and, much more important, in doing business.

The road to achieving my view of what the future will be, may not yet exist or, if it does be very difficult to cross at least, however please let me try to explain:
I think a company that wants to successfully claim it's stake in the virtual society that we are headed for, is a company that has a corporate data warehouse with accessibility for both internal and external use by all sorts of users and by all sorts of systems.

A future Information Systems Structure?
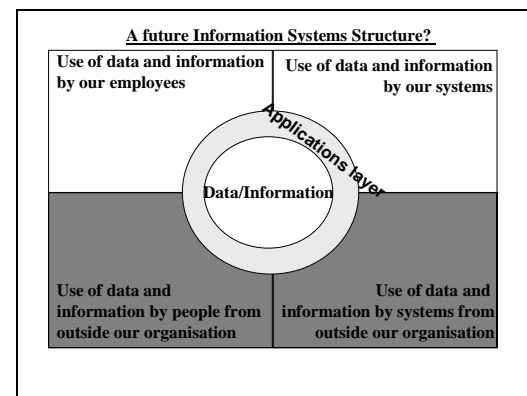
It's our goal to go on making our way in this direction. Using data warehousing as a means to better integrate decision making in the way we define and realize our mission and strategy.

This perspective on data warehousing seems to be broader than the market perceives it to be at present. We realize that steps on this road will be small; technology should be given a chance to evolve. However the direction is in my opinion clearly set. It should be the goal of the ever emerging

technology to help broaden the perspective and fulfill our needs in this area. SAS Institute is making progress. I am looking forward to their next steps and I thank you very much for the opportunity and your time.

Authors:
Jan. J.M. Roording RA RC,

**Dutch Tax Administration,
P.O.Box 20201, 2500 EE The Hague,
The Netherlands
+31 70 3427821 office
+31 651 315987 mobile**

**Steven F.M.J. van Agt,
SAS Institute,
P.O.Box 3053, 1270 BE Huizen,
The Netherlands
+31 35 6996900 office
+31 653 714840 mobile
e-mail: snlsta@snl.sas.com**