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Overview and Insight

A practical approach to connect business, applications, and technology with ArchiMate®, a standard of The Open Group

A Case Study by:

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Boundaryless Information Flow ™
achieved through global interoperability
in a secure, reliable, and timely manner

Executive Summary

This Case Study addresses the approach the Netherlands Tax & Customs Administration took to use the ArchiMate® language to provide a consistent and coherent overview and insight across business, application, and technology domains. It describes a practical, incremental way of working, based on a standardized metamodel, with automated scripts for publication, visualization, and quality control. This document can be helpful for IT managers and architects who need consistent and coherent information to improve decision-making.

This Case Study supports The Open Group vision of Bounderyless Information Flow™: information from multiple sources is combined and integrated in a standard way, is provided to people in the right context, and is used to improve the business processes of the IT department.

Introduction

The Netherlands Tax & Customs Administration levies, collects, and checks taxes on behalf of the government. They are also responsible for paying benefits in the form of financial support for rent, children, and for health insurance. They monitor goods coming into the country. Besides dealing with issues relating to security, health, the economy, and the environment, Customs also levies excise duties. The Tax & Customs Administration is one of the largest government authorities in the Netherlands. Every year about 29,000 employees collect some €232 billion in tax revenues and distribute more than €12 billion in benefits.

Business processes and communication with citizens, enterprises, and other governmental agencies are highly automated. Handling these volumes is only possible because of a high level of computerization. A lot of interconnected IT systems have been used to support these business processes for many years.

However, this high level of computerization also has some drawbacks. Continuous requirements from legislation and business, lack of maintenance, and shrinking budgets have led to a complex IT landscape with a lot of point solutions and technical debt. As a result, it takes a lot of effort to guarantee business operations, and fulfilling new demands has a big impact and takes more and more time. Structural improvements of the IT landscape – better, cheaper, and more agile – is almost impossible.

In 2014, the Court of Audit concluded that the Tax & Customs Administration is not in control of its IT. This includes all aspects of IT, from applications to development tools, and from hardware platforms to cost of maintenance and operations.

Observations

Analyzing this situation leads to some observations.

First is the lack of a coherent **overview and insight** in business processes, applications, and technology:

- Organizational complexity: the Tax & Customs Administration consists of different business lines for tax, customs, benefits, and various supporting processes; coordination of cross-cutting issues over these business lines is difficult.
- IT organization complexity: the IT function is split up into separate organizations for information management, application development, and infrastructure, and each department has their own architecture deliverables.
- Lack of standardization: similar architecture deliverables have different levels of detail and contain different artifacts, which makes it time-consuming to review and to decide on investments, planning, and feasibility.

A second observation is that it is not easy to get **up-to-date and reliable information** on the IT landscape:

- Information is scattered: information on architecture is kept in presentations, documents, spreadsheets, and so on, and it takes too much effort to combine this information and to resolve differences.
- Information is not reliable: not all relevant information for making decisions on architecture is available and up-to-date, and therefore decisions are often based on partial information.

And finally, it is difficult to determine the **impact of changes** and to find the best strategy for an application or for the entire IT landscape:

- Changes can occur from business, application, and infrastructure, but a change of one has impact on the others.

Overview and Insight

From the previous section it is clear that a lot of IT and architecture is in place, but also that this is not sufficient to meet the new requirements of legislation and business and to ensure continuity in the meantime. The CIO initiated a program called "Overview and Insight". The goal of this program is to contribute to the drivers and goals below by providing consistent and coherent information in order to make better decisions.

Guarantee Continuity

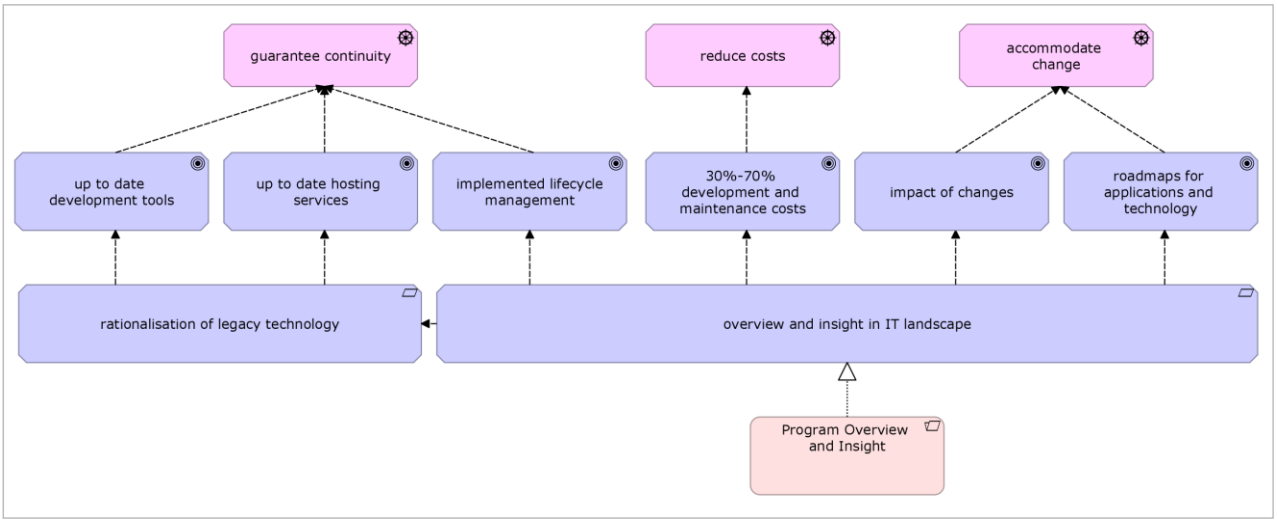
- The IT landscape should use up-to-date development tools and hosting services.
- Lifecycle management should be a continuous activity.

Accommodate Change

- Ease the determination of the impact of change.
- Roadmaps for change should be based on information across domains and layers.

Reduce Costs

- Spend less money on maintenance and use it for development and enhancements.



Approach

The aim is to set up a **central repository** for the Tax & Customs Administration with **standardized** information on the Business, Application, and Technology Layers. This repository should be integrated with existing application **metrics** and characteristics. An **incremental approach** is taken to show results in a short time and to deliver value as soon as possible. Quality is governed by **automated validation** of the repository against the standards and guidelines. Finally, all information is **published** and made available for everyone in the organization to use.

Trying to achieve this is not without issues and challenges. The first issue we had to deal with was to put together a set of standards and to enforce its use. Since there are a lot of domains each having more or less their own way of working this could be a challenging and very time-consuming step. Therefore, we decided to put a small central team in place with a small group of experienced architects to set up the standards incrementally. Besides this, the enforcement of the standards was not left to the architects, but a responsibility of the architects' manager. This management attention helps in setting the right priorities.

Another challenge was to get everyone on the same base level. Up front, we already knew that not every domain had the same level of knowledge and experience on the ArchiMate language as the Enterprise Architecture tooling in use.[1] Also, there is quite a difference in the way the business and application architects in different domains work together. To overcome this, we only prescribed the minimum level needed, so more advanced domains could keep their additional schemes and concepts in use. Secondly, we offered support from the central team to help others to comply to the minimum level.

Architecture connects business, applications, and technology, and can focus on planning or on solutions. This means a lot of different stakeholders are involved and should be interested in a coherent overview of the IT landscape. Getting these stakeholders involved or committed was done in two ways: top-down, since the assignment to start this Overview and Insight program came from the CIO; bottom-up, because whenever possible the intermediate results of the program were presented to individual stakeholders or groups. The more information available, the more stakeholders are interested.

The focus in this Case Study is on the Application Layer. Not that the Business and Infrastructure Layers are of less importance, but the Overview and Insight program was started at the department for application development and maintenance.

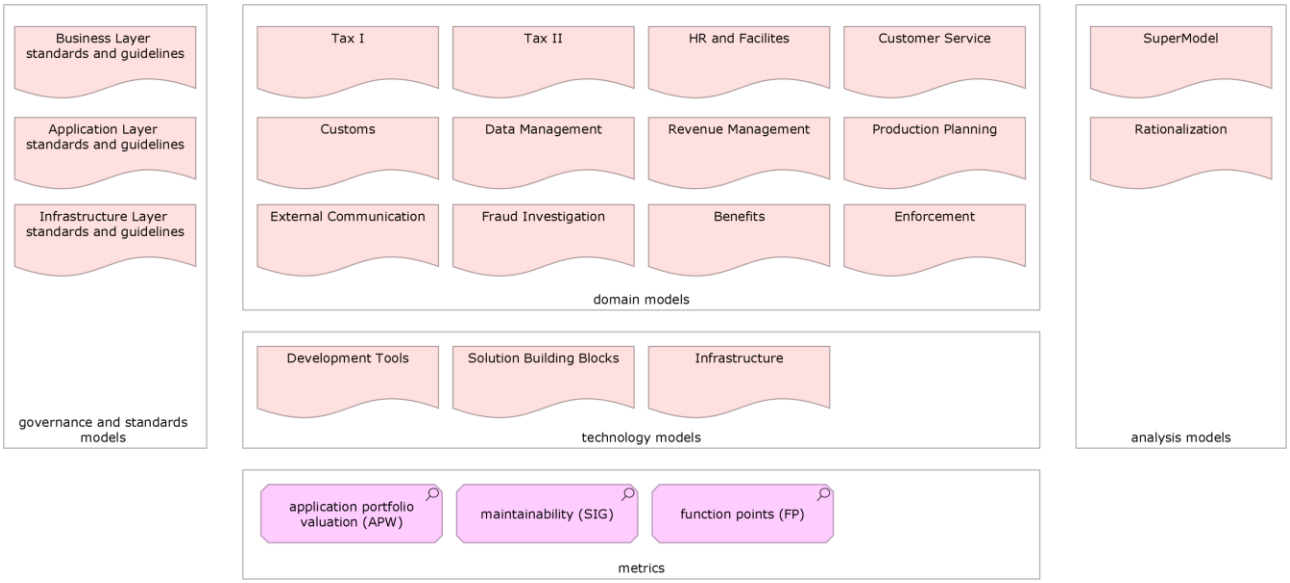
Central Repository

The Tax & Customs Administration has a large IT department, split over multiple information management business units, a department for application development and maintenance, and a department for infrastructure development and operations. There are different business and technology domains, each having specific priorities, different working practices, and different levels of maturity. Therefore, it is extremely

[1] The ArchiMate modeling language is a standard of The Open Group. More information can be found at www3.opengroup.org/subjectareas/enterprise/archimate.

challenging to make one single architecture deliverable which holds all architecture information and upon which all architects can work together.

However, with the Enterprise Architecture tools in use it is possible to have a central repository which contains all architecture models. The different departments are responsible for maintaining their models, but the governance and compliance to standards is done centrally.



Governance and Standards Models

This part of the repository contains a collection of centrally provided models with standards and guidelines for the Business, Application, and Technology Layers. Also, scripts to support validation, import and export information, and predefined views are provided.

Technology Models

These are models for development tools, solution building blocks, and infrastructure; i.e., everything needed to develop, maintain, and operate applications and infrastructure.

Business Domain Models

Each business unit has one or more domain models consisting of baseline and target business processes, applications, and the technology in use.

Analysis Models

Analysis models are used to support overall analysis activities (the supermodel), or to support a specific cross-cutting theme or project (in this case, rationalization).

Standardized Information

To enforce standardization we set up a metamodel.

As one of the companies involved with the initial development of the ArchiMate standard, it was obvious we should use the ArchiMate standard for modeling architectures. However, the standard alone was not enough, since it is possible to model objects and relationships in a lot of different ways in the ArchiMate language. To be able to compare domains, to connect domains, and to combine domains, it is necessary to standardize on how the architecture is modeled.

Therefore, the metamodel contains definitions of the concepts, relationships, and attributes to use. Together with naming conventions, rules for the level of detail, and examples, this gives enough guidance for architects to fill in their domain models. We started with a limited set of concepts and relationships to keep things practical. The metamodel can be extended incrementally whenever we need to. Also, we keep the option open for domains to use other concepts in their architectures.

The metamodel currently in use is as follows: