METHODOLOGY

The Czech Statistical Office collects various characteristics about research and development using direct comprehensive statistical survey (VTR 5-01). This survey has been carried out since 1995 and it is annual. It is included in the Program of statistical surveys that is each year updated according to the law n. 89/1995 Sb.

1. Basic facts about survey

Name of survey:	Annual Survey about Research and Development (VTR 5-01)
Questioner:	Since 1995 there are two types of questioner according to the sector of performance:
Technique of survey:	The questioner is sent to statistical units by mail. Also possibility to fill it out electronically.
Periodicity	Annual
Recalculation for non-response	In power since 2001
Rate of return of questioner:	In 2010: 86,6 %; in 2009: 89,8 %; in 2008: 86,7 %
Statistical units:	All legal entities and persons who carry out R&D in the Czech Republic as their primary or secondary activities irrespective to number of employees, sector of performance and economic activity.
Purpose:	To collect data about labor force in R&D and expenditure on R&D.
Characteristics:	Number of R&D workplaces and workplaces primarily devoted to R&D. Number and structure of R&D personnel – by occupation, qualification, sex. Size and structure of expenditure on R&D – by type of costs, source of funds, type of R&D activity. Size of expenditure in specific R&D fields (ICT, biotechnology, nanotechnology and nanomaterials). Number and structure of R&D workplaces that used their R&D results in commerce in 2008.
Classification:	Characteristics are sorted by: • sector of performance (business enterprise, government, higher education, private non-profit), • fields of science (natural sciences, engineering, medical sciences, agricultural sciences, social sciences and humanities), • region (CZ-NUTS 3),

	• in the business enterprise sector also by type of economic activity (CZ-NACE), • in the government sector by type of workplace (Academy of Science ČR, R&D workplaces in CZ-NACE 72, other government R&D workplaces).
International, comparison	Data collected by this survey are internationally comparable because this survey respects standard described in Frascati manual (OECD, 2002) and EC direction n. 753/2004 from 22nd April 2004.

2. Definitions

Research and development

The terms **research** and **development** in the Czech Republic are defined in the Act on R&D Support from Public Funds. R&D is defined as systematic creative work undertaken on a systematic basis in order to increase the stock of knowledge, including knowledge of human beings, culture and society, and carried out for the purpose of obtaining or using new knowledge using methods allowing confirmation, widening or refuting of knowledge obtained. It includes:

- **basic research**, which is experimental or theoretical work undertaken primarily to acquire new knowledge of the underlying foundation of observed phenomena, to explain their causes and possible impacts when using obtained findings without any particular application or use in view;
- **applied research**, which is experimental or theoretical work undertaken to acquire new knowledge or skills with a purpose to develop or improve goods, processes or services; findings from this type of research are directed primarily towards a specific aim or objective;
- **development (experimental development)**, which is systematic work drawing on existing knowledge gained from research, technology, business or other related fields to produce or substantially improve new materials, products or equipment, or to introduce new or improved technologies, systems and services.

The R&D data in this part of the chapter come from the annual R&D survey measuring human and financial resources designed for R&D activities. The survey is fully governed by EU and OECD methodological principles laid down in the Frascati manual (OECD, Paris 2002) and Commission Regulation (EC) on statistics on science and technology.

Reporting units in the R&D survey are all legal and natural persons conducting R&D in the Czech Republic as their principal (CZ-NACE 72 – places devoted fully to research) or secondary economic activity, irrespective of the number of personnel, sector or CZ-NACE activity.

The R&D personnel and R&D expenditure data are always totals from collected questionnaires. Since the year 2001, mathematical and statistical methods have been used to make estimates for non-response.

Sector of performance

The R&D indicators are normally observed in the following four key **R&D sectors defined in the Frascati manual and** derived from institutional sectors and sub-sectors used in the national accounts:

- **business enterprise sector,** which comprises all companies, organizations and institutions whose principal activity is market production of goods or services for sale to the general public at an economically significant price;

- **general government sector**, which includes especially workplaces of the Academy of Sciences of the Czech Republic and other places of research under the competence of ministries (on 1 January 2007 the statute of most of these entities changed to public research institutions), institutions of central and local government, except for publicly managed higher education institutions; it also contains public libraries, archives, museums and other cultural establishments conducting R&D as their secondary activity;

  Note: All public research institutions irrespective of their institutional sector used in national accounts belong into the government sector in the R&D statistics. Before 2009 were some public research institutions included in the business enterprise sector due to the fact that their institutional sector was since 2004 identified according to the international classification ESA as – Nonfinancial enterprises (ISEKTOR 11). In order to maintain methodological correctness and comparability of data in time were all data in 2009 recalculated.

- **higher education sector,** which comprises both public and private universities and other institutions of post-secondary education. It also includes all research institutes, experimental facilities and clinics whose work is directly controlled or managed by higher education institutions or they are associated with them. Since 2005, in compliance with OECD methodology, the sector also includes teaching hospitals. This sector is not a separate institutional sector of national accounting but has been separately identified for its important role in R&D;

- **non-profit institutions serving households sector** (referred to as the private non-profit sector), which comprises private institutions, including private persons and households, whose primary aim is not profit formation but providing non-market services to households. They include, e.g., associations of research organizations, societies, unions, movements, federations or foundations.

R&D personnel

R&D personnel include researchers, technicians, administrative staff and other supporting staff in the reporting units.

By occupation, R&D personnel are split into:

- **researchers:** professionals engaged in the conception or generation of new knowledge, products, processes, methods and systems or managing of such projects. They are mostly scientific specialists or heads of R&D departments;

- **technicians and equivalent staff** (referred to as "technicians")**:** persons who participate in R&D activities by performing scientific and technical tasks involving the application of concepts and operational methods (usually under the supervision of researchers);

- **other supporting staff** (referred to as "other personnel"): skilled and unskilled craftsmen, secretarial and clerical staff participating in R&D activities or directly associated with such activities; included are also managers and office staff who provide direct support for R&D.

The number of R&D personnel is measured by two basic indicators – headcount (HC) and full-time equivalent (FTE):

- Registered number of employees at **31 December in Head Count** refers to registered number of active R&D personnel employed (full or part-time) at the end of reference year in the reporting units irrespective of time devoted to research and development activities. ;

- **Full-time equivalent (FTE)** brings information about real volume devoted to research and development activities. One FTE is equal to one year of work fully devoted to R&D. This variable is important especially to measure volume of R&D activities by persons who do not devote to R&D fully but are engaged also in other activities (for example, professors who teach as well as make research). The indicator also includes the number of FTE persons working for the reporting unit under contract for work or contract of service.

  In 2005 the FTE calculation was changed in compliance with OECD requirements to improve the international comparability of national data. Starting from 2005, the FTE R&D personnel data are not comparable with those for previous years (1995–2004).

R&D expenditure

Total expenditure consists of all R&D current and capital expenditure made within the statistical unit or economic sector irrespective of the source of funds. Included are also expenditures made outside the statistical unit (external expenditure) under the condition that they fully support R&D of the statistical unit (e.g., purchase of supplies for R&D).

According to the source of financing of R&D activities, we can differentiate five sectors that provide funds to R&D. The R&D expenditures can come from the business enterprise sector (private funds of enterprises, financial institutions, and employers), the government sector (public funds from state or regional budget), abroad (funds coming from institutions or individuals located outside the political borders of a country) the higher education sector (profits of higher education institutions), and the private non-profit sector (other national sources).

Type of costs on research and development:

a) **Current costs** on R&D, there are surveyed in the structure:

- **Labour costs** of R&D personnel – these comprise annual wages and salaries of R&D employees recalculated by time devoted R&D activities, including health and social insurance, which are paid by employer for employees.

- **Labour costs of persons with short-term contracts for R&D**

- **Other current costs** – purchases of materials, supplies and equipment to support R&D performed by the reporting unit, further costs for services rented or purchased for R&D. The depreciation of buildings, machinery equipment and equipment is excluded.

b) Investment expenditure on R&D, there are surveyed in the structure:

- **Land and buildings** – expenditure on lands acquired for R&D (e.g. experimental laboratories) and buildings constructed or purchased, expenditure on technical assessment of buildings etc.

- **Instruments and equipment** – expenditure on technical and other equipment necessary for performance of R&D (machines, instruments and equipments including their software equipment).