# IT strategy

## Information systems
## Strategic planning

**Statistics Austria**
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# 1 Management summary

An effective IT strategy must put consideration of the business strategy and process orientation before the selection of information methods and technologies. If the individual directorates are also responsible for the definition and commercial organisation of business processes, then the IT Department sees itself as an advisor and service provider for the specialist department in that it offers IT technologies and methods for the purposes of reorganising or gradually optimising business processes.

Besides the implementation of new technologies, particular emphasis must be given to organisational factors (changed work content and processes) and also to the integration of new systems and methods into the existing range of applications and support services. There are significant opportunities for efficiency enhancement and rationalisation in this area.

In this context, the IT Department is a partner and advisor, particularly of course with respect to the use of the existing technical opportunities. The further development of IT application know-how in the directorates (reliable and widespread use of the standard software that is provided) remains a requirement, however.

In terms of the strategic management of information and communications systems, this means that the IT Department does not see itself purely as an implementer of new technology for the sole purposes of giving applications a modern, up-to-date appearance or providing users with an interface that is easier to use, for instance. Rather, it sees itself as an innovator, consultant and partner to the directorates.

There is a requirement for the various departments of Statistics Austria to access the same information at the same time and to interlink and process this information. This requirement means that application integration is extremely important.
The objective must be that information is always collected, processed and presented in accordance with the same rules (standards). This is one of the key tasks of information management, and also plays an important role in terms of the design and development of databases and the automated publication of results.

In principle, interoperability is the basis for any IT strategy today. Applications on platforms of all types may be integrated using standardised communication levels. As a result, only products made by manufacturers that support standards and integrate them in their products should be purchased.

# 2 General IT strategy

In implementing its existing IT strategy, Statistics Austria focuses on supporting business processes and on the organisational units involved in these processes. This approach is also reflected in the allocation of funds from Statistics Austria's budget, which is oriented primarily to the requirements of the core processes of statistical production.

The IT Department is the central provider of IT services within the Federal Institute. One of its key tasks is the timely provision of the requisite IT resources in the necessary quantity and quality.

Because the IT Department does not see itself purely as an implementer of new methods and technology, it will continue to develop in its role of innovator, consultant and partner to the specialist departments.

The core task of IT management is and remains to guarantee the optimal provision of IT services and support to Statistics Austria while ensuring maximum cost-effectiveness, to support the specialist departments with know-how that is as homogenous as possible and to guarantee the comprehensive compatibility of all solutions offered in order to ensure optimal protection of the investments made.

Data protection and data security requirements naturally continue to be satisfied without reservation.

The following concrete objectives result from this:

- integration, redesign and acceleration of processes
- streamlining and quality enhancement
- reduction of the burden on respondents

The use of new forms of survey (e.g. e-Quest, optical slip reading) is revolutionising statistical production and has furthermore necessitated a change to IT support.

The statutorily required use of third-party administrative registers (e.g. the Austrian Central Register of Residents), which is intended to reduce the burden on respondents, makes demands in terms of the integration and interoperability of IT applications and Statistics Austria's data structures with those of external data owners. The same requirements result from planned co-operations relating to the preparation of economic accounts with other organisations (e.g. with the National Bank of Austria for the preparation of the balance of payments).

Within the framework of the current IT strategy, the present reform measures in statistical production and process reorganisation measures in Statistics Austria directorates are in essence being supported as follows:

- web services as the prerequisite for interoperability with other institutions and organisations.
- Internet technologies for both supporting surveys and publishing the results.
- open architectures and the use of international standards in order to facilitate integration with other institutions and organisations.

# 3 Information architecture

Within a modern service and 'customer'-oriented IT department and its technical infrastructure, it is essential that a number of basic principles are taken into account. These result on the one hand from Austria's membership of the European Union and the respective national IT strategies resulting therefrom, and on the other from the changed requirements of in-house and external users, for instance:

- the Europe-wide compatibility of public networks, applications and services as the EU's primary goal in the area of IT.

- the use of technical norms (standards) and recommendations passed by the European Union and the Austrian IT Coordination Department, such as:

  - the use of software with a freely accessible source code (Open Source)
  - the promotion and use of this software in the public sector
  - the purchase of key platforms relating thereto
  - the use of LINUX

- further integration into the desired trans-European network of public administration (IDA project), which has as its objective the free exchange of information in the defined areas of taxes/customs, statistics, social security and health.

As far as the use of Open Source is concerned, it is necessary to bear meagre personnel resources and technical particularities in mind. Because commercial products frequently use proprietary exchange formats, a lack of interoperability with the existing IT infrastructure is not uncommon and can only be overcome by means of costly conversions.

The following basic principles are at the focus of Statistics Austria's general information architecture described below:

**Horizontal integration**: This refers to the strategic objective of promoting cross-survey solutions in the future in the place of "stovepipe" applications. These solutions can be configured via meta-data but at the same time are flexible enough to be adapted to the specific requirements of individual surveys (through the component architecture and the definition of interfaces for expanding applications using plug-in modules).

**Vertical integration**: This concerns the simplification and standardisation of statistical production processes across the statistical lifecycle. What is particularly important here is meta-information management. Statistical meta-data must be electronically collected as early as possible (or generated automatically on the basis of specific work steps) so that it is available during subsequent phases of statistical production and can be reused.

**Standardisation:** The prerequisite for horizontal and vertical integration is the elaboration of (and adherence to) standards. These include, for example, standardised data formats and data storage rules (four-layer model, statistical spreadsheet format, etc.), standards for software development (user interfaces, component architecture), meta-data standards and standardised procedures in statistical production.

## 3.1 Application software management

Application management at Statistics Austria is in principle undertaken by the IT Department exclusively. It is understood as signifying the development and maintenance of an organisation-wide software portfolio that supports all of Statistics Austria's key business processes.

It also encompasses decisions as to whether an existing application should be adapted and expanded, or whether a new application should be developed and/or whether standard software should be used. These decisions are usually based on the volume of investment already made in the existing programs (investment protection), the availability of strategically similar standard software and additional cost-related factors.

The system modules, i.e. the components, required in each case may be realised in different ways at Statistics Austria, e.g. through standard or customised software or through the integration of legacy systems. A combination of all the above is used in most cases. This requirement is supported by modern architectures such as a client/server architecture or web services. The systems must also be interconnected. The advantages of Enterprise Application Integration (EAI) platforms apply here. They

not only unite business needs and realisation, but also prevent media discontinuities between functionally designed applications.

Application software should in principle be developed by Statistics Austria itself (with third-party involvement also), firstly if it is to accommodate specific tasks such as the execution, plausibility control and correction of surveys and secondly in the area of configuration, transformations and data manipulation in and between the four data management layers of the layer model.

A further fundamental requirement is the reduction of vertical integration in software development. Bought-in standard software and the outsourcing of selected sub-implementation stages reduce the realisation and maintenance costs of development in-house. Only components that are significant for the 'core business' are developed in-house.
It is important, however, that sovereignty over design and architecture is retained. This core competence must be upheld to ensure that business requirements may be supported effectively and efficiently.

Of the application-related new developments and projects to be implemented by the IT Department that deserve special mention, the following are noteworthy here:
Registers:

- Conclusion of the development of a web application for "iFarm" (former Register of Agricultural and Forestry Enterprises) for use by third parties.
- Continuing realisation of a new application for the "NEU enterprise register".
- During the course of preliminary work for the "Register-based census 2011", further third-party registers are being integrated into the data warehouse, the data cubes that satisfy the requirements are being developed and are being evaluated accordingly by the specialist department.

From the current perspective, software developments for realising the "meta-data repository" will have to be carried out in 2008. However, the scope and characteristics of this project were still under discussion at the time of planning of the 2008 programme of work.

Development of an electronic portal:
Following the actual launch of the "standard portal" in 2007 (realised in the context of an initiative of the Austrian government's IT Coordination Department), it should be anticipated that in 2008 the previously defined – purely public – user group will be expanded to include semi-public establishments and also private users. This

expansion is particularly relevant to the Federal Institute's objectives as regards the desired integration e.g. of enterprises in the agricultural and non-agricultural sector for the purposes of online surveys (eQuestWeb).

The entire redesign and reorganisation of the Integrated Statistical Information System (ISIS-New) continues apace.
The last software adaptations by the manufacturer are scheduled to be made during the planning period. It should also be assumed that it will be possible to conclude the key realisation stages of the independently developed software modules, which are predominantly based on defined interfaces. Following on from this, the infrastructure required for start-up must be finalised so that data read-in may begin. All these measures should ensure that the launch scheduled for 2009 takes effect.

## 3.1 Background and anticipated benefits

It is intended that the standardisation measures relating to application development – a focus on only a small number of programming languages and development environments – will

- reduce the training costs required for updating this know-how;
- reduce the programming costs as a result of better capacity utilisation and more straightforward scheduling of employees' workload;
- improve the organisation's reaction time (resolution of interface issues between the given specialist department and the IT Department);
- free up meagre IT development resources;
- increase the overall efficiency of IT investments.

The introduction of Internet-based systems will bring about a further paradigmatic shift. Instead of monolithic or granular systems, web services can now be offered. These are particularly strong in terms of interoperability.

Service-oriented architectures (SOAs) and web services are also becoming ever more important. Software architectures are used to model the internal structure of complex IT systems and thus constitute the basis of any corporate IT system.

## 3.2 Strategic software products

**End-user tools (on workstations):**

The MS OFFICE package, comprising WORD, EXCEL, ACCESS and PowerPoint.

SAS Enterprise Guide (SAS/EG), a collection of SAS routines and tools that give expert statisticians access to RDS, ADS, SDS and PDS.
SPSS is used in a number of sub-areas.

**Standard application software (on workstations):**

SAS/BASE
SAS/STAT
SAS/…
SAS/INTEGRATOR
SAP R/3 (business software; limited number of users)

**Middleware:**

DB2 as a relational database management system (for RDS, ADS)
ISIS, Superstar as multidimensional databases (for SDS)
SAS/IT, SAS/Access, SAS/BI Server

**Application development:**

WEBSPHERE

# 4 IT infrastructure

A three-platform concept, namely

- a central server using z/OS operating systems and UNIX (AIX, LINUX),
- decentralised servers using UNIX (RISC processors) and WINDOWS (INTEL processors)
- workplace computers using the WINDOWS operating system

has been the proven approach taken for many years and will be retained, with special attention given to server consolidation. In this case the central server area has the particular task of central data management. Much effort is being made first and foremost to ensure that, when possible and sensible to do so, data volumes are stored in standardised database systems (DB2/UDB). This strategy guarantees the necessary data integration measures and ensures that existing data storage and recovery processes can be used on all platforms.

## 4.1 Servers and operating systems

In order to support projects at Statistics Austria, it is necessary to isolate database management, business logic (the actual programs) and interaction with the users from one another from the standpoint of application technology. In line with this concept model, the following platforms are used at Statistics Austria:

**Database server:** IBM zSeries with z/OS as the operating system, as a platform for the database management systems, i.e. DB2, ISIS (new), and also for software for the SDS and PDS layers to be selected in the future.

**Application server:** IBM zSeries Linux processors with LINUX as the operating system, as the preferred platform for new application programs.

In the future it should also be possible to both develop special applications for z/OS (e.g. in batch routines) and use special applications on WINDOWS clients (e.g. software for questionnaire data that is collected electronically).

The platforms used at Statistics Austria are selected and provided with consideration of the following factors:

- overall cost analysis
- operational reliability
- scalability

The increased use of LINUX processors on mainframes is penetrating platform monopolies to some extent. The increase in computer performance resulting from greater demand is also being decelerated by running some programs on processors other than LINUX processors; with respect to z/OS, the time intervals between capacity increases – resulting from the growth in applications – are becoming ever greater.

## 4.2 Security strategy/management

The use of information systems and networks has changed dramatically in recent years. As a consequence of the widespread use of the Internet and the opportunities afforded by new technologies, previously closed systems are now being networked – at both national and international level. It is imperative that the operators and users of these systems can depend on their reliability and availability.

In the area of public administration, requirements concerning the trustworthiness and reliability of IT systems are joined by requirements relating to audit and verification capabilities.

The reliability of IT systems relates primarily to:

- confidentiality
- integrity
- authenticity
- availability
- dependability

- data protection

The Austrian Security of Information Act transposes developments in the context of the European Union and other obligations incumbent upon Austria (OECD, Western European Union, NATO Partnership for Peace).
The resulting 'IT-Sicherheitshandbuch für die öffentliche Verwaltung' (IT Security Manual for Public Administration) reflects the key principles of this Act and constitutes the basis for IT security measures at Statistics Austria. Statistics Austria's own Data Protection Regulations also impose specific obligations.

## 4.3 Network management

In principle, the existing approach involving the full functional integration of all PCs into the **LAN (Local Area Network)** through

- the provision of all decentrally provided software products and

- the opportunity to make use of the mainframe computer's capabilities

is being further pursued. Within the framework of the **teleprocessing network** with external posts it will naturally be necessary to continue placing greater emphasis on electronic data collection – via the now almost established opportunities afforded by electronic data exchange with publicly-owned data processing centres (ministries, governments of the federal provinces, etc.). This strategy is intended to

- reduce the burden on respondents;

- and in so doing increase respondent satisfaction;

- streamline processes within Statistics Austria;

- improve data quality;

- bring about positive effects with respect to data processing times.

# 5 IT Department

## 5.1 Portfolio of functions and services

Despite continual changes in specific demands, the fundamental requirement of any IT operation – namely to offer secure and stable information systems and services – has not changed:

- handling of all of Statistics Austria's IT matters
- data processing centre services and support for external customers
- provision of all services with the guarantee of optimum quality and security for
    - traditional IT services and support
    - network services and
    - special services
- management of the data processing centre that is as commercially efficient as possible
- support/training

In the event of specific demands, the existing range of services can and shall be extended taking cost/benefit analyses into account and ensuring a focus on offsetting costs and on budget-related factors.

In recent years, however, there have been major changes in terms of the requirements and demands of users, 'customers', and also with respect to the way in which services are provided.
Here the IT Department's role is increasingly to provide concentrated know-how, to manage company-wide and/or country-wide data pools and databases (e.g. registers, 'cross-sectional data'), to distribute data in a structured manner and to manage and integrate the various processes and processing levels.