



Annual report on Research and Development

Year 2021

Registered by SO SR Nr. Vk 146/21 from 1. 10. 2020

IKF				Year		Month		IN								Serial No.				
1	3	0	4	2	1	1	2													

IN – Identification number is filed out; if the IN is sixth-digit number, **at the first two places will be zeros**.

Serial No. – Universities and faculty hospitals fill it out the number according to the attached code list; other statistical units fill in the code "0000".

Dear respondent,

The Statistical Office of the SR performs statistical surveys with the aim to appraise situation and development of the economy and the society of the Slovak Republic and for international comparisons. This survey is a part of the Programme of State Statistical Surveys approved on 2021 - 2023 issued in the Collection of Acts of the SR. Reporting duty to fill out the statistical form follows from § 18 of the Act No. 540/2001 Coll. of Acts on State Statistics in wording of later regulations. If you did not carry out any activity, or did not carry out activity, which is a subject of this statistical survey, you should submit the report filled out with available data and also inform us about a possible change of your prevailing activity.

From 1 January 2016, the statistical unit shall provide data by filling in and sending an electronic form in accordance with § 18, 5 of the Act. The statistical unit that is a natural person or a natural person - an entrepreneur without employee at 31 December of the previous calendar year, or a statistical unit t having residence in the location without an Internet connection or signal, can also fulfil the reporting obligation by sending the completed statistical form in written form. A pattern of statistical questionnaire for download and subsequent printing and filling in paper form is published on the SO SR website in the menu Metadata/Patterns of statistical questionnaires.

Reported confidential data are protected, not published and used only for needs of the Statistical Office of the SR. Protection of confidential statistical data is given by the Act No. 540/2001 Code of Acts on State Statistics in wording of later regulations. For the protection of confidential data is responsible The Statistical Office of the Slovak Republic.

Electronically filled in statistical form give **on website SO SR www.statistics.sk to 15. 3. 2022**
or in legitimate case deliver to **Regional Office Žilina, Framborská 23, 011 21 Žilina.**

We thank you for delivering on time and we are looking forward to our further cooperation.

Name and Address of Seat of Organisation:		NUTS4 code:
Report was filled in by (Name and Surname):	Phone (guiding figure):	Stamp and signature of the Head of reporting unit:
E-mail:	The date of sending:	

A. Annual report on research and development

2 Time to fill in the form

			1
The time required to keep a statistical record, to find the required information from the accounting or statistical records, to consult with internal or external experts when filling out the form and complete the form itself.	hours	1	
	minutes	2	

Statistical record means the recording of the data required by the relevant statistical survey. The module is filled in once a year. In monthly surveys shall be filled in the month of September, the quarterly shall be filled in the third quarter, biannual shall be filled in the second half and in the annual is the module filled to the deadline for fulfilment of the reporting duty.

100161 Characteristic of Research and Development workplaces

			1
Field of Science Code in which R&D activities are mainly provided	1		
SK NACE5 - prevailing activity	2		
Sector according to the Frascati Manual	3		prefilled

23 Research and Development (R&D) employees

			R&D employees in head-counts, total number during the reference year		R&D employees, full-time equivalent (FTE)	
			Total	of which Females	Total	of which Females
			1	2	3	4
R&D employees - Total			1			
of which	Researchers (RSE)		2			
	Technicians and equivalent staff		3			
	Supporting staff		4			
R&D employees by qualification (of row 1)			5	x	x	x
of which	University and higher qualification level		6			
	of which	Bachelor degree	7			
		Master degree	8			
		Doctoral degree	9			
	of row 6 with a scientific degree and scientific-pedagogical degree		10			
	Short-cycle tertiary education (ISCED 554 only)		11			
	Secondary education		12			
Basic education		13				
Researchers by qualification (of row 2)			14	x	x	x
of which	University and higher qualification level		15			
	of which	Bachelor degree	16			
		Master degree	17			
		Doctoral degree	18			
	Short-cycle tertiary education (ISCED 554 only)		19			
	Secondary education		20			
	Basic education		21			
Checksum (Rows 1 - 21)			CS			

This module should be filled in by the reporting units for all R&D activities, including universities who shall report only their R&D employees in this module.

Indicators in FTE (full-time equivalent) value for the employees (columns 3-4) using the equation (rounded to one decimal):

Sum of work-hours in R&D activities over the current year / 2000

			R&D employees in head-counts, total number during the reference year		R&D employees, full-time equivalent (FTE)		
			Total	of which Females	Total	of which Females	
			1	2	3	4	
R&D employees – Total			1				
of which	Researchers (RSE)		2				
	Technicians and equivalent staff		3				
	Supporting staff		4				
R&D employees by qualification (of row 1)			5	x	x	x	x
of which	University and higher qualification level		6				
	of which	Bachelor degree	7				
		Master degree	8				
		Doctoral degree	9				
	of row 6 with a scientific degree and scientific-pedagogical degree		10				
	Short-cycle tertiary education (ISCED 554 only)		11				
	Secondary education		12				
	Basic education		13				
Researchers by qualification (of row 2)			14	x	x	x	x
of which	University and higher qualification level		15				
	of which	Bachelor degree	16				
		Master degree	17				
		Doctoral degree	18				
	Short-cycle tertiary education (ISCED 554 only)		19				
	Secondary education		20				
	Basic education		21				
Checksum (Rows 1 - 21)			CS				

This module should be filled in by universities only for the teaching employees engaged in R&D. **Ph.D. students in doctoral programmes in full time study participating in R&D activities, but not university employees, are not included in this module**, they are recorded in the module 100411 in rows 13 to 16.

Indicators in FTE (full-time equivalent) value for the employees (columns 3-4) using the equation (rounded to one decimal):

Sum of work-hours in R&D activities over the current year / 2000

			R&D personnel in head-counts, total number during the reference year		Number of hours worked in R&D by persons included in columns 1 resp. 2 during the year	
			Total	of which Females	Total	of which Females
			1	2	3	4
Internal personnel ¹⁾ working proprietors and unpaid family workers in total			1			
of which	Researchers		2			
	Technicians and equivalent staff		3			
	Supporting staff		4			
External personnel – unpaid ²⁾ unpaid volunteers in total			5			
of which	Researchers		6			
	Technicians and equivalent staff		7			
	Supporting staff		8			
External personnel - paid personnel working on a contractual basis including consultants and leased persons in total			9			
of which	Researchers		10			
	Technicians and equivalent staff		11			
	Supporting staff		12			
Doctoral students (not university employees) in total ³⁾			13			
of which	Researchers		14			
	Technicians and equivalent staff		15			
	Supporting staff		16			
Persons participating in the tasks within the R&D grants (not included in the number of employees of the internal R&D in modules 23, 24, or in other categories of this module) in total			17			
of which	Researchers		18			
	Technicians and equivalent staff		19			
	Supporting staff		20			
Checksum (Rows 1 - 20)			CS			

¹⁾ Fill in only organisations belonging to the **business enterprise sector and private non-profit sector**

²⁾ Fill in only organisations belonging to the **higher education sector and private non-profit sector**

³⁾ Fill in only organisations belonging to the **higher education sector and government sector**

31 Structure of researchers by age (internal)

		Total number of researchers during the reference year in head-counts		of which newly recruited in reference year in head-counts		Number of leaving in reference year in head-counts	
		Total ¹⁾	of which Females ²⁾	Total	of which Females	Total	of which Females
		1	2	3	4	5	6
Under 25 years	1						
25 - 34 years	2						
35 years	3						
36 - 40 years	4						
41 - 44 years	5						
45 - 54 years	6						
55 - 64 years	7						
65 years and more	8						
Checksum (Rows 1 - 8)	CS						

¹⁾ Sum in row CS in column 1 in this module must be equal to sum of figure on row 2 in column 1 of the module 23 plus a figure on row 2 in column 1 of the module 100411 for all respondents **apart** from universities and organisations in government sector (GOV). For universities: sum in row CS in column 1 is equal to sum of figures on row 2 in column 1 in modules 23 and 24; for GOV organisation: sum in row CS in column 1 is equal to figure on row 2 in column 1 in the module 23.

²⁾ Sum in row CS in column 2 in this module must be equal to sum of figure on row 2 in column 2 of the module 23 plus a figure on row 2 in column 2 of the module 100411 for all respondents **apart** from universities and organisations in GOV. For universities: sum in row CS in column 2 is equal to sum of figures on row 2 in column 2 in modules 23 and 24; for GOV organisation: sum in row CS in column 2 is equal to figure on row 2 in column 2 in the module 23.

In business enterprise sector and in private non-profit sector the number of researchers includes also working proprietors and unpaid family workers from the row 2 in the module 100411. **The number of internal researchers does not include external personnel – unpaid, paid, doctoral students and persons participating in the tasks within the R&D grants.**

32 Researchers by citizenship (internal)

		Code of the country	Total number of researchers during the reference year in head-counts	
			total ¹⁾	of which females ²⁾
Citizenship		1	2	3
	1			
	2			
	3			
	4			
	5			
	6			
	7			
	8			
	9			
	10			
	11			
	12			
	13			
	14			
	15			
Checksum	CS	x		

¹⁾ Sum in row CS in column 2 in this module must be equal to sum of figure on row 2 in column 1 of the module 23 plus a figure on row 2 in column 1 of the module 100411 for all respondents **apart** from universities and organisations in government sector (GOV). For universities: sum in row CS in column 2 is equal to sum of figures on row 2 in column 1 in modules 23 and 24; for GOV organisation: sum in row CS in column 2 is equal to figure on row 2 in column 1 in the module 23.

²⁾ Sum in row CS in column 3 in this module must be equal to sum of figure on row 2 in column 2 of the module 23 plus a figure on row 2 in column 2 of the module 100411 for all respondents **apart** from universities and organisations in GOV. For universities: sum in row CS in column 3 is equal to sum of figures on row 2 in column 2 in modules 23 and 24; for GOV organisation: sum in row CS in column 3 is equal to figure on row 2 in column 2 in the module 23.

In business enterprise sector and in private non-profit sector the number of researchers includes also working proprietors and unpaid family workers from the row 2 in the module 100411. **The number of internal researchers does not include external personnel – unpaid, paid, doctoral students and persons participating in the tasks within the R&D grants.**

			Total (in EUR)	of which Government source
			1	2
Total expenditure on R&D (Rows 2 and 7)		1		
Capital Expenditure		2		
of which	Land and Buildings	3		x
	Machinery and Equipment	4		x
	Capitalised computer software ¹⁾	5		x
	Other intellectual property products	6		x
Current Expenditure ²⁾		7		
of which	Labour costs on R&D	8		x
	Remuneration under contracts for work done outside employment relationship	9		x
	Scholarships for doctoral students	10		x
	Purchases of services	11		x
	Purchases of materials for R&D	12		x
	Other current costs	13		x
Checksum (Rows 1 - 13)		CS		

¹⁾ Funds for the purchase of software used in internal research and development are reported as follows: if the software is used for more than a year, it have to be shown in capital expenditure (row 5); if the software is used for one year or less it have to be reported in other current costs (row 13). Funds devoted to own software development have to be reported in labour costs as well as in material costs.

²⁾ Current expenditure also includes expenditure on external research and development personnel, as indicated in module 100411, as follows:
row 9 - fill in the expenditure for R&D personnel on personnel working on a contractual basis including consultants and leased persons, as well as the funds provided to persons in the framework of R&D grants;
row 10 – fill in the scholarships of doctoral students, who are not employees (persons reported in Module 100411 in row 13);
Current expenditure also includes expenditure incurred for activities for which executing persons do not count to the number of R&D staff (internal or external), namely:

in row 11 - expenditure for the purchase of direct services used for the implementation of internal research and development, e.g. managerial, administrative, technical, office work, etc. (it is not specified in the agreement with the supplier how many and which persons to perform the service, so the number of persons in module 100411 is not reported, but the relevant expenses have to be filled in this row);

row 13 (other current costs) – fill in the expenditure on the implementation of indirect services, e.g. proportional part of expenses for cleaning, maintenance, security service activities, libraries, computer centers of routine character.

			GERD (in EUR) ¹⁾	of which Current expenditure on R&D ²⁾
			1	2
Basic research		1		
Applied research		2		
Experimental development		3		
Checksum (Rows 1 - 3)		CS		

¹⁾ Fill in total expenditure on R&D by type of R&D, sum in row CS must be equal to figure on row 1 in column 1 of the module 25.

²⁾ Fill in current expenditure on R&D by type of R&D, sum in row CS must be equal to figure on row 7 in column 1 of the module 25.

			GERD by source of funds (in EUR) ¹⁾	
			1	
Domestic resources (from entities in the Slovak Republic)			1	
of which	Business enterprise		2	
	of which	Own funds of enterprise (internal funds)	3	
		From other enterprises in the same group	4	
		From other enterprises outside the same group	5	
	Government		6	
	of which	Own funds of agency/department/institution (internal funds)	7	
		Central government (excluding GUF)	8	
		Local government (excluding GUF)	9	
		Public general university funds (GUF)	10	
	Higher education		11	
	of which	Own funds of institution (internal funds)	12	
		Other higher education institutions	13	
	Private non-profit		14	
	of which	Own funds of organisation (internal funds)	15	
		Other private non-profit organisations	16	
	Foreign sources			17
of which	Business enterprise		18	
	of which	From other enterprises in the same group	19	
		Other enterprises	20	
	State (other national governments)		21	
	Higher education		22	
	Private non-profit organisations		23	
	from the EU Structural Funds		24	
	from other sources of international organisations and institutions		25	
Checksum (Rows 1 - 25)			KS	

¹⁾ Fill in total expenditure on R&D by given sources of funds in the module; the sum of rows 1 and 17 must be equal to figure on row 1 in column 1 of the module 25.

			GERD by type of funds (in EUR) ¹⁾	
			1	
Internal funds for intramural R&D			1	
External funds for intramural R&D			2	
of which	Exchange funds – contract research (funding with a compensatory return of R&D)		3	
	Transfer funds including GUF (funding without a compensatory return of R&D)		4	
Checksum (Rows 1 - 4)			CS	

¹⁾ Fill in total expenditure on R&D by given type of funds; sum of rows 1 and 2 must be equal to figure on row 1 in column 1 of the module 25. Internal funding includes own resources of the R&D organisation listed in module 27. The types of funding are explained in more detail in the methodological notes to this module.

		Expenditure on R&D tasks (of which of column 1)									
		GERD by socio-econ. objectives (in EUR)	of which from government source	Total	Tasks of Foundation for Innovation	of which financed by government (of which of column 2)					Other R&D tasks
						Incentives for R&D	State programs for R&D and development of infrastructure R&D	Tasks of the Agency for Support of R&D	R&D tasks financed by central government	Tasks of structural funds of EU	
		1	2	3	4	5	6	7	8	9	10
Exploration and exploitation of the Earth	1										
Environment	2										
Exploration and Exploitation of Space	3										
Transport, telecommunications and other infrastructures	4										
Energy	5										
Industrial production and technology	6										
Health	7										
Agriculture	8										
Education	9										
Culture, recreation, religion and mass media	10										
Political and social systems, structures and processes	11										
General advancement of knowledge	R&D financed from GUF (funding of universities)	12									
	R&D financed from other sources	13									
Defence	14										
Checksum (Rows 1 - 14)	CS										

In column 1 fill in total expenditures on R&D in structure by socio-economic objectives.

In column 2 fill in expenditures on R&D from government in structure by socio-economic objectives.

Sum in row CS in column 1 (2) must be equal to figure on row 1 in column 1 (2) of the module 25.

Row 13 is to be completed only by R&D institutions belonging to the sector according to SK NACE = 72.

		GERD (in EUR)	of which Government source
		1	2
Information and communication technologies	1		
of which software	2		
Biotechnology	3		
New materials	4		
Nanotechnology and nanomaterials	5		
Checksum (Rows 1 - 5)	CS		

		Production code in R&D ¹⁾	R&D expenditure in the current year ²⁾	
			total	of which Current expenditure on R&D
		1	2	3
Main production by activity	1			
Secondary resulting production by activity	1. activity	2		
	2. activity	3		
	3. activity	4		
	4. activity	5		
Checksum (Rows 1 - 5)	CS	x		

¹⁾ Fill in expenditure on research and development (R&D) broken down by classification of the resulting production of research and development, i.e. depending on the nature of the products or services in which the R&D results will be used (integrated). In column 1 fill in the code from the classification of the resulting R&D production from the list given in the methodological notes to this module.

R&D expenditure according to R&D production code is broken down in estimated ratios. For example, a reporting unit has a total R&D expenditure of 10 000 EUR; the result of its VV activity are VLSI integrated circuits which are used as follows:

row 1 main production	261 Manufacture of electronic components and boards	estimate 70 %	7 000 EUR
row 2 main production	262 Manufacture of computers and peripheral equipment	estimate 20 %	2 000 EUR
row 3 main production	721 R&D in natural and technical sciences	estimate 10 %	1 000 EUR

²⁾ The checksum row in column 2 of this module must be equal to figure on row 1 in column 1 of the module 25. The checksum row in column 3 of this module must be equal to figure on row 7 in column 1 of the module 25.

To be completed only by reporting units belonging to the business enterprise sector.

		Code of the region	R&D expenditure in local units by region (in EUR)
		1	2
Bratislavský kraj	1	1	
Trnavský kraj	2	2	
Trenčiansky kraj	3	3	
Nitriansky kraj	4	4	
Žilinský kraj	5	5	
Banskobystrický kraj	6	6	
Prešovský kraj	7	7	
Košický kraj	8	8	
Checksum (Rows 1 - 8)	CS	x	

If you don't have a local unit, please indicate the total R&D expenditure in the region according to your organisation's headquarters.
If R&D was carried out also in local units located in the territory of another region, allocate R&D expenditure to the relevant regions. The sum of rows for all regions (in row CS) must be equal to the value in row 1 column 1 of the module 25.

			External R&D expenditure in the current year (in EUR) ¹⁾
			1
Acquisition of R&D from other subject from Slovakia or from abroad, total (purchase of R&D performed by other units and grants given to others for performing R&D)		1	
Acquisition of R&D from other subject from Slovakia		2	
of which sector of R&D performance	Business enterprise	3	
	of which	Other enterprise in the same group	4
		Other enterprise	5
	Government	6	
	Private non-profit sector	7	
	Higher education	8	
Acquisition of R&D from other subject from abroad		9	
of which sector of R&D performance	Business enterprise	10	
	of which	Other enterprise in the same group	11
		Other enterprise	12
	Government	13	
	Higher education	14	
	Private non-profit sector	15	
	International organisations	16	
Checksum (Rows 1 - 16)		CS	

¹⁾ Sum of rows 2 and 9 must be equal to row 1 in this module.
Sum of rows 3, 6, 7 and 8 must be equal to row 2 in this module.
Sum of rows 10, 13, 14, 15 and 16 must be equal to row 9 in this module.

To be completed only by reporting units belonging to the business enterprise and government sector.

B. Impact of the COVID-19 pandemic on research and development

100536

Due to the COVID-19 pandemic, research and development in 2020 was not carried out:

Yes	<input type="checkbox"/>	1
No	<input type="checkbox"/>	2

100537

Due to the COVID-19 pandemic, the focus of research and development has changed to another economic activity:

Yes	<input type="checkbox"/>	1
No	<input type="checkbox"/>	2

100538

The economic activity to which research and development has been redirected due to the COVID-19 pandemic

Fill in only if your answer to question 100537 is "Yes".

		1
Code of the economic activity to which the research and development has been redirected (select from the list given in the methodological explanations for module 34)	1	
Estimate of R&D expenditure in the economic activity to which R&D was redirected (in EUR)	2	

100539

Estimate of the change in R&D personnel and R&D expenditure due to the COVID-19 pandemic

		Type of change ¹⁾	Estimate the change in % (Indicate the appropriate option) ²⁾
		1	2
Number of internal R&D personnel	1		
Number of external R&D personnel	2		
R&D expenditure (in EUR)	3		

¹⁾ Code list:

- 1 - Increase
- 2 - No change
- 3 - Decrease

²⁾ Code list:

- 1 - Less than 10 %
- 2 - 11 - 25 %
- 3 - 26 - 50 %
- 4 - 51 - 75 %
- 5 - More than 75 %

Entities who are resident in the territory of the Slovak Republic have a reporting duty - that means, that the reporting unit will report data for business activities carried out in the territory of the Slovak Republic, but also for activities carried out abroad to which it incurs tax and other levy obligations in relation to the Slovak Republic in accordance with applicable legislation.

Question 100536 in Section B - Impact of the COVID-19 pandemic on research and development is filled in by all reporting units, regardless of whether they had R&D activities in 2020. This question has to be answered "yes" only by those reporting units that did not carry out any R&D activities **due to the COVID-19 pandemic**. If the reporting unit did not carry out any R&D activity **for any other reason**, answer to the question 100536 has to be "no".

All **modules in Section A** have to be filled by reporting units performing R&D activities **only for R&D activities**. With the exception of Module 35, all modules relate to internal R&D within the organisation. Module 24 is completed only by universities for university teachers who are engaged in the research and development activities. **Students in doctoral programs participating in R&D activities, who are not university employees, have to be included in module 100411 in rows 13 to 16.**

Module 34 is filled only by reporting units from business enterprise sector, module 35 is filled only by reporting units from business enterprise and government sector. The content of the survey is in line with the revised international methodology for R&D statistics - Frascati Manual, 2015.

Reporting units in the field of statistical survey on research and development (hereinafter R&D) are all legal and natural persons engaged in R&D activities and their R&D potential during the year represents, recalculated by the full-time equivalent (hereinafter FTE), **at least 1 man-year**. (Reporting units include all persons who carried out R&D activities or direct R&D services during the year at least 200 hours, i.e. 10% of the set annual capacity, i.e. 0.1 FTE. For example, if there worked in the organisation 2 persons on R&D in the range of 0.3 FTE and one person in the range of 0.4 FTE, the VV potential of the organisation during the year was 1 FTE). If a legal or natural person has not carried out any research and development activities at the end of the year, it have to fill in the data in the questionnaire for the period of performance of R&D activities in that year. In case that the legal or natural person did not carry out activities in the field of R&D during the whole year, it will send a negative questionnaire stating the reason for not completing it.

The questionnaire have to be filled by reporting units only for research and development activities, not for the whole organisation. To R&D activities in the meaning of the law on the Organisation of State Support R&D no. 172/2005 Coll. as amended, it includes basic research, applied research and development. Their definition is given in the methodological notes to module 26. It is difficult to define the boundaries between R&D activities and other activities, particularly in the field of services. The following **basic criteria** serve to identify R&D activities according to the international methodology (Frascati manual 2015):

- to focus on new knowledge (new)
- should be based on the original, not the obvious, obvious concepts and hypotheses (creative)
- uncertainty about the end result (uncertain)
- to be planned and budgeted (systematic)
- lead to results that can be repeatable (portable and/or reproducible).

In addition to these basic criteria, the following indicators may also help to identify the presence of research and development in service areas: links to public research laboratories, employment of PhD holders or carry out doctorates, publishing research and development results in scientific journals, organizing scientific conferences, or participation in scientific review. Examples of R&D activities in banking and insurance could be: mathematical research relating to financial risk analysis, development of risk models for credit policy, experimental development of new software for "home banking", development of techniques to investigate customer behavior to create new types of accounts and banking services, research to identify new risks or new risk characteristics to be taken into account in insurance contracts, research into social phenomena affecting new types of insurance (health, retirement, etc.), research related to electronic banking and insurance, services related to Internet and e-commerce applications, research relating to new or significantly improved financial services (new concepts for accounts, loans and savings instruments).

Examples of R&D activities in other service sectors could be: analysis of the impact of economic and social change on consumption and leisure activities, development of new methods for measuring consumer expectations and preferences, development of new methods for delivery and measurement of social services results that can be adapted to various socio-economic and cultural environments, the development of new methods and research tools, the development of tracking and tracing procedures (in logistics), research towards new concepts in travel and recreation, etc.

To identify the R&D element in software development:

- if a software development project is to be classified as R&D, its completion must depend on the development of scientific or technical progress and objective of the project must be the systematic solving of a scientific or technical problem;
- except where the software is part of an overall R&D project, the development associated with software having the character of a final product or software built into the finished product it could also be classified as R&D if the basic R&D criteria apply.

If the software is part of an overall R&D project, it can be classified as R&D if this component leads to advances in computer applications. This means that updates or changes to an existing program or system can be classified as R&D if they involve scientific or technical progress that results in the dissemination of knowledge.

Using the software for a new application or goal alone is not progress. For example, the following computer software

activities must be involved in R&D: creating new operating systems and languages, designing and implementing new search engines based on original technologies, creating new or more efficient algorithms based on new techniques, creating new and original encryption and security techniques, etc.

Research activities do not include: training and different types of training (but research carried out by doctoral students yes) services of scientific and technical information (library services, patent services) if they are not part of the solution of a particular research program to collect data for general information (routine work related to topography, geology, hydrology, meteorology and routine astronomical tracking), standardization work, specialized medical procedures, patent and licensing operations, routine political and economic analyzes, work related to industrial innovation (technical, financial and commercial activities in order to ensure the commercial success of the new product), the production itself and related activities - maintenance, repair, etc. (however, if a new product or production process requires additional R&D work to be successfully marketed, these must be included in R&D activities).

The survey includes indicators on internal and external R&D personnel as well as indicators on internal and external R&D expenditure. **Internal personnel** includes employees reporting units and in the business enterprise and private non-profit sector owners and unpaid family members participating in R&D activities. **External personnel** includes research and development personnel working on a contractual basis including consultants and leased persons, outside workers who have worked or assisted in R&D and have not received any wages or remuneration and doctoral students (who are not employees) participating in R&D activities. Internal R&D expenditures represent expenditures for the organisation's own research. External R&D expenditures are funds spent on acquisition R&D from other organisations.

Overheads employees are not included in the R&D personnel categories unless they are directly involved in research and development activities. However, the relevant overheads are included in R&D expenditure (to be included in other current costs as a proportion of overheads attributable to R&D activities).

All data shall be filled in whole positive numbers unless is otherwise specified for the relevant module. If the value is available and has a zero value, zero "0" shall be indicated in the monitored item. If the data is less than half of the unit of measure after rounding, zero shall also be given "0". If the required data cannot be determined in the necessary breakdown from the available records, a qualified estimate shall be provided.

A. Annual questionnaire on research and development

A.100161

R.1 - Field of science in which research and development work is predominantly provided – indicate code according to the code list:

Code	Field of science	Code	Field of science
	Natural sciences	303	Health sciences
101	Mathematics	304	Health biotechnology
102	Computer and information sciences (except informational and communication technology classified in 203 and except library and information science classified under 508)	305	Other medical sciences
103	Physical sciences		Agricultural sciences
104	Chemical sciences	401	Agriculture, forestry, and fisheries
105	Earth and related environmental sciences (and earth resources)	402	Animal and dairy science
106	Biological sciences	403	Veterinary science
107	Other natural sciences	404	Agricultural biotechnology
	Engineering and technology	405	Other agricultural sciences
201	Civil engineering (construction, transport, geodesy)		Social sciences
202	Electrical engineering, automation and control systems	501	Psychology
203	Informational and communication technology	502	Economics and business
204	Engineering	503	Educational sciences
205	Chemical engineering	504	Sociology
206	Materials engineering	505	Law
207	Medical engineering	506	Political Science
208	Environmental engineering (mining, metallurgy, water science)	507	Social and economic geography
209	Environmental biotechnology	508	Media and communications
210	Industrial biotechnology	509	Other social sciences
211	Nano-technology		Humanities
212	Wood Sciences	601	History and archaeology
213	Other technical sciences (other engineering and technologies)	602	Philological sciences

	Medical and health sciences	603	Philosophy, ethics and religion
301	Basic medical sciences and pharmaceutical sciences	604	Science of culture and art
302	Clinical medicine	605	Other humanities

R.2 - Code of statistical classification of economic activities; fill in according to the prevailing activity of the reporting unit.

R.3 - Sector according to the Frascati manual; University hospitals are included in the higher education sector. The code is filled in by the relevant department of the Statistical office (except to providing the questionnaire in the printed version).

A.23

This module lists the internal R&D personnel. Indicate the number of R&D employees during the reference year (including those who left); includes all persons employed directly in research and development and employees providing direct R&D services. To the extent performing R&D activities, the number also includes medical employees, employees of prototype workshops, employees admitted for a study stay. **Students in the doctoral study programs participating in R&D activities who are not employees of the university are listed in the module 100411 in rows 13 to 16.**

Universities fill in module 23 only for R&D employees. University teachers involved in R&D activities and employees on study visits are presented in Module 24. Overheads employees are not included in the R&D personnel categories unless they are directly involved in research and development activities. However, the relevant overheads are included in R&D expenditure (the proportion of overheads attributable to R&D activities).

Employees providing indirect R&D services are not reported, such as: cleaners, drivers, maintenance staff, canteen staff, security service, libraries, routine computing centers, SAV publishers and sales staff, SAV executive staff.

The survey includes all persons who performed research and development activities during the year, respectively direct R&D services in the range of minimum 200 hours, it means 10% of established annual capacity. Persons performing research and development activities are reported in both head count as the total number of persons working on R&D during the year and in full-time equivalent.

Data fill in in columns 1 and 2 in whole positive numbers and in columns 3 and 4 to one decimal place.

R.1 - Fill in in accordance with the contents of each column.

R.2 - Fill in the number of researchers from row 1. This category includes employees having crucial importance for the development and use of social scientific knowledge. Usually they are employees with completed university education. Researchers' work includes analysis, research into theories, concepts and operational methods, consulting or applying current scientific knowledge in the fields of natural, technical, medical, agricultural, social and human sciences.

These include: scientific employees, scientific-pedagogical employees, scientific-technical employees, research and development employees, managers and employees working directly in the planning and management of research and development work of researchers, employees on study visits. They are mostly employees in Class 2 and sub-group 1223 of the International Standard Classification of Occupations SK ISCO-08.

R.3 - Fill in the number of employees (from row 1) classified as technicians and equivalent staff. This includes technicians participating in research projects by carrying out scientific and technical tasks as a rule under the control of researchers. Their work includes: searching for bibliography and excerpting, obtaining relevant materials from archives and libraries, preparing computer programs (programmers); conducting experiments, tests and analyzes; preparation of materials and equipment for expertise, tests and analyzes; measurement records, calculations and preparation of tables and graphs; statistical surveys and materials; work on specialized machinery and equipment or their maintenance. These are employees in Classes 31, 32 and 3314 SK ISCO-08.

R.4 - Fill in the number of employees (from row 1) classified as supporting staff. This category includes skilled or unskilled craftsmen, secretaries and other intellectual staff participating in research and development projects. It also includes all other managers and administrative staff for human and financial matters whose activities are directly a research service. They are mostly employees in group 331 (except for subgroup 3314), 334 and major classes 4, 6, 8 of ISCO-08.

R.5-13 - Qualification structure of R&D personnel:

- **with higher education and higher qualification** (row 6) – fill in the number of R&D personnel from row 1 who have attained full university and higher education, broken down in the next three rows as follows:

- **with university education of the first degree** (row 7) – fill in the number of employees with the bachelor's degree (Bc.)

- **with university education of the 2nd degree** (row 8) – fill in the number of employees with technical (Ing., Ing. arch.), doctoral (MUDr., MVDr., MDDr.) and master (Mgr., Mgr. art., RNDr., PharmDr., PhDr., JUDr., PaedDr., ThDr.) education completed in the prescribed manner according to Act no. 131/2002 Coll. on universities and on amendments to certain acts, including employees admitted to study stays and students in doctoral study programs in full-time form of study. In this row are not included employees with Bachelor's degree and staff with higher qualifications, such employees will be shown in row 4 respectively 6;

- **with a university degree of 3rd degree** (row 9) - the number of employees of doctoral students with the title PhD., ArtD., CSc. and postgraduate graduates in 1990-1996;

- **with a scientific degree or a scientific-pedagogical degree** (row 10) – fill in the number of R&D staff with scientific qualification DrSc. and staff with a scientific / pedagogical or artistic / pedagogical degree professor and associate professor from row 6 (this figure is not included in the educational structure - the figure in row 1 equals the sum of the figures in rows 6, 11, 12 and 13);

- **with a short-cycle tertiary education** (row 11) – fill in the number of R&D employees who have completed upper - secondary, non - university education ending with a graduation examination; evidence of the degree of education obtained is a certificate of graduation exam and graduation diploma. (short-cycle tertiary education or post-secondary specialty studies of 2-3 years in economics, banking, computer science, administrative and secretarial work, foreign languages, higher vocational education in health and nursing, 6-year conservatory, 8-year dance conservatory and so on);

- **with secondary education** (row 12) – fill in the number of R&D staff with full secondary vocational, complete secondary general or secondary vocational education; evidence of formal level of education is the baccalaureate certificate or certificate of final examination or certificate of apprenticeship;

- **with basic education** (row 13).

R.14-21 - The qualification structure of the researchers in rows 15 to 21 is given similarly to the total number of R&D personnel in rows 6 to 13.

C.1 - Fill in the registered number of employees of R&D in head count, it means number of persons working on R&D during the reference year.

C.2 - Fill in the registered number of women in head count working on R&D during the reference year.

C.3 - Fill in the number of R&D personnel in FTE, it means in full time equivalent (hereinafter FTE). Calculation of the FTE indicator per employee:

Total hours worked per employee in research and development activities in reference year / 2000

The FTE equivalent expresses the extent of work activity. One FTE equals one year of work an employee who is engaged at 100% of research activity. The time spent by the employee in performing research and development activities is counted. If e.g. it is an employee who regularly spends 30% of his/her time performing R&D and the rest of the time is engaged in other activities (pedagogue, doctor, etc.) then as an equivalent of full working hours counts 0.3 FTE. Similarly, if the employee is engaged in full-time R&D activities, but he/she works in the organisation for example only for 6 months, counting 0.5 FTE.

C.4 - Fill in the number of women in FTE from column 3.

A.24

This module is filled in by universities only namely for university teachers and employees on study visits participating in research and development. **Students in doctoral degree programs participating in R&D activities, who are not university employees, have to be filled in module 100411, in rows 13 to 16.**

Overheads employees are not included in the R&D personnel categories unless they are directly involved in research and development activities. However, the relevant overheads are included in R&D expenditure - the proportion of overheads attributable to R&D activities is added to the other current costs in Module 25.

The indicators have to be filled in according to the explanatory notes to module 23.

Data have to be given in columns 1 and 2 in whole positive numbers and in columns 3 and 4 to one decimal place.

A.100411

Fill in the staff (internal and external) who do not have employee status but participate in R&D activities and are not included in the modules 23 and 24. If one person worked in a reporting unit under more closed agreements during the reference year, this person is counted in columns 1 and 2 respectively **only once** and into columns 3 and 4 respectively have to be included the sum of hours worked for all agreements of the person concerned. Only persons who carried out research and development activities during the year are included here, respectively direct R&D services of at least 200 hours, it means 10% of annual capacity.

R.1-4 - Fill in working owners and unpaid family members engaged in R&D activities. This indicator is filled in by the reporting units **only in the business enterprise and private non-profit sector.**

R.5-8 - Fill in external persons who worked or assisted in research and development in the organisation during the reference year and did not receive any wages or remuneration for the work. They are volunteers, emeritus professors, etc. This indicator is filled in by the reporting units **only in the higher education and private non-profit sector.**

R.9-12 - Fill in persons working in research and development on contractual basis (work performed outside the employment relationship). This includes self-employed consultants and leased persons who are employees of other companies, such as intermediary firms. It includes only those persons whose reporting unit knows the function (researchers, technicians and equivalent staff, support staff), gender, time spent on research and development activities. If this information is not known, such a person is not included in this module but the relevant expenditure have to be indicated in module 35, this is external research.

R.13-16 - Fill in doctoral students (who are not employees). This indicator is filled in by the reporting units **only in the higher education and government sector.**

R.17-20 - Fill in the persons participating in the tasks of the R&D grants. In the business enterprise and private non-profit sector, this includes also doctoral students who are not employed in the reporting unit.

A.31

This module concerns internal researchers, it means employees and in the business enterprise and private non-profit sector also working owners and unpaid family members participating in research and development activities. Fill in the number of researchers in head count broken down by age category (age achieved by researchers in the reference year). The sum of rows 1 to 8 (columns 1, 2) in this module have to be equal to the sum of the data in row 2 (columns 1, 2) in modules 23 and 100411 in all reporting units except colleges, universities and their faculties and organisations in government sector. For colleges, universities and their faculties, the sum of rows 1 to 8 (columns 1, 2) in this module have to be equal to the sum of the data in row 2 (columns 1, 2) in modules 23 and 24; for organisations in the government sector, the sum of rows 1 to 8 (columns 1, 2) in this module must be equal to row 2 (columns 1, 2) in module 23.

A.32

Fill in the number of internal researchers in head count broken down by nationality by country name. If the nationality is

not known, fill in "Unknown". The sum of the rows for all countries (columns 2, 3) must be equal to the sum of the data in row 2 (columns 1, 2) in modules 23 and 100411 in all reporting units except colleges, universities and their faculties and governmental organisations. For colleges, universities and their faculties, the sum of the rows for all countries (columns 2, 3) must be equal to the sum of the data in row 2 (columns 1, 2) in modules 23 and 24; for organisations in the government sector, the sum of the rows for all countries (columns 2, 3) is equal to the row 2 (columns 1, 2) of module 23.

A.25

All research and development (R&D) expenditure incurred within the reporting unit (so-called internal expenditure), from any source, is reported here. For expenditure incurred outside the reporting unit to include only those that serve to support internal R D (eg. purchase of equipment for R&D). **Funds for the acquisition (purchase) of R&D from another organisation (executors of R&D) are reported in module 35 - external expenditure (not included in internal R&D expenditure in modules 25-28, 100412, 33, 34 and 100277).**

Depreciation of buildings, machinery technical device and equipment are from the statistical survey of internal R&D expenditure excluded.

Expenditure have to be reported in relation to the number of R&D personnel, not for the whole organisation. University shall also include in the capacity of internal expenditures an adequate share of expenditures for teaching staff participating in research activities.

R.1 - Fill in total internal R&D expenditure, it means sum of capital and current expenditures. Column 1 shows the total amount of expenditure in sequence year, and in column 2, the part that was paid from government sources. In column 1 fill in the total amount of expenditure in the reference year and in column 2 the part of it that has been paid from state resources.

R.2 - Fill in the funds for acquisition of long-term tangible and intangible assets (for budgetary organisations - expenditure category 710 of the budget classification - procurement of capital assets and for other organisations - accounting group 04). From the side "to give" turnover is indicated without the initial state, it means only turnover for the current year.

In column 1 fill in the total amount of capital expenditure in EUR and column 2 the part of it that has been paid from government sources.

R.3 - Fill in expenditure for land acquired for the purpose of R&D (e.g. exploration plots, location for laboratories respectively pilot plants) and buildings acquired by construction or purchase, as well as reconstruction costs or modernization of buildings, etc.

R.4 - Fill in expenditure on machinery and equipment acquired for the purpose of R&D (e.g. devices, computers including their software, etc.).

R.5 - Fill in expenditure on computer software used in research and development for more than one year. If the software is used for one year or less, funds to purchase such software are included in other current costs. Funds devoted to the own software development have to be reported in personnel costs as well as in material costs.

R.6 - Fill in expenditure on other intellectual property products. This category includes the acquisition of technical knowledge (know-how), industrial property rights (e.g. the purchase of patents, industrial and utility models) for the purpose of research and development.

R.7 - Fill in current expenditure for carrying out research and development activities. In budgetary organisations indicate current expenditure by budget classification and in other organisations shall be the sum of the operational and financial costs related to the research and development activities. In column 1 fill in the total amount of current expenditure in EUR and in column 2 the part of it that has been paid from government sources.

R.8 - In budgetary organisations fill in the labour costs from the budget classification of expenditure category 610 - wages, salaries, service income and other adjustments, 620 - insurance and employer's contributions to insurance companies and where appropriate from category 640 item 642 - current transfers to individuals and non-profit organisations (salaries of employees on study visits). In other organisations fill in account group 52 - personnel costs.

R.9 - Fill in the remuneration for work performed under contracts - work performed outside employment relationship (for the number of hours worked reported in module 100411 in rows 9 and 17)

R.10 - Fill in the scholarship of doctoral students who are not employees (persons reported in module 100411 in row 13). Expenditure on R&D activities of those doctoral students who are employees of the reporting unit are included in the labour costs of this module in row 8.

R.11 - Fill in the expenditure on the purchase of direct services to carry out internal research and development, e.g. managerial, administrative, technical, clerical work, etc. (it is not specified in the agreement with the supplier how many and which persons to perform the service, so the number of persons in module 100411 will not be reported, but the relevant expenditure have to be included in this row.

R.12 - Fill in the expenditure on the purchase of materials needed to carry out internal research and development.

R.13 - Fill in the expenditure for the implementation of indirect services, e.g. a proportion of expenditure on cleaning, maintenance, security service activities, libraries, routine computing centers, etc.

A.26

R&D expenditure from row 1 of column 1 of module 25 is specified and current R&D expenditure from row 7 of column 1 of module 25 for individual R&D activities. Research and development is the acquisition of new knowledge, techniques and patterns in the field of science and technology by applying scientific methods and procedures. The sum of rows 1 to 3 must be equal to in column 1 of total R&D expenditure in row 1 of column 1 of module 25 and in column 2 of total current expenditure shown in row 7 of column 1 of module 25.

R.1 - Fill in the expenditure on **basic research** (mainly for science projects). Basic research is a systematic activity whose priority objective is to broaden the knowledge of the researched object and its deeper understanding regardless of the

practical application of the acquired knowledge.

R.2 - Fill in the expenditure on **applied research** (mainly for science and technology projects). It is a systematic activity focused on the practical application of knowledge and the discovery of new scientific knowledge in order to use them in the economic and social fields.

R.3 - Fill in **experimental development** expenditures – it means for the systematic use of scientific knowledge for the production of utility materials, equipment, systems, methods and processes, including the design and development of prototypes.

A.27

This module specifies R&D expenditure by source of funding. Fill in the original source of R&D funding. Tax relief for research and development is not included in the funding of R&D. The sum of rows 1 and 17 must be equal to total R&D expenditure (row 1 column 1 of module 25). The figure in row 6 must be equal to the total R&D expenditure from the government sources (row 1, column 2 of module 25).

Row 10 - General university funds is filled in **only by higher education institutions**.

Internal funds (from the organisation's own sources) in each sector is indicated in highlighted rows (font "**bold**"), which are only filled by organisations belonging to the sector. The following table provides guidance on which module rows have the reporting units to fill in regarding belonging to individual sectors (business enterprise, government, higher education and private non-profit):

The R&D organisation belongs to the sector:	Obligation to fill in the rows of module 27
Business enterprise sector	Rows 1, 2, 3 , 4, 5, 6, 8, 9, 11, 14, 17, 18, 19, 20, 21-25
Government sector	Rows 1, 2, 6, 7 , 8, 9, 11, 14, 17, 18, 21-25
Higher education sector	Rows 1, 2, 6, 8, 9, 10, 11, 12 , 13, 14, 17, 18, 21-25
Private non - profit sector	Rows 1, 2, 6, 8, 9, 11, 14, 15 , 16, 17, 18, 21-25

R.1 - Fill in the funds (expenditures) for research and development obtained from entities in the Slovak Republic. Row 1 must be equal to the sum of row 2, row 6, row 11 and row 14.

R.2 - Fill in the funds (expenditures) for research and development obtained from economic entities (legal and natural persons) engaged in profit-making activities. This includes also non-profit institutions serving these entities, if they are mainly financed from their funds.

R.3 - Fill in the expenditure paid from the **own funds of organisations in the business enterprise sector**.

R.4 - Fill in the expenditure paid by other business entities in the same group of enterprises, if the reporting unit is an enterprise, which is part of a group of companies. An enterprise group is a grouping of businesses (legal units) linked by legal or financial (ownership) relationships. It is an economic entity that is authorized to make decisions concerning the units which compose it.

R.5 - Fill in the expenditure paid from other enterprises outside; the reporting unit, which is an independent enterprise and is not part of a group of enterprises, have to report the funds received from other enterprises in this row.

R.6 - Fill in the expenditure paid from the government sources by central or local government at all levels and from institutions, which are mainly financed from the state budget, including also the co-financing of projects from abroad (e.g. EU structural funds).

R.7 - Fill in the expenditure paid by the **own sources of government sector organisations**, e.g. from the sale of intellectual property.

R.8 - Fill in the expenditure paid from state funds by central government excluding funds for universities.

R.9 - Fill in the expenditure paid from state funds by local government excluding funds for universities.

R.10 - To be completed **only by higher education institutions**; fill in state budget funds devoted to research and development at universities, it means the relevant part of the general university funds, including funds from the VEGA and KEGA grant agencies.

R.11 - Fill in the funds (expenditures) of universities, as well as research institutes, clinics, etc., which are part of higher education institutions or are directly managed by higher education institutions.

R.12 - Fill in the own funds of universities devoted to research and development, obtained from business activities of universities pursuant to Act No. 131/2002 Coll. on universities and on amendments to certain acts.

R.13 - Fill in the expenditure paid from the funds by the other universities.

R.14 - Fill in the funds (expenditures) received from private non-profit organisations, foundations, donations, etc.

R.15 - Fill in the expenditure from **own funds of private non-profit sector organisations**.

R.16 - Fill in the expenditure from another private non-profit organisation.

R.17 - Fill in the funds devoted to R&D, obtained from foreign sources.

R.18 - Fill in the funds devoted to R&D, obtained from business entities abroad.

R.19 - **To be completed only by business enterprise sector organisations**. Fill in the expenditure paid from the funds received from abroad from business entities in the same group of enterprises, if the reporting unit is an enterprise which is part of a multinational foreign enterprise group.

R.20 - **To be completed only by business enterprise sector organisations**. Fill in the expenditure paid from the funds received from abroad from other enterprises outside the group; the reporting unit, which is an independent enterprise and is not part of a group of enterprises, have to indicate the foreign funds received from business entities in this row.

R.21 - Fill in the funds devoted to R&D, obtained from state respectively governmental foreign organisations.

R.22 - Fill in the expenditure paid from the funds received from universities and research institutes, clinics of teaching hospitals, etc., which are part of higher education institutions or directly managed by universities abroad.

R.23 - Fill in the funds obtained from abroad from private non-profit organisations, foundations, gifts, etc.

R.24 - Fill in the expenditure paid from the structural funds of the European Union, **reduced by the amount that was paid from the state budget (co-financing of EU projects)**. State budget funds used for pre-financing of projects have to be included in this row.

R.25 - Fill in the expenditure on R&D paid from other sources of international organisations and institutions and foreign funds.

A.100412

This module breaks down total R&D expenditure for internal and external funding. The sum of the data for internal and external funding must be equal to that in row 1 of column 1 of module 25.

R.1 - Internal funding includes all sources devoted to internal research and development from the organisation's own sources (funds obtained from its own activities). In the business enterprise sector, it is for example reserves or retained earnings (which were not distributed as dividends), sales of common products (other than R&D), funds raised from financial markets, bank loans, venture capital, etc.). In the higher education sector, internal financing includes for example income from student enrollment fees, lifelong learning and income from other services. The convention for international comparison referred to in the Frascati manual is that general university funds (GUF), i. e. subsidies from the state budget for higher education institutions are not classified as internal sources but as external government sources.

Another example of internal funding is when a research institute finances some R&D works through income from licence fees and profits from the sale of goods and services. Although these funds are received from other entities, they should not be considered as transactions for R&D but as "retained earnings" and should therefore be included in the internal sources of funds because the buyer of goods and services did not purchase with the intention of providing R&D funding. It should be noted that the term "intramural" R&D expenditure is not synonymous with "internal" R&D funding, as not all in-house R&D activities are financed from internal sources.

The data in this row have to be equal to that for the organisation's own funds, as specified in module 27.

R2 - External funding includes sources devoted to internal research and development from all other sources (except internal) and further broken down into exchange (contract research, R&D results are provided to the funders) and the transfer of funds, including public university funds (R&D results are not provided to the funders). State funding for higher education and budgetary organisations is an external financing transfer. Grants are external financing and in most cases the results must be provided to the funders, that is contract research. Donations and philanthropy funds received explicitly for research and development are external funds.

Although the receiving organisation/enterprise can have considerable scope in deciding how and when these funds are used in concrete activities of internal research and development, the source of these funds is still out of the receiver unit. The amount should be reported for the period when it was spent on research and development and not when it was received. Philanthropy from individual R&D donors, for example to address research for individual diseases, is a growing phenomenon. These funds must be reported as an external source from the private non-profit sector, which also includes individuals. Gifts and philanthropy received without a requirement or expectation to be used for R&D have to be included in internal sources if they are used for R&D on the basis of a decision by the receiving organisation/enterprise.

Convention on international comparisons provided in the Frascati Manual is, that in the business enterprise sector funds obtained from other members of the same group of enterprises are considered as external sources.

The flow of funds between the statistical units for carrying out research and development can be in the form of exchange or without exchange (transfer, transfer - grants), i.e. the reverse compensation flow results of R&D from R&D executor. An example of **exchange funding** is funding under the R&D cooperation agreement. Public procurement is one of the common forms of providing exchangeable funds for R&D. A government agency for project funding of research and development through public procurement may waive the right to the outcome of research and development that has been contracted with the R&D executor; however, these funds are considered as exchangeable funds.

In the case of a **transfer of R&D funds** from one economic entity to another, the financing entity does not require any goods or services in return and has no significant rights to the R&D result. These include for example state budget funds for higher education and budgetary organisations, donations, philanthropy, debt relief, etc.

A.28

In this module fill in the total expenditure on research and development broken down by socio-economic objectives, namely the expenditure on R&D together in column 1, expenditure paid from government sources in column 2 and expenditure on research and development projects in columns 3 to 10. The sum of rows 1 to 14 in column 1 must be equal to the total expenditure on research and development (module 25 row 1 column 1), in column 2 it must be equal to the total expenditure on R&D from the state budget (module 25 row 1 column 2). The sum of rows 1 to 14 in column 3 must be equal to the total expenditure on R&D projects.

As a practical rule on the classification expenditure devoted to R&D by socio-economic objectives need to use the following hierarchy of sources of information:

- the nature and finalization of the research and development projects as set out in the official documentation;
- if the source described in a) is not usable, then the characteristics and specialization of the organisation, provided that the organisation has a clear mandate to carry out research and development in a specific area (e.g. R&D funding from the Ministry of Agriculture provided to the research center specializing in research and development in the field of health must be classified as "health" rather than "agriculture");
- if the sources of information described in points a) and b) are not applicable, the characteristics of the funding institution (e.g. R&D funding from the Ministry of Agriculture is to be classified as research and development in agriculture).

R.1 - This includes research into the earth's crust and mantle, seas, oceans, atmosphere and research into their use. It also includes climate and meteorological research, pole research and hydrology. It does not include soil pollution research

and research on soil improvement and land use.

R.2 - This includes pollution control research aimed at identifying and analyzing sources of pollution and their causes and all pollutants, including their spread in the environment and their effects on humans and the biosphere. This includes the development of monitoring equipment to measure, eliminate and prevent all types of pollution in all types of environment.

R.3 - Fill in the funds spent on civil space research and technology. Relevant defense research is classified in row 14. Although civil space research does not generally deal with specific objectives, it often has a specific objective, such as increasing general knowledge (e.g. astronomy) or related to specific applications (e.g. telecommunications satellites).

R.4 - This includes research on infrastructure and landscape development, including research on construction and planning of buildings. More generally, this socio-economic objective includes all research relating to the general planning of land use, transport and telecommunications systems. It also includes research into the protection against harmful effects on urban and rural planning, but not research on other types of pollution.

R.5 - Includes research into the production, storage, transport, distribution and rational use of all forms of energy. It also includes research into processes designed to increase the efficiency of energy production and distribution and the study of energy conservation.

R.6 - This includes research related to the increase in industrial production and technology. It includes research on industrial products and their manufacturing processes, with the exception of areas which form an integral part of the implementation of other objectives (e.g. defence, space, energy, agriculture).

R.7 - Covers research aimed at protecting, promoting and restoring human health, including within a broad interpretation aspects of nutrition and food hygiene. The full scope includes preventive medicine, including all aspects of medical and surgical treatment for individuals and groups, and the provision of hospital and home care, social medicine and pediatric and geriatric research.

R.8 - This includes all research into support for agriculture, forestry, fisheries and food production. It includes: research on chemical fertilizers, biocides, control of biological pesticides and mechanization of agriculture; research on the impact of agricultural and forestry activities on the environment; research into the development of food productivity and technology.

R.9 - Included are expenditures on research related to general education, including training, pedagogy and didactics, special education (for the gifted, persons with learning difficulties, disabilities) at all levels of education - from pre-school to university.

R.10 - This includes research related to cultural, recreational and sporting activities, religion, art and also radio, television and publishing services.

R.11 - This covers research related to the political structure of society, public administration, social change and processes, social conflicts, regional studies and developments in the area of social security and protection of specific groups of the population (immigrants, offenders, etc.).

R.12 - Covers all research at universities.

R.13 - **To be completed only by R&D institutions belonging to the sector according to SKNACE Rev. 2 = 72.** This includes expenditure that are intended for the general advancement of knowledge that cannot be attributed to the specific objectives.

R.14 - Fill in the funds spent on research and development for military purposes. It also includes basic research and nuclear and space research, funded by the Ministry of Defense. Civil research, funded by the Ministry of Defense, for example in the fields of meteorology, telecommunications and health, should be classified in the relevant socio-economic objectives.

C.3-10 - These are expenditure on target-oriented activities aimed at developing knowledge, product, technological and other innovations that are directed mainly at specific problems of the state, strengthening exports, supporting small and medium-sized enterprises, improving the environment, etc.

C.4 - These are the research and development projects of the non-investment fund for the support of research and development established by the Ministry of Economy of the SR - i.e. the Innovation fund.

C.5 - These are projects within the meaning of Act no. 185/2009 on Incentives for research and development and on the amendment of Act no. 595/2003 Coll. on Income tax, as amended; direct incentives for R&D (subsidies from the state budget) will be provided.

C.6 - State R&D programs addressing the key challenges of developing and meeting the needs of society. The state program specifies the area of science and technology in which research and development is to be concentrated or intensified, with the aim of increasing its economic and social benefit and contributing to its high level and international recognition. It is approved by the government. State programs for the development of research and development infrastructure are aimed at creating better conditions for solving research and development projects, in particular by modernizing and improving the technical research and development infrastructure, increasing the qualification of R&D personnel, etc.

C.7 - These are research and development projects supported by the Agency for the support of research and development under the Act no. 172/2005 Coll. on the organisation of state support for research and development and on the amendment of Act No. 575/2001 Coll. on the organisation of government activities and the organisation of central state administration, as amended.

C.8 - These are research and development projects financed by central government authorities within the meaning of paragraph 11 section 2 letter c) of Act no. 172/2005 Coll. on the organisation of state support for research and development and on the amendment of Act No. 575/2001 Coll. on organisation of government activities and organisation of central state administration as amended – it is funds provided for the reimbursement of research and development expenditures of budgetary organisations, contributions to research and development to subsidized organisations and subsidies to legal and natural persons - entrepreneurs for research and development (within the meaning of paragraph 8 section 1 letter a, § 8 section 2 and § 9 section 4 letter f) of Act no. 523/2004 Coll.), which are within their founding or material scope.

C.9 - These are projects to support research, development and innovation supported by the structural funds - from the operational program (hereinafter OP) Research and Development, OP Education, OP Competitiveness and Economic

Growth, etc.; only part of the expenditure paid from the state budget (co-financing of EU projects) is given.

C.10 - Other types of R&D projects (e.g. The framework program Horizon 2020).

A.33

This module is filled in by the reporting units when they have carried out research and development in the selected areas.

R.1 - Fill in that part of the total internal expenditure on R&D in row 1 of module 25, which was related to the research and development of information and communication technologies (the following products according to the Classification of Products by Activity (CPA 2008)) shall be reported: **26.1 Electronic components and boards** (valves and tubes with hot cathode, cold cathode or photocathode, including CRT displays; diodes and transistors; electronic integrated circuits; audio, video, network and similar cards for automatic data processing machines; smart cards), **26.2 Computers and peripheral equipment** (portable data processing machines weighing less than or equal to 10 kg, e.g. laptops and notebooks; digital assistants and similar computers; POS terminals, ATM terminals and similar devices which can be connected to a data processing machine or to network, input or output units, also containing storage units under a common cover, monitors and projectors principally used in an automatic data processing system; units with two or more of the following functions: printing, scanning, copying, faxing, storage units, etc.), **26.3 Communication equipment** (radio or television transmitting apparatus, television cameras; electrical apparatus for line telephony or telegraphy, videophones; parts of electrical telephonic or telegraphic apparatus; burglar or fire alarms and similar apparatus), **26.4 Consumer electronics - audio-visual apparatus and equipment** (radio receivers; television receivers, whether or not combined with radio receivers or sound or video recording or reproducing apparatus; parts of audio and video equipment; **26.8 Magnetic and optical media** (magnetic media, unrecorded except for magnetic stripe cards; optical media, unrecorded; magnetic stripe cards), **61 Telecommunications** (wired telecommunications services; wireless telecommunications services; satellite telecommunications services; other telecommunications services), **62 Computer programming, consultancy and related services** (computer programming; design and development of information technology; computer software originals; computer game software originals; other software originals), **63.1 Data processing, hosting on the internet and related services; web portal** (secure video stream; secure audio stream; advertising space or time on the internet).

R.2 - Includes software development if it represents scientific and technical progress. For example new theorems and algorithms in computer science, new or significantly changed operating systems, programming languages, application programs, development of internet technology, etc.

R.3 - Indicate that part of total internal R&D expenditure from row 1 of module 25, which has been devoted to research in biotechnology. The definition of biotechnology is as follows: the application of science and technology to living organisms as well as to parts, products and models therefrom in order to transform living or non-living materials to produce knowledge, goods and services. The indicative, non-exhaustive definition is based on the list:

- DNA (coding): genomics, pharmaco-genetics, gene samples, DNA sequencing / synthesis / amplification, genetic engineering.
- proteins and molecules (functional blocks): sequencing / synthesis of peptides / proteins, gluco-engineering of lipids / proteins, proteomics, hormones and growth factors, receptors / signaling / pheromones cells.
- culture and engineering of cells and tissues: the culture of cells / tissues, tissue engineering, hybridization, cell fusion, vaccine / immune stimulants, embryo handling.
- Process biotechnology: bioreactors, fermentation, bioprocesses, bioextraction, bio-softening, bio-whitening, bio-sulfur, bio-purification and biofiltration.
- Sub-cell organisms: gene therapy, viral vectors.

R.4 - Indicate that part of the total internal R&D expenditure from row 1 of module 25 which was devoted to the research of new materials, the use of which may be new to the market or to the enterprise.

R.5 - Fill in that part of the total internal R&D expenditure from row 1 of module 25, which has been devoted to research in the field of nanotechnologies and nanomaterials. Nanotechnologies are technologies that deal with the smallest particles of matter that can be handled. For example, nanoelectronics in the development of transistors, diodes, etc. to minimize the size of computers, also optoelectronics - optoelectronic properties of semiconductors, receptor surfaces of biosensors for biological systems, new microscopic techniques. Nanotechnologies can be interdisciplinary fields, may combine physics, computer science, electronics, biology, biotechnology, chemistry and so on.

A.34

To be completed only by the reporting units belonging to the business enterprise sector. In this module have to be indicate the expenditure on research and development (R&D) broken down by classification of final production of research and development; i.e. depending on the nature of the products or services in which the R&D results will be used (integrated). In column 1, enter the code from the classification of the final R&D production, ie. Code from the list given in the table below. This list is based on the CPA production classification, whose full version is available on the website of the Statistical Office of the Slovak Republic and corresponds to the SK NACE - statistical sectoral classification at the three-digit level. Final production code does not necessarily agree with major activity of the monitored reporting unit, or entity that will use the results of R&D. To identify the final production of the research and development activities is used the following rule: if the reporting unit carries out the research and development for its purposes, as the final production will indicate its main activity, or its secondary activity according to Statistical sectoral classification SK NACE (3-digit code from the table below). If the results of the research will be used by another enterprise or several enterprises, belonging to different sectors, those sectors are identified by a code of final production indicated in the following table:

Classification of final production of research and development activities

Code	Name	Code	Name
010	Crop and animal production, hunting and related service activities	430	Specialised construction activities
020	Forestry and logging	450	Wholesale and retail trade and repair of motor vehicles and motorcycles
030	Fishing and aquaculture	460	Wholesale trade, except of motor vehicles and motorcycles
050	Mining of coal and lignite	465	Wholesale of information and communication equipment
060	Extraction of crude petroleum and natural gas	470	Retail trade, except of motor vehicles and motorcycles
070	Mining of metal ores	490	Land transport and transport via pipelines
080	Other mining and quarrying	500	Water transport
090	Mining support service activities	510	Air transport
100	Manufacture of food products	520	Warehousing and support activities for transportation
110	Manufacture of beverages	530	Postal and courier activities
120	Manufacture of tobacco products	550	Accommodation
130	Manufacture of textiles	560	Food and beverage service activities
140	Manufacture of wearing apparel	581	Publishing of books, periodicals and other publishing activities
150	Manufacture of leather and related products	582	Software publishing
160	Manufacture of wood and of products of wood and cork, except furniture; manufacture of articles of straw and plaiting materials	590	Motion picture, video and television programme production, sound recording and music publishing activities
170	Manufacture of paper and paper products	600	Programming and broadcasting activities
181	Printing and service activities related to printing	610	Telecommunications
182	Reproduction of recorded media	620	Computer programming, consultancy and related activities
190	Manufacture of coke and refined petroleum products	631	Data processing, hosting and related activities; web portals
200	Manufacture of chemicals and chemical products	639	Other information service activities
210	Manufacture of basic pharmaceutical products and pharmaceutical preparations	640	Financial service activities, except insurance and pension funding
220	Manufacture of rubber and plastic products	650	Insurance, reinsurance and pension funding, except compulsory social security
230	Manufacture of other non-metallic mineral products	660	Activities auxiliary to financial services and insurance activities
241	Manufacture of basic iron and steel and of ferro-alloys	680	Real estate activities
244	Manufacture of basic precious and other non-ferrous metals	690	Legal and accounting activities
250	Manufacture of fabricated metal products, except machinery and equipment	700	Activities of head offices; management consultancy activities
254	Manufacture of weapons and ammunition	710	Architectural and engineering activities; technical testing and analysis
261	Manufacture of electronic components and boards	721	Research and experimental development on natural sciences and engineering
262	Manufacture of computers and peripheral equipment	722	Research and experimental development on social sciences and humanities
263	Manufacture of communication equipment	730	Advertising and market research
264	Manufacture of consumer electronics	740	Other professional, scientific and technical activities
265	Manufacture of instruments and appliances for measuring, testing and navigation; watches and clocks	750	Veterinary activities
266	Manufacture of irradiation, electromedical and electrotherapeutic equipment	770	Rental and leasing activities (excluding leasing of intellectual property)
267	Manufacture of optical instruments and photographic equipment	780	Employment activities

Code	Name	Code	Name
268	Manufacture of magnetic and optical media	790	Travel agency, tour operator and other reservation service and related activities
270	Manufacture of electrical equipment	800	Security and investigation activities
280	Manufacture of machinery and equipment n.e.c.	810	Services to buildings and landscape activities
290	Manufacture of motor vehicles, trailers and semi-trailers	820	Office administrative, office support and other business support activities
301	Building of ships and boats	840	Public administration and defence; compulsory social security
302	Manufacture of railway locomotives and rolling stock	850	Education
303	Manufacture of air and spacecraft and related machinery	860	Human health activities
304	Manufacture of military fighting vehicles	870	Residential care activities
309	Manufacture of transport equipment n.e.c.	880	Social work activities without accommodation
310	Manufacture of furniture	900	Creative, arts and entertainment activities
320	Other manufacturing	910	Libraries, archives, museums and other cultural activities
325	Manufacture of medical and dental instruments and supplies	920	Gambling and betting activities
330	Repair and installation of machinery and equipment	930	Sports activities and amusement and recreation activities
350	Electricity, gas, steam and air conditioning supply	940	Activities of membership organisations
360	Water collection, treatment and supply	950	Repair of computers and personal and household goods
370	Sewerage	951	Repair of computers and communication equipment
380	Waste collection, treatment and disposal activities; materials recovery	960	Other personal service activities
390	Remediation activities and other waste management services	970	Activities of households as employers of domestic personnel
410	Construction of buildings	980	Undifferentiated goods- and services-producing activities of private households for own use
420	Civil engineering	990	Activities of extraterritorial organisations and bodies

A.35

This module is filled only by reporting units belonging to the business enterprise and government sector. It covers expenditure on external research and development (R&D) as opposed to modules 25-28, 100412, 33, 34 and 100277, which include expenditure on internal R&D. **External R&D expenditure** are funds that the reporting unit has paid to another organisation (R&D performer) for carrying out R&D during the reference period. This includes acquisition of R&D performed by other units as well as grants provided to other units to carry out R&D. External R&D expenditure are not included in the internal R&D expenditure of modules 25-28, 100412, 33, 34 and 100277. In order to avoid duplication of reporting, it is important to differentiate expenditure on internal and external research. The boundary line between internal and external expenditure is not always clear, especially in particular in the acquisition of R&D services. To identify whether they are internal or external R&D expenditure will help the relationship between the reporting unit and persons (entities) carrying out R&D outside the organisation. According to the Frascati manual, the following practical criterion applies:

- **the acquisition of R&D services** (service is not necessarily R&D) under a contract with an individual or an enterprise indicates a close relationship with external R&D personnel; the relevant expenditure are considered to **be internal expenditure** and are listed in the module 25 in current expenditure;
- in the case of the **financing of R&D work carried out outside the organisation by an independent unit** (but not as an integrated part of the reporting unit's R&D projects), it is assumed that the reporting unit is not in close contact with the R&D staff; then it is the **external expenditure** on R&D that are included in this module.

B. Impact of the COVID-19 pandemic on research and development

B.100536

The question is answered by all reporting units, regardless of whether they had R&D activities in 2020.

If the reporting unit **did not carry out any research and development** due to the COVID-19 pandemic, it answer to the question "yes", it does not answer to other questions and modules in the questionnaire.

If the reporting unit did not carry out any research and development for any other reason than the pandemic, it answer to the question "no", it does not answer to other questions and modules in the questionnaire.

If the reporting unit **carried out research and development** in 2020, it answer to the question "no" and fill in all the questions and module in the questionnaire.