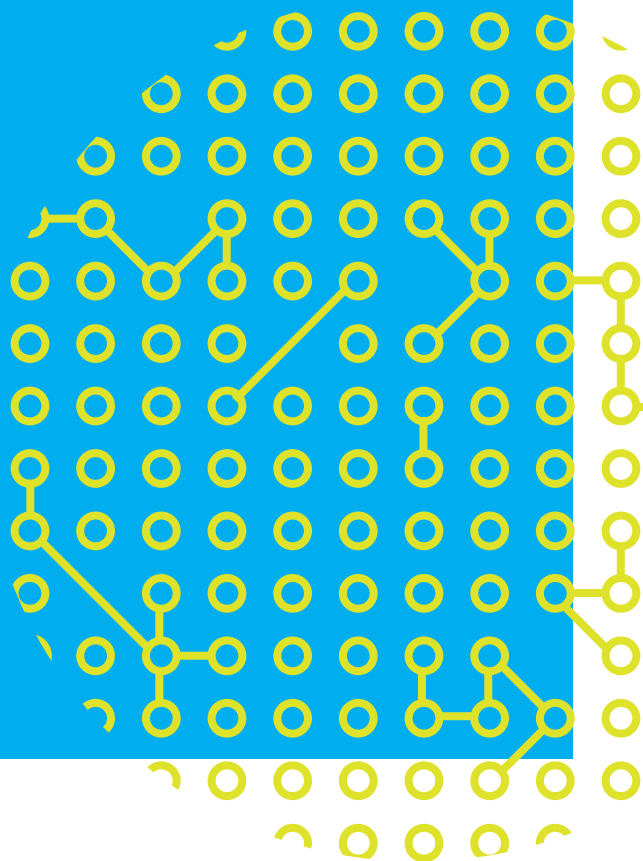




Science and  
Technology  
Centre  
Novo mesto

# DEVELOPMENT STRATEGY JRZ RUDOLFOVO Science and Technology Centre 2023–2027



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# { 1 Introduction

**Economic success and prosperity at all levels are founded upon knowledge. Knowledge that ultimately comes to life in solutions that improve our lives. This is, above all, knowledge that is alive in the people working in the institutions where it is cultivated.**

There are many companies in South-Eastern Slovenia where knowledge is successfully translated into solutions and products and which are the foundation of the region's prosperity. Institutions of knowledge, schools, faculties and institutes, and of course the people who work in them, are also crucial to the stable development of the region as a whole.

Rudolfovo was founded as a public research institute in March 2022. It is the fruit of several years of effort by the Novo mesto Development Centre and the municipalities of Novo mesto, Črnomelj, Metlika and Trebnje.

Rudolfovo was established to carry out research and development in the fields of Industry 4.0, digitalisation, the circular economy and intellectual property. Experience shows that you have to keep the technology close, you have to test it, you have to master it and only then can you use it to solve challenges in the business world, both economic and non-economic, and in science.

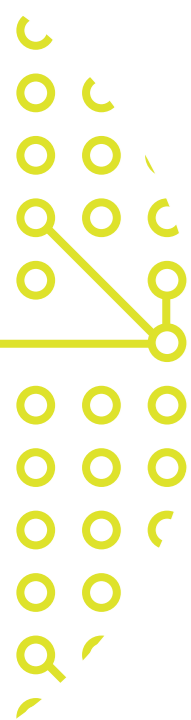
We believe that being at the cutting edge of a technological field means that you create technologies, not just buy and use them. This is why we need to maintain our ambition to build on state-of-the-art technologies, first by developing our own software solutions and then by integrating these devices into new high-performance systems, and in the future we will play an important role in the development of new technologies and thus co-create new high-tech companies.

The Development Strategy presented below is the document in which we have set out our mission, our vision, our values and our strategic orientations. It also contains detailed quantitative objectives for the period up to the end of 2027 and a list of 8 strategic projects. For some objectives, we have provided only rough estimates of the target values; these will be updated as necessary over the years.

This document is an important tool to ensure that all stakeholders are aware of all the points outlined above and so that we can measure on an ongoing basis how well we are achieving our objectives.

I am convinced that this plan will also help us develop into a world-class institute.

Director of Rudolfovo  
**Prof. Dr. Janez Povh**



## 2 Starting Points for the Development Strategy

### 2.1 General Information about the Founding and Development of the Public Research Institute Rudolfovo

The Public Research Institute Rudolfovo – Science and Technology Centre Novo mesto (“Rudolfovo”) was founded on 23 March 2022 by the Government of the Republic of Slovenia to support the technological development and innovation of South-Eastern Slovenia and the Eastern Slovenia Cohesion Region, and thus also the whole of Slovenia.

The operation of Rudolfovo is aimed at achieving the following objectives:

- creating an ecosystem of new small and medium-sized highly innovative companies that will be based on high technology and will give the geographical area of South-Eastern Slovenia the necessary stability, quality jobs and economic prosperity based on high added value,
- business support for existing large and medium-sized companies in South-Eastern Slovenia to innovate their products, services and processes in collaboration with researchers from JRZ Rudolfovo and thereby increase their competitiveness and added value,
- increasing public investments and the number of researchers in South-Eastern Slovenia and the Eastern

- Slovenia Cohesion Region, support for the green and digital transformation of the Slovenian economy and public sector,
- establishment of a state-of-the-art research infrastructure in selected fields of activity, which will be the basis for transferring knowledge to the economy and the public sector,
- improving excellence in science, transfer of knowledge to younger generations, the enthusiasm of young people for STEM professions (Science, Technology, Engineering and Mathematics),
- cooperation with higher education organisations.

The main areas of the Institute’s scientific research activities in the first decade of its operation will focus on key enabling technologies for Industry 4.0 and 5.0, digitalisation and digital transformation of the economy and the entire society, the circular economy, the transfer of research results and technological knowledge to the environment while protecting intellectual property and thereby promoting technological, non-technological and social innovations, technologically complex entrepreneurship and consequently increasing productivity and added value in the economy.

Rudolfovo’s R&D unit features the following:

- Laboratory for Factories of the Future
- Centre for Digital Transformation
- Centre for Circular Economy
- Centre for Technology Transfer and Intellectual Property

### 2.2 Starting Points for the Development Strategy

The first JRZ Rudolfovo Development Strategy is based, in addition to positive legislation and regulations in the subject areas, on the following starting points:

- Decision establishing the Public Research Institute Rudolfovo – Science and Technology Centre Novo mesto;
- Statute of Rudolfovo – Science and Technology Centre Novo mesto;
- Work Programme and Financial Plan for 2023; and
- Revised Work Programme and Financial Plan for 2022.

### 2.3 Preparation and Adoption of the Development Strategy

The Development Strategy is a fundamental planning document that has been developed through three internal strategic conferences held on 2 December 2022 and 20 January and 17 February 2023.

The final content and format was discussed and confirmed by the Rudolfovo Board of Directors on 11 May 2023.

## 3 Analysis of the Environment of JRZ Rudolfovo

### 3.1 SWOT Analysis

#### S – Strengths

- Small and agile and a positive team climate
- Open mindset
- Development orientation
- Leading with vision and inspiration
- Fostering innovation
- Employee social capital
- High-tech equipment
- Multidisciplinary team composition
- Industry focus
- Geographical location
- Involvement in the international environment and projects
- Local and regional support

#### W – Weaknesses

- Some research groups severely lack resources
- Part-time jobs and high involvement in other institutions
- Few own references
- Current premises do not allow ambitious development
- Infrastructure under development
- Market activity is still being established
- Youth and the financial weakness and vulnerability of the institution
- Unattractiveness of public sector jobs for engineering staff

#### O – Opportunities

- Professional development of staff and effective recruitment of international experts
- Visibility and promotion of results
- Further integration into international networks
- Networking with research organisations and educational institutions, the Chamber of

Commerce of Dolenjska and Bela krajina, regional centres and the Urban Municipality of Novo mesto

- Further networking with businesses and applied cooperation in the region
- Developing those areas which are also priority development areas within the European Union
- To make use of the equipment acquired
- Identifying the needs of the economy and offering appropriate professional services
- Continuous improvement
- Raising public awareness of the role and importance of research and technology
- Socially beneficial impacts
- Cross-border cooperation with Croatian regions

#### T – Threats

- Unstable funding, possibility of changes in funding conditions
- General / financial, economic, .../ crisis and instability in the international environment
- Staff turnover, general staff shortage
- Cyber threats, data loss
- Public finance volatility
- Failure in project applications
- Too much fragmentation of work/focus
- Working in silos

### 3.2 PEST Analysis

#### P – Political Environment

- Science policy instability
- No clear development priorities
- The focus of science policy in Slovenia is on basic science
- Many opportunities for EU-funded applied research projects

The political climate can affect the development and future of the Institute

#### E – Economic Environment

- Strong economy in South-Eastern Slovenia
- Public investment in R&D is increasing, but uncertainty remains over the stable financing of Rudolfovo
- Many opportunities for applied research projects
- Insufficient awareness in the environment of the fruitfulness of cooperation between research organisations and industry

#### S – Socio-Cultural Environment

- Practical focus of the local environment
- Rich technical and industrial tradition
- Support of the economy
- Strong regional awareness, affinity
- A favourable position in the local environment must be justified
- Smaller younger generations
- Unattractive working conditions in the public sector for engineering staff, which, together with demographic changes, poses major challenges in attracting talented young professionals

#### T – Technological Environment

- Stimulating and internationally comparable technological environment of the Institute
- Technological innovation in the Slovenian economy is improving, including in SMEs
- Highly developed secondary and higher vocational technical education in South-Eastern Slovenia
- The region has a developed basic infrastructure
- Digital transformation, including in SMEs, is a priority

# 4 The Mission, Vision and Values of Rudolfovo

## 4.1 Mission

We {co}create, share and transfer high-tech knowledge to partners in the economy.

## 4.2 Vision

We will become a cutting-edge high-tech research organisation and the link between science and its effective application in practice.

## 4.3 Organisational Culture Values

### Integrity

Integrity is a fundamental principle in our work. Respect, trust, integrity, compliance, authenticity, accountability, fairness, transparency and credibility are the foundations on which we operate and through which we select new colleagues and build our partnerships.

### Partnership

We carry out our work through professional and networking partnerships in the international arena, with various actors in industry, entrepreneurship, science, education and other parts of the public sector. When working with partners, we use an adjusted version of Herb Taylor's Four-Way Test:

1. Is this the right solution under the circumstances?
2. Is it fair to all concerned?
3. Will it strengthen the partnership?
4. Will it be beneficial to all concerned?

### Diversity

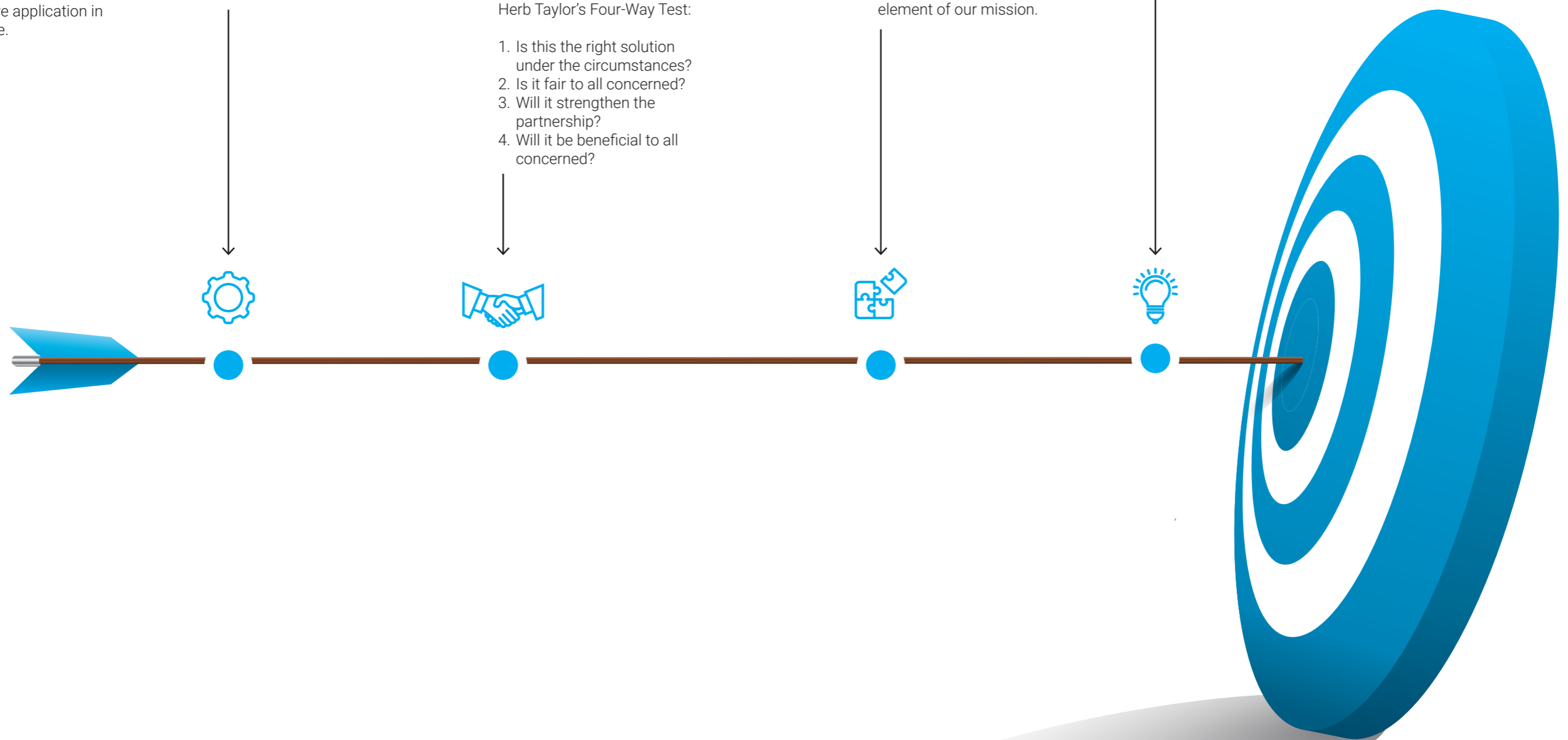
New technologies and new initiatives to improve our lives come in many forms and in many places. We consider agile openness to different perspectives, ideas, initiatives and their comprehensive integration into the current state of development of our partners as an important element of our mission.

### Creativity

Scientific truth and the openness to freely discover and share technological discoveries and solutions are the foundations of our existence. To be able to identify the right solutions, we foster and value creativity in all areas of our work.

### Sustainable Development and Social Responsibility

Employees and other colleagues of Rudolfovo place the concern for comprehensive sustainable development and social responsibility at the forefront of our activities, as a prism through which we facilitate our integration in society.



# 5 Strategic Orientations and Objectives

## 5.1 Strategic Orientations



- **A Excellence in scientific research**
- **B Development work for industry and industrial partnerships**
- **C Development of excellent professionals**
- **D Business excellence and stakeholder satisfaction**

## 5.2 Objectives and Indicators

### A. EXCELLENCE IN SCIENTIFIC RESEARCH

Objective	Operator	Status 2022	Objective 2023	Objective 2027
1 Number of pure WoS/Scopus citations per registered researcher (cumulative, in the last ten years)	Researchers	76/100	80/100	100/120
2 Number of new original scientific articles (category 1.01) in the year per employed researcher	Researchers	1.88	2.0	2.2
3 Number of patents (patent application filed)	CPTIL	0	0	3
4 Number of programme groups	Research group leaders	0	4	4
5 Number of ARRS projects	Research group leaders	0	1	8
6 Number of infrastructure programmes	Research group leaders	0	1	1
7 ERC projects	Research group leaders	0	0	1
8 Number of patent applications filed with the Slovenian patent office (annually)	Researchers	0	1	2
9 Number of patent applications filed with a foreign patent office that have passed a full examination	Researchers	0	0	2
10 Number of research projects involving at least one higher education institution	Researchers	0	3	6

### B. DEVELOPMENT WORK FOR INDUSTRY AND INDUSTRIAL PARTNERSHIPS

Objective	Operator	Status 2022	Objective 2023	Objective 2027
11 IP consultancy services	Head of CPTIL	0	1	5
12 Establishment of the office for technology transfer and intellectual property	Head of CPTIL	0	Establishment of the office	Office works regularly
13 Number of national/regional organisations of which Rudolfovo is a member	Director	1	4	8
14 Number of international organisations of which Rudolfovo is a member	International cooperation adviser	0	1	5
15 Number of technology transfers	CPTIL	0	1	2
16 Number of less than one year long research and development projects involving the economy or other users of knowledge	Research group leaders	0	6	15
17 Value of less than one year long research and development projects involving the economy or other users of knowledge (in EUR)	Research group leaders	0	€65,000	€450,000
18 Number of at least one year long research and development projects involving the economy or other users of knowledge	Research group leaders	0	1	3
19 Value of at least one year long research and development projects involving the economy or other users of knowledge (in EUR)	Research group leaders	0	0	€300,000
20 Number of innovation awards	Research group leaders	0	1	3

### C. DEVELOPMENT OF EXCELLENT PROFESSIONALS

Objective	Operator	Status 2022	Objective 2023	Objective 2027
21 Number of conferences attended	Researchers	0.33 per employee	1 per employee	1.5 per employee
22 Employee training in hours per employee	Director	12	40	64
23 Number of researchers involved in the teaching process of higher education institutions (in persons)	Researchers	8	15	20
24 Share of female Scientific Councillors among all Scientific Councillors (%)	Director	0	25	50
25 Share of female Scientific Associates among all Scientific Associates (%)	Director	41.20	50	50
26 Number of foreign researchers employed at the JRZ (in persons)	Director	2	8	15
27 Number of researchers, Republic of Slovenia citizens employed at the JRZ, who have returned from abroad in the last 5 years (in persons)	Director	0	2	5
28 Number of visiting young researchers (up to 10 years postdoc) who have done less than one month of continuous research at the JRZ (in persons)	Director	0	2	5
29 Number of visiting young researchers (up to 10 years postdoc) who have done at least one month of continuous research at the JRZ (in persons)	Director	0	2	5
30 Number of visiting senior researchers (more than 10 years postdoc) who have done less than one month of continuous research at the JRZ (in persons)	Director	0	2	4
31 Number of visiting senior researchers (more than 10 years postdoc) who have done more than one month of continuous research at the JRZ (in persons)	Director	0	1	4
32 Number of JRZ researchers who have done at least one month of continuous research at foreign universities or foreign scientific institutions (in persons)	Director	0	3	5
33 Number of staff members awarded for their professional work	ALL	0	1	5



## D. BUSINESS EXCELLENCE AND STAKEHOLDER SATISFACTION

Objective	Operator	Status 2022	Objective 2023	Objective 2027
34 Total revenue (excluding revenue for the new building and planned large pieces of equipment from strategic projects)	Director	1,001,862	2,090,400	4,000,000
35 Amount of initial or stable ARRS funding (in EUR)	Director	999,439	2,000,000	2,720,000
36 Amount of revenue from international projects (percentage of total revenue)	Research group leaders	0	1.2%	17%
37 Amount of funds raised through national tenders (percentage of total revenue)	Research group leaders	0.0%	0%	10%
38 Amount of revenue from commercial projects (percentage of total revenue)	Research group leaders	0.2%	3.1%	5%
39 Depreciation rate of research equipment as at 31/12 (%)	Director	0%	15%	30%
40 Digitalisation – volume of paper-based business documentation	Director	Moderate	Small	Negligible (required by law/contract)
41 Number of employees in FTE	Director	15.9	35	50
42 Number of spin-off companies	Research group leaders	0	0	1
43 Organisational climate assessment (OC index)	Secretary	Not done	Adjustment of the SIOK questionnaire and first measurement	Value to be determined after first measurement

### 5.3 Strategic Projects for 2023–2027

Project Number	Project	Cost Estimate	Implementation Time-frame
1	Arrange stable funding for Rudolfovo, in accordance with the Scientific Research and Innovation Activities Act (ZRRID).	No special costs	2025–2027
2	Development of professional services: Setting up a project office (2 people) Setting up a PR and Marketing Department (1 person) Hiring of a lawyer or a secretary for the Institute (1 person) Appointment of an Assistant Director (1 person)	approx. €200,000 per year	2023–2024
3	Attracting talent to research posts (30 posts)	€30,000 for various marketing activities	2023–2027
4	Ensuring a positive working atmosphere: • Establish a remuneration system for project work, as provided for in Article 64 of the Scientific Research and Innovation Activities Act (ZRRID). • Establish a system for measuring organisational climate	No special costs for setting up the systems	2023–2024
5	Close cooperation with postgraduate schools in the wider area: • Enabling research on Rudolfovo's equipment for all students of these schools • Rudolfovo's employees are involved in doctoral studies at these schools	8 doctoral students per year: €40,000 annually for tuition fees	2023–2027
6	Become an associate member of a major internationally recognised association of institutes, such as the Fraunhofer Society.	Approx. €10,000 per year	2023–2024
7	Arranging our premises: purchase and renovation of own building or part of the building in Podbrezňan	€2,000,000	2024–2025
8	Equipment for the new laboratories: Industrial Energy Optimisation Laboratory: LabE	€100,000	2023–2024
9	Equipment for the new laboratories: Quantum Computing Laboratory: LabQ	€10,000,000 for a quantum computer and other lab equipment	2025–2027
10	Purchase of major pieces of equipment for existing laboratories: • CT scanner • 3D printer	€400,000	2023–2024
11	Obtain an ERC project	€30,000 for assistance in writing the project	2025–2027
12	Set up a spin-off company	Cost estimate to be provided later	2025–2027

## 6 Method of Monitoring and Updating the Development Strategy

**By monitoring and controlling the implementation of the strategic orientations, Rudolfovo aims to ensure the appropriate quality and continuous improvement of its R&D and management process.**

Systematic monitoring, evaluating and updating of the JRZ Rudolfovo Development Strategy includes, inter alia:

1. Ongoing monitoring, implementation and oversight of the implementation of the strategic orientations.
2. Reviewing, assessing and reporting to both internal competent authorities and external institutions.
3. The Development Strategy shall be reviewed annually, when the previous year's indicator values are entered, and shall be updated at least once during the period for which it is drawn up, or more than once in the event of major changes in the external or internal environment that could have a significant impact on its implementation.

4. The Director shall be responsible for the implementation of the strategic orientations and for reporting about the results of the implementation of the objectives of the JRZ Rudolfovo Development Strategy.
5. The Board of Directors and the Scientific Council shall monitor all factors in the environment and, in accordance with their respective competences, shall set priorities and determine the activities to be carried out in order to achieve the strategic orientations and objectives.



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