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Technological solution of the Czech Business Register and tools for administration and use	

1. Basic characteristics of the content of the Business Register

The Czech Statistical Office (CZSO) on the basis of Act No. 89/1995 Coll., on the State Statistical Service, has created the Business Register (hereinafter referred to as „the BR“. In defining the types of units and the scope of observed attributes maintained in the Register, the CZSO is also governed by regulations of the Council of the European Communities. These regulations contain procedures for the design of registers for statistical purposes (Council Regulation No. 2186/93 of 22 July 1993) and define statistical units (Council Regulation No. 696/1993 of 15 March 1993).

Starting from 1 January 2003, the Register encompasses the following 4 types of units:

- **legal units** – the BR reflects the legal state of registration of all businesses with legal personality in the Czech Republic;
- **statistical enterprises** – the BR reflects statistical needs; only legal units reporting economic activity are considered statistical enterprises; legal units may be combined to form an enterprise consisting of more legal units;
- **local units (LU)** – each statistical enterprise has at least one local unit (at the seat of the enterprise); other local units are recorded for enterprises in multiple locations;
- **kind-of-activity units (KAU)** – come into being through the profiling of large important enterprises with heterogeneous activity; they are recorded only with a small segment of enterprises (300-500 enterprises).

The Register tracks changes of all units in time, i.e. their births, deaths, mergers/takeovers and break-ups/split-offs, as well as changes of attributes observed on individual types of statistical units maintained in the BR. Even after their deaths, all units remain in the BR; information on businesses is fully available, using historical views of the Register.

Attributes maintained on individual businesses can generally be divided as follows:

- 1) identification ones - identification number, business name, address, name, address and birth certificate number of the entrepreneur, territorial identification;
- 2) classification ones - legal form, institutional sector, NACE, size by number of employees, size by turnover, size by agricultural and arable land (applying to agricultural units), activity, government department, type of natural person, etc.

The system of observation by information sources is used to observe the attributes of individual businesses. Data sources, such as company register or trade register, are distinguished from the business itself, professional chamber, etc. As a result, the Register keeps track of administrative (legal) status of each business. Using additional information on the economic reality of businesses (e.g. statistical surveys, social security register, VAT payers register, income tax payers register), the CZSO puts the Register into statistical form, so that the BR can be used for the preparation and implementation of statistical surveys. The Register has become an integral part of the process of preparing and implementing statistical surveys, it is used to create the framework of surveys and samples for approx. 50 statistical surveys today and covers thus nearly all of the economic surveys.

All observed attributes are bound to the system of nomenclatures and classifications, which the CZSO creates for statistical needs and which are used for the purposes of statistical surveys. Selected classification attributes are marked as obligatory, i.e. they have to be given for each business (e.g. identification number, business name, date of birth, address, etc.).

In compliance with further requirements for the state administration of the Czech Republic, the work will go into the creation of an administrative business register, under active participation of the CZSO and using approaches and experience gathered by the EU Member States. The goal is to create an administrative business register in the Czech Republic to be used by central government; simultaneously, every authority will create its own part of the register, which will be unavailable to the public and will keep track of peculiarities of a given authority, e.g. statistics.

2. Basic characteristics of technical and technological solutions to the Business Register

The statistical BR has been built as a central register with a network of registration workplaces in the regions. The BR is a client/server application where the server part of the application contains all data, handles the data and ensures data integrity and security model of application. HP GS60 under operating system True64 Unix is the database server used for the BR. Oracle is the relational database system. This is a unique application tailored to the needs of the CZSO, using all supporting means of the ORACLE product, and the first client/server application actually operating in the conditions of the CZSO. The total volume of the disk space operated by the application is about 100 GB. The application has been created as an application for a non-programmer user in a friendly environment of the system of supply menus and screens with a button option.

The use of LAN/WAN in the CZSO makes data available for any CZSO client workplace that is authorised to online access to the server of the BR. The closely observed client/server architecture reduces the amount of transmitted data to a minimum, because data are handled only on the side of the server. The basis of LAN/WAN in the CZSO is a double main switch Cisco, to which all Unix and Intel servers in the computing centre Prague are redundantly connected, the transmission speed is 100 Mbit/s (the speed of the spine is 1 Gbit/s). The LAN in Prague is linked, making one logical whole, with WAN lines (hired digital lines with speed 512 kbit/s) of fourteen CZSO regional departments located outside Prague where LANs have been installed.

A PC with processor Intel Pentium, at least 128 MB RAM, graphical display device at least 800x600, mouse, and TCP/IP protocol to connect the station to the network are used for the client workplaces where the BR is maintained (updated). The client part of application contains no data; it only serves communication between users and the data server. Only the outcome of asked question, which represents no significant load for the environment of the network when working online with application, is transmitted to the client workplace.

In addition to access to BR data, using Oracle client, there is a possibility of a passive access to BR data, using a WWW client. This variant, which the CZSO has long been making available also on the Internet on its WWW server, allows full search for a business; however, the data can only be read from a data image. This data subset is not maintained on the BR data server, but it is situated at the CZSO Intranet server and the need of disk space is approx. 35 GB of the disk field.

3. Basic characteristics of the BR data model

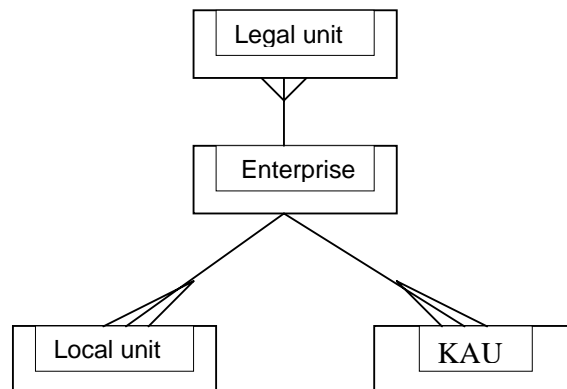
The BR in form developed at the CZSO is an open technical solution with a fixed link to RDBMS Oracle, but having a number of technology options (technical platform and the operational system of server and client workplaces, networking). We consider the BR as an open register, because changes in the scope of observed attributes or changes in data sources do not require change in BR data structures.

Principles of constructing the BR data model:

- a) solution is based on the possibilities of relational database structures in the ORACLE system;

- b) the observation of statistical units and their attributes in the BR is fully historical, i.e. allowing data valid at any date to be seen;
- c) where meaningful, the Register allows a multiple occurrence of an attribute to be recorded, the number of records being not limited (e.g. multiple occurrence of CZ-NACE);
- d) with selected classification attributes, the Register allows the values of an attribute to be recorded at the same date from various sources and rules for their use in statistics to be defined;
- e) the observation of attributes of individual businesses depends on the types of recorded businesses (by legal form) and units (not all attributes are observed with all types of businesses and units);
- g) work with data stored in the BR is subject to so-called security model where the roles of individual users are defined in detail. On the client side, authorisation to particular users is given, allowing them individual types of activities. There are functions also on the server side aimed at data protection against technical breakdown and unauthorised access to data;
- h) the administration of the BR takes place above so-called edition interface, which allows continuous administration of the BR independent of its use (tabulations, creation of basic sets and samples, etc.). Edition interface represents a mechanism for the separation of data space intended for editing (EDT schema) from space containing permanent data (BR schema). All data changes take place in the EDT schema – both individual changes made manually and large-scale changes made on a batch basis. A complete check is carried out above the EDT schema, with recalculation into statistical value; the unit goes back in the BR schema only if the record of the unit passes as correct;
- i) the system retains information on updating operations carried out in the Register – who performed the operation and when.

The basic entity for every unit is the entity of **statistical enterprise**. Statistical enterprise contains a link to one or more **legal units** (always one legal unit in time is defined as dominant and its identification number is borne by the statistical enterprise). Further, the statistical enterprise is bound to one or more **local units** and to **kind-of-activity (KAU)** units. KAU are not obligatory.



Subordinate entities with attributes (variables) of individual unit types, address entity distinguishing coded and full address, and a special entity to identify natural persons are bound to these basic

entities. All entities have then a table attached keeping track of changes in individual entities in individual variables.

4. Basic characteristics of functions in the Business Register

The BR application contains functions that cover a large majority of what all types of users need for work with the BR. There are three large groups of functions:

1) administration of the BR

- batch updates broken down by type of data source (e.g. update by data from the company register, from the trade register, from relevant professional chambers, from the system of taxation, etc.);
- manual updates allowing changes in all attributes observed in the BR ;
- takeovers and updates of nomenclatures;
- operation functions, such as creation of file data structures to export data from the BR;

2) provision of information from the BR

- publicly available data on one business (identification number) – to be printed on a prepared form;
- publicly available data on a set of businesses – in a predefined data structure;
- overall data on the numbers of businesses – so-called cross tables;

3) preparation of statistical surveys

- preparing a statistical task and defining reporting duty, strata and the sampling;
- creating basic sets and samples and their exports to users;
- verifying reporting duty;
- burden on reporting units.

5. Basic characteristics of organising Business Register administration

The Statistical Registers Department is in charge of the statistical BR in the CZSO. The Department consists of two sections. The first is section for the methodology and development of the BR, which is responsible for the conception and methodology of the BR, taking account of statistical needs. The second is section for local and KAU surveys whose duty is to methodologically control and support the creation of local units and KAU, using the so-called profiling of statistically significant businesses. The BR is administered at the level of seven selected regions where new professional workplaces have been established to administer the BR. All these workplaces work in a standard environment and operate one central register. These workplaces administer the Register with respect to both territory and subject matter, i.e. each of them covers all businesses having seats in a given region plus businesses falling into the terms of reference of the workplace in a given region (for example, the workplace for the BR in Brno covers all businesses having seats in the former Jihomoravský Region plus all statistically surveyed businesses in the whole Czech Republic with the principal activity of construction). To administer the BR, these workplaces use data from administrative and from statistical data sources.

The workplaces use the following information to administer the BR:

1) administrative data sources:

- data from commercial courts running company registers – coded files sent by e-mail on a daily basis;
- data from the district trades licensing offices – data files handed over on a computer medium;
- data from so-called other businesses themselves – applications for assignment of the identification number or notifications of changes.

2) statistical data sources:

- data from statistical surveys in form of data files to ensure feedback from statistical surveys to the BR.

On top of the workplaces in the regions, also a workplace at CZSO headquarters in Prague takes part in BR administration, updating the BR by data from central administrative data sources (VAT payers, income tax payers, professional chambers, social security payers, etc.). In total, a CZSO staff of approx. 70 participate in methodology, conception development and administration of the BR.

6. Basic characteristics of providing data from the Business Register to the public

The provision of data from the BR to the public is fully subject to individual data protection and the public at large can have only data defined by the State Statistical Service Act. There are the following basic ways of providing data from the BR:

- data presentation on CZSO web site – focus on information about one chosen business;
- provision of the entire unabridged BR on CD-ROM, using a standard data structure with a basic utility program allowing search for and display of information about businesses;
- provision of extracts from the BR – information about one business printed on a prepared form;
- provision of extracts from the BR on electronic medium, using a standard data structure.