

Strategic development plan for the next 5 years

Chapter I – General Framework for Strategic Development

I.1 Research area

Accelerated technological development has been, and remains, a consequence of scientific research, and it is evident that the countries which have benefited most are those that have invested heavily in the RDI sector. It should be noted that there are currently strong premises for the emergence of technologies that will be disruptive to today's way of life, the most important being those related to artificial intelligence, nanotechnologies (including genetic, biomolecular, and quantum technologies), and autonomous machines/devices (see the development of autonomous vehicles and robots adapted to a wide range of fields – from agriculture to medicine). These technologies will strongly influence the economy and labour market. In many advanced countries, society is preparing for a post-industrial era in which many jobs, especially those involving repetitive tasks that do not require special skills, will disappear.

Research in materials science has played an essential role in this progress, spurring innovation in key sectors such as metallurgy, ICT, the automotive industry, the pharmaceutical industry, and agriculture. From silicon single crystals used in high-performance processors and Gorilla Glass for modern displays, to materials for batteries and high-efficiency solar cells, advances in materials science have enabled production methods that support a wide range of technological applications. Today, researchers worldwide are exploring advanced materials: oxides for artificial neurons, electroactive polymers for artificial muscles, materials for energy conversion and storage (solar cells, fuel cells, batteries, supercapacitors), and lightweight materials for sustainable construction. New directions in materials research promise solutions to major global challenges, such as the transition to renewable energy sources and replacing critical, toxic, or polluting resources.

The National Institute for Research and Development in Materials Physics (INCDFM) has, since its establishment, the mission to conduct fundamental and applied research, as well as experimental development, in condensed matter physics, materials science, nanomaterials, and nanostructures. The institute's scientific activity covers the entire chain from materials synthesis – in bulk form, thin films, or nano-objects – to structural, compositional, and physico-chemical characterization, and integration into demonstrator applications at functional model or prototype level. The portfolio of investigated materials is diverse and includes semiconducting, superconducting, dielectric, ferroelectric, magnetic, and optical systems, as well as heterostructures and composites obtained by combining materials with complementary

properties. According to the founding act (Government Decision no. 1312/1996, updated by Government Decision no. 1006/2015), INCDFM carries out:

- I. Research-development activities within PNCDI, sectoral programs, the Nucleu programs, and international RDI programs, structured into fundamental research, applied research, secondary research areas, as well as services and micro-production (detailed in *section 2.5* of this report);
- II. Activities ancillary to research-development in its own field of activity, with the approval of the state authority for research-development (detailed in *section 2.5* of this report);
- III. Commercial and production activities, registered with the Trade Register as a national research-development institute;
- IV. Collaborations and research-development activities in strategic fields and national defence, as well as other ancillary activities, with the approval of the state authority for research-development;
- V. Participation and collaboration, on a contractual basis, in fulfilling the duties of the central public administration body specialized in the institute's specific field of activity.

INCDFM's research directions, both those carried out in the previous period and those defined in this strategic development plan, are aligned with the strategic directions set at European and national levels. The current strategy was developed on the premise that research in condensed matter physics and materials science, with emphasis on advanced functional materials and nanomaterials, is a key element identified in multiple international and national strategic documents. Among these, we mention:

- ✿ The National Strategy for Research, Innovation and Smart Specializations (SNCISI) for 2022–2027, approved by Government Decision no. 933/2022;
- ✿ The National Plan for Research, Development and Innovation IV for 2022–2027, approved by Government Decision no. 1188/2022;
- ✿ Advanced Materials for Industry Leadership (https://research-and-innovation.ec.europa.eu/document/download/0fcf06ea-c242-44a6-b2cb-daed39584996_en?filename=com_2024_98_1_en_act_part1.pdf);
<https://op.europa.eu/en/web/eu-law-and-publications/publication-detail/-/publication/e96cbe01-d9e5-11ee-b9d9-01aa75ed71a1>);
- ✿ The Materials 2030 Roadmap (<https://www.ami2030.eu/roadmap/>).

I.2 Socio-economic environment characteristics

At the national level, several factors are relevant to the socio-economic context:

- 🌸 Industrial polarization by region and sector, with strong industrial centres located mainly in major cities, where there are also large universities and research institutes capable of providing companies with specialists and expertise (*e.g.*, Bucharest, Cluj-Napoca, Timișoara, Iași, Brașov, Craiova);
- 🌸 Limited access to domestic capital for establishing innovative enterprises, correlated with a deficit in entrepreneurial education, especially among young people. The majority prefer employment in the private or public sector, avoiding the risks of starting their own businesses;
- 🌸 Increasing difficulty in accessing medium- and highly-skilled labour, largely caused by intense migration over the last decade. The reasons are structural and economic: lack of reforms and excessive bureaucracy, financial instability, and the absence of clear development prospects drive many well-trained young people to continue their careers in countries where their skills are properly valued.

In the Bucharest–Ilfov region, the socio-economic environment is significantly more developed than the national average. The region generates approximately 30% of Romania’s GDP and concentrates over 10% of the population. Bucharest is the largest university centre in the country, with 21 public higher education institutions and 16 private universities. It also hosts 46 research institutes and centres of the Romanian Academy and 31 national research-development institutes, alongside other public and private entities. This concentration of resources creates a dynamic socio-economic environment favourable to innovation and sustainable development, which gives INCDFM, by virtue of its location in Bucharest–Ilfov, the following advantages:

- 🌸 Easy access to highly qualified human resources;
- 🌸 Extensive potential for collaboration with other research organizations in the area;
- 🌸 Partnership opportunities with private companies in the region;
- 🌸 The possibility of establishing its own spin-off or start-up companies.

I.3 Current context

This Strategic Development Plan is based on INCDFM’s performance and resources in 2020–2024, summarized as follows:

- 🌸 Scientific output: ~195 papers/year in Web of Science®-indexed journals, with a cumulative impact factor of 900–1000; over 50% published in Q1 journals (according to Journal Citation Reports).

- 🌀 Research infrastructure: total value > €35 million, including: CEUREMAVSU Centre (POS-CCE 2009–2011, ~€10 million); RITecC Centre (POS-CCE 2014–2015, ~€10 million); the IOSIN network of XPS/ESCA spectrometers; other infrastructures integrated in the Department of Condensed Matter Physics and Materials Science; the historic Oteteleşanu Hall building, rehabilitated 2010–2020 through public investment.
- 🌀 Human resources: ~300 employees, of whom >200 are research staff (physicists, chemists, engineers), more than 150 with a PhD; average age ~40 years.
- 🌀 Collaborations: extensive national and international network; approx. 50% of publications co-authored internationally.
- 🌀 Relations with the economy: steady growth, materialized through provision of research services and two POC knowledge-transfer projects, involving numerous subcontracts with companies from Bucharest–Ilfov and other regions.
- 🌀 Recent strategic project: membership in the National Platform for Semiconductor Technologies (PNTS, launched November 2024), with €10.1 million funding for modernizing the former INCREST building (opposite the RITecC Centre) and acquiring equipment for thin-film deposition and photolithography

Chapter II – SWOT Analysis from Scientific and Financial Perspectives

II.1 SWOT Analysis: Scientific Perspective

Strengths



- 🌀 Qualified and dynamic research personnel;
- 🌀 Retention of young researchers, with a tendency to reverse the brain-drain process;
- 🌀 Modern infrastructure capable of generating functional models and prototypes;
- 🌀 Strong scientific output, international publications;
- 🌀 Prestigious national and international collaborations;
- 🌀 Good success rate in national project competitions;
- 🌀 Ongoing collaboration with the private sector.

Weaknesses



- 🌀 Low success rate in competitions funded through European programs;
- 🌀 Limited participation in experimental development and technology transfer activities (insufficient number of R&D engineers and technicians);
- 🌀 Low level of innovation at the international level;
- 🌀 Small proportion of foreign researchers active in the institute.

Opportunities:



- 🌀 Attracting researchers from the diaspora and abroad;
- 🌀 Increasing interest in the circular economy;
- 🌀 Combating climate change through innovative technologies;
- 🌀 Expansion of renewable energies;
- 🌀 Advanced materials → niche high-tech sectors;
- 🌀 3D printing → raw materials and functional composites;
- 🌀 Functional coatings and synthetic – biological interfaces;
- 🌀 Materials for special or extreme conditions;
- 🌀 Catalysts with reduced content of critical materials;
- 🌀 Demand for a better life and smart cities;
- 🌀 Integration of artificial intelligence in RDI.

Threats



- 🌀 Risk of economic isolation from advanced countries;
- 🌀 Deficiencies in project evaluation → exaggerated emphasis on quantitative indicators to the detriment of qualitative ones;
- 🌀 Incoherent national policies that may once again favor the exodus of researchers;
- 🌀 Hard-to-verify indicators in project evaluation;
- 🌀 Excessive bureaucracy in projects;
- 🌀 Insufficient preparation of graduate students for research;
- 🌀 Lack of qualified technical workforce;
- 🌀 Perpetuation of a false-negative image of Romanian research and of the NIRDs in the public eye.

II.1 SWOT Analysis: Financial Perspective

Strengths



- A solid portfolio of projects won in national and international competitions over the past 10 years, generating an average annual turnover of approximately 10 million euros.
- Efficient use of resources, which has allowed both significant investments in equipment and facility upgrades, as well as ensuring appropriate remuneration for research personnel.

Weaknesses



- Lack of predictability and continuity in research funding sources;
- High dependence on budgetary funding;
- Low share of funds attracted from the private sector and from internationally funded projects;
- Still low level of digitalization in financial-accounting and procurement services.

Opportunities:



- Capitalization of all funding source available at national and international level;
- Promotion of contracts with private companies → flexible and adaptable collaboration framework;
- Involvement in smart specialization fields at the regional level, enabling access to dedicated funding from regional sources;
- Benefiting from tax incentives granted to innovative companies or those requesting research services.

Threats



- Very low public funding for research;
- Lack of stable institutional funding for salaries and infrastructure;
- Absence of a clear calendar for national calls → increased dependence on Nucleu program (from 35% to >55% in 10 yrs);
- Most projects have small budgets due to the limited funds allocated to PNCDI;
- Monopoly in the management of competitions, with a single agency responsible;
- Ineffectiveness of ROSTeu in lobbying for attracting EU funds.

Chapter III – Objectives and Strategic Development Directions

III.1 Objectives

OS1. Consolidate INCDFM's position as an elite research centre in advanced materials and technologies, according to international visibility criteria, at the level of the South-East European region, targeting leadership in Central and Eastern Europe by 2030.

OS2. Strengthen INCDFM's participation in programs and projects funded from international sources, as well as in major research infrastructures – European and global – by consolidating involvement in networks such as CERIC-ERIC, CERN, and ITER, and by expanding collaborations with other excellence consortia.

OS3. Transform RITecC into a national benchmark centre for innovation and technology transfer. Expand RITecC by acquiring the INCREST building and reorganizing it as an autonomous entity within the National Platform for Semiconductors (PNTS). The new centre will function both as a platform for advanced research and as an incubator for innovative firms, targeting applications with potential for integration into high-tech industries.

OS4. Transform INCDFM and its CIFRA subunit into an elite centre for training young researchers from Romania and abroad through advanced training programs, access to cutting-edge research infrastructure, and international partnerships.

OS5. Strengthen INCDFM's ties with the private sector by initiating activities that stimulate researchers' entrepreneurial skills, leading to the establishment of innovative spin-offs and start-ups.

OS6. Continuously develop and maintain research infrastructure by accessing dedicated funds, including structural funds. The infrastructure will be fully leveraged by providing services to public authorities, specialized institutions in security and public health, academic centres, and the private sector.

OS7. Develop and internationalize human resources by attracting top graduates, Romanian researchers from the diaspora, and foreign researchers interested in long-term collaborations with INCDFM.

OS8. Consolidate collaboration with Doctoral Schools by increasing the number of PhD supervisors from INCDFM and affiliating them with prestigious universities in Romania.

OS9. Attract experienced technical staff and develop specialized workshops to deliver applications at functional-model level. Strategic partnerships with industry will also be strengthened to facilitate technology transfer.

OS10. Effectively promote INCDFM's image, activities, and results through mass media and social media channels, as well as through active participation in conferences, congresses, invention fairs, and the organization of in-house events.

OS11. Pay special attention to connecting INCDFM to the latest trends in international research by intensifying efforts to open new research themes with a high degree of originality from the institute's experts.

Alignment of INCDFM's strategic objectives with the General (OG) and Specific Objectives of SNCISI:

OS1, OS2, OS3, OS4, OS6, OS7, OS8, and OS9 – aimed at consolidating INCDFM as an elite research unit in Romania and in Eastern and South-Eastern Europe through scientific excellence, infrastructure modernization, attracting highly qualified human resources, and openness to societal challenges – are fully aligned with **OG1** of SNCISI and the Specific Objectives **OS.1.1, OS.1.2, OS.1.3, OS.1.4, OS.1.5**.

OS1, OS3, OS5, OS6, OS9, and OS10 are congruent with **OG2** of SNCISI. As an elite research institution in the Bucharest–Ilfov development region, with expansion projects in the South-Muntenia region by creating a branch in Mihai Bravu, INCDFM can contribute to the smart specializations identified in these regions (Bucharest–Ilfov: Advanced materials; Intelligent systems and components; Health. South-Muntenia: High-tech industry; Agriculture and food industry; Machine building, components, and production equipment; Health). Alignment with

OG3 of SNCISI is reflected in INCDFM's stated intent to strengthen the innovative side of its research and expand collaboration with the private sector while encouraging researchers' entrepreneurial activities.

OS1, OS2, OS4, OS7, OS10, and OS11 align with OG4 of SNCISI through INCDFM's commitment to expand participation in European research programs, connect to major international infrastructures, attract researchers from abroad, and keep pace with the latest trends in global excellence research.

*Therefore, INCDFM's development objectives frame harmoniously within the general objectives of SNCISI for 2022–2027. In essence, these strategic directions can be summarized by four key concepts: **EXCELLENCE, COMPETITIVENESS, COOPERATION, and INTERNATIONALIZATION.***

III.2 Strategic directions for development and research

For the coming period, INCDFM will focus on four vertical strategic directions, considered essential pillars of institutional development. Each includes two complementary sub-directions to ensure thematic coherence and application relevance:

1. Health and Environment

- ✿ Materials for medical applications;
- ✿ Materials for catalysis, photocatalysis, pollution control, environmental protection, and cultural heritage protection.

2. Electronics, Optoelectronics, Spintronics, Photonics, Space, and Security

- ✿ Materials for electronics, spintronics, optoelectronics and emerging technologies;
- ✿ Materials for sensing.

3. Energy. Extreme Conditions

- ✿ Materials for renewable energies and circular economy;
- ✿ Materials for energy storage.

4. Theory and Computational Methods (*theoretical research is an essential foundation for all domains included in the first three vertical strategic directions*).

In addition to the four directions above, there are major strategic collaborations in which INCDFM is involved and which will continue in the coming years:

- ✿ DRD3 – radiation-hard detectors, collaboration with CERN;
- ✿ Materials for fusion and fission nuclear reactors, collaboration within EURATOM;
- ✿ Collaboration as partner facility within CERIC-ERIC;

- ❁ CIFRA themes associated with large international collaborations and experiments such as: LUX-ZEPLIN, CUORE, DARWIN, GERDA, MAJORANA, HOLMES, LEGEND, XENON-1t/nt, SuperNEMO, EXO-2000, and nEXO.

Mapping the four strategic research directions to SNCISI:

OG1 – OS.1.5 → Priority areas: *Digitalization, industry and space* – **directions 1 and 4**; *Climate, energy and mobility* – **directions 1 and 2**; *Food, bioeconomy, natural resources, biodiversity, agriculture and environment* – **directions 1 and 2**; *Health* – **direction 1**; *Civil security for society* – **directions 2 and 4**.

OG2 – OS.2.1 → National smart specializations: *Digital economy and space technologies* (microelectronic devices and systems for smart products; future networks, communications, IoT; technologies for the space economy; AI systems; robots and cognitive agents) – **directions 2 and 4**; *Energy and mobility* (green mobility; modern low- or zero-emission energy generation technologies; energy storage) – **directions 3 and 4**; *Advanced functional materials* (optoelectronics; smart composite materials; recyclable materials and recycling technologies; materials for electronic, electrical, photonic, magnetic applications and sensing) – **directions 1–4**; *Environment and eco-technologies* (technologies for environmental management, monitoring and depollution; circular economy technologies) – **directions 1 and 4**; *Health – advanced prevention, diagnosis, and treatment* (next-generation nuclear diagnostic-therapeutic technologies; early diagnostics; technologies for autonomous living; wearable systems) – **direction 1**.

OG2 – OS.2.2 → Regional smart specializations: *Bucharest–Ilfov* – advanced materials; intelligent systems and components; health. *South–Muntenia* – high-tech research industry; agriculture and food industry; machine building, components, and production equipment; health – **all directions**.

OG3 – OS.3.1, OS.3.2, OS.3.3 → **all directions**.

OG4 → **all directions**.

Chapter IV – Human Resources Strategy

In 2025, INCDFM received the HR Excellence in Research certificate, following European Commission endorsement of its alignment with the 40 principles of the European Charter for Researchers and the Code of Conduct for Recruitment.

Objectives:

- ❁ Stabilize young research staff through appropriate professional, financial, and social measures;

- ✿ Attract high-performing Romanian researchers from the diaspora by creating a competitive, stimulating institutional framework;
- ✿ Increase the number of foreign researchers working within bilateral collaborations or projects earned by the institute, and attract them into ERC-type projects;
- ✿ Intensify national and international researcher mobility through financial support and facilitating access to international collaborations;
- ✿ Ensure an optimal ratio between research and administrative staff to increase institutional efficiency;
- ✿ Increase the efficiency of administrative activities through broader use of specialized software to reduce researchers' bureaucratic load;
- ✿ Strengthen efforts to stabilize and qualify technical staff through continuous training and recognition of required competencies.

Planned activities:

- ✿ Continue hiring recent university graduates, applying rigorous testing and selection criteria, leading to permanent positions at INCDFM;
- ✿ Encourage experienced researchers to obtain habilitation, in order to increase the number of PhD supervisors in the institute;
- ✿ Hire at least five experienced engineers in areas such as mechanical processing, vacuum and cryogenic equipment, electrical engineering, electronics, automation, and computing;
- ✿ Develop the Technology Transfer and Intellectual Property Department by recruiting experienced personnel and by continuous training of current staff, especially regarding international IP protection;
- ✿ Hire specialists experienced in “clean room” environments, including in techniques such as lithography, plasma treatments, metallization, and thin-film deposition by physico-chemical methods;
- ✿ Ensure continuous professional training for technical staff by participation in relevant specialization courses (*e.g.*, professional welding, optics/polishing, glassblowing, electrician, CNCAN, ISCIR, RENAR specializations, *etc.*);
- ✿ Hire part-time undergraduate students for early training in applied research;
- ✿ Open available project positions to foreign researchers, with emphasis on attracting those from emerging or developing economies;

- ✿ Actively participate in international scholarship and exchange programs, such as “Eugen Ionescu” or “Constantin Brâncuși”;
- ✿ Involve INCDFM and CIFRA, as a component subunit, in advanced professional training activities for young researchers from Eastern Europe and the Mediterranean region, in collaboration with UNESCO and ICTP-Trieste;
- ✿ Leverage informal collaborations with researchers from the diaspora and abroad by sending INCDFM young researchers for short work placements on common topics, using mixed funding sources.

Chapter V – Developing New Research Topics through Specific Mechanisms

Objective: Continuous promotion of quality and excellence in research at INCDFM

Modes of action:

- ✿ Facilitate periodic interactions with academic partners and companies abroad through European consortia (H2020, ERA-NET, FLAG-ERA, ESA, EIT) and bilateral international cooperation;
- ✿ Consolidate existing international collaborations (CERIC-ERIC, CERN, CoSMoS–Elettra Trieste) and initiate partnerships with ELI (all three pillars) and synchrotron radiation centres (Elettra Trieste, SLS Zurich, Soleil Saint-Aubin, Bessy Berlin, ALBA Barcelona, ESRF Grenoble) via beamline applications;
- ✿ Encourage researchers’ participation in workshops, brokerage events, and information-exchange visits;
- ✿ Engage actively in activities of European Technology Platforms;
- ✿ Support researchers’ own initiatives in applying to national and European research calls;
- ✿ Facilitate access to scientific literature and internal research reports;
- ✿ Maintain and expand collaborations with industry (multinational companies and SMEs);
- ✿ Develop priority partnerships with prestigious academic institutions and research groups in Romania and abroad;
- ✿ Implement proactive measures for researcher mobility. Support INCDFM staff participation in short work placements with international partners;
- ✿ Attract young researchers from abroad for collaborations on topics of common interest.

Chapter VI – Research–Development–Innovation Infrastructure. Research Facilities.

Investment Strategy and Plan

Objectives:

- ✿ Maintain infrastructure at a competitive international level;
- ✿ Expand infrastructure and facilities for pre-industrial research;
- ✿ Establish an incubator for innovative firms in the Bucharest–Ilfov region (especially Jilava, Măgurele, and Bragadiru areas);
- ✿ Develop the IT infrastructure, especially the high-performance computing (HPC) capacities.

Concrete measures:

- ✿ Purchase new equipment to replace those physically or morally obsolete which require costly repairs or no longer meet performance requirements;
- ✿ Acquire equipment required to open and consolidate new research directions;
- ✿ Apply for structural funds and Widening programs to rehabilitate, endow, and transform the INCREST building into an incubator for innovative firms;
- ✿ Continue acquiring IT equipment to maintain IT services and develop a performant HPC cluster dedicated to ab initio calculations, molecular dynamics, and materials design;

For infrastructure development, funding will be sought either through direct investments by public RDI authorities or through projects financed from EU convergence and cohesion funds made available to the regions by the European Union. Implementation of the investment plan is conditioned on effective access to available funding sources and on launching competitions dedicated to research infrastructures financed from structural funds.

Chapter VII – Supporting Innovation and Technology Transfer. Potential Users/Beneficiaries and Trends in Their Configuration and Structure

Objective: Valorisation of research results with economic effects.

This objective is underpinned by:

- ✿ RDI directions in advanced technologies with high application potential;
- ✿ Experience of collaborating with companies in Romania and abroad through R&D projects and provision of scientific and technological services, deepened by POC-G projects;
- ✿ Organizational experience in delivering scientific and technological services, supported by high-level research infrastructure;
- ✿ Experience in PR, dissemination, and networking in the RDI environment.

- ✿ To capitalize on INCDFM's creative potential with economic impact, intellectual property (IP) protection will pivot from the national to the international level, aiming to create IP portfolios whose value exceeds the sum of the individual components.

Envisaged measures:

- ✿ Train RDI staff on internal procedures and legislation for IP protection, as well as strategic elements of IP management;
- ✿ Provide assistance in IP management according to internal procedures, including IP portfolio evaluation;
- ✿ Technical marketing: prepare technology offers, identify appropriate dissemination channels, and promote them to the market;
- ✿ Support in preparing business plans for spin-offs and start-ups founded by INCDFM researchers;
- ✿ Assistance in drafting collaboration offers to industry, including tailoring for specific events;
- ✿ Update the website with research results relevant to technology transfer, including demonstrative videos (*e.g.*, functional models, technologies);
- ✿ Update the database of potential collaborators (companies, NRDIs, universities, IP consulting firms, partners from structural-fund projects, regional agencies, technology parks) to identify target partners;
- ✿ Prepare a public offer of INCDFM expertise, services, and RDI collaboration, with periodic updates on the EERTIS platform;
- ✿ Organize meetings with company representatives to identify industry needs;
- ✿ Identify new potential beneficiaries of knowledge transfer;
- ✿ Facilitate company access to research infrastructure (facilities, installations, equipment) for analyses, tests, experiments, characterizations aimed at developing new or improved products, technologies, or methods;
- ✿ Carry out contractual activities of industrial research and experimental development;
- ✿ Collaborate effectively on contracted RDI projects;
- ✿ Develop joint projects with private firms that are members of the DRIFMAT Cluster.

Potential users/beneficiaries:

- ✿ **From Romania:** innovative companies in Bucharest–Ilfov (*e.g.*, SC Apel Laser SRL; SC Optoelectronica 2001 SA; SC R&D Consultanță și Servicii SRL; ICPE-SA; Ofrim Group; SC Microelectronica SA; SC Plasma JET SRL; SC Exatel SRL; SC Stimpex

SRL; SC Nuclear & Vacuum SA; SC Zentiva SA; SC Sara Pharm Solutions SRL; SC Centrul IT pentru Știință și Tehnologie SRL; SC Agilrom Scientific SRL; Isovolta Group; SC Dragan Medical Services SRL; SC Artdesign GDS SRL; *etc.*), as well as from other regions (SC NANOM-MEMS SRL; Continental Timișoara; ROMBAT; SC Roseal SA; SC Anorom SRL; SC Bioelectronic SRL; SC Pro-Vitam SRL; SC Intelectro Iași SRL; SC All Green SRL; *etc.*).

- ✿ **From abroad:** collaborations will be encouraged with major industrial players in advanced technologies such as IBM, Intel, Siemens, Thales, Honeywell, BASF, Agilent, Izertis, *etc.*

Chapter VIII – Defining Scientific and Technological Identity Nationally and Internationally. Promotion and Visibility

Objective: Raise societal awareness of INCDFM’s essential role in developing excellence research in Romania and promoting high-technology applications

Envisaged actions:

- ✿ Streamline the marketing service;
- ✿ Actively promote application-oriented results via videos on social networks (*e.g.*, YouTube, Facebook) and by press releases and press conferences;
- ✿ Expand IWMP from a thematic workshop by invitation to an international conference dedicated to frontier research in functional materials, potentially by merging with ROCAM;
- ✿ Establish an in-house scientific publication indexed in major databases and a small press to promote popular science books on condensed matter physics and materials science;
- ✿ Continue publishing the Annual Scientific Report in English;
- ✿ Continuously update INCDFM’s website;
- ✿ Affiliate INCDFM with European Technology Platforms and distributed European infrastructures (following the CERIC-ERIC model);
- ✿ Promote collaborations with prestigious foreign institutions (following the examples of CERN, CEA, and others).

Chapter IX – Action Plan. Operational Planning

Strategy element addressed	Specific actions	Targets	Responsibilities	Timeframe
HUMAN RESOURCES (recruitment, professional development)	a) expand collaboration with final-year students from the University of Bucharest – Faculty of Physics or from UPB (BSc theses); b) design and implement professional training courses in specialties of interest to INCDFM; c) involvement in research projects; d) active participation in MSCA, ERC, ERA-Chair fellowships; e) support work placements for INCDFM young researchers in prestigious foreign labs.	☼ Identify the most talented students/graduates who, after earning their degree/PhD, can work at INCDFM; ☼ Develop institutional partnerships for national/international projects; ☼ Attract researchers from outside Romania for short- and medium-term placements at INCDFM. ☼ Increase the number of PhD candidates, PhDs, and PhD supervisors; ☼ Continuous training of human resources.	Director General; Scientific Director; Scientific Council; Laboratory Heads	2025–2030, with annual review of results

INFRASTRUCTURE	a) Identify, in the new multiannual financial framework, funding opportunities for research infrastructure development; b) Identify national funding sources for consolidation/rehabilitation of the office building; c) Intensify efforts to integrate infrastructure into pan-European networks.	🌀 Maintain and develop competitiveness and technological capabilities; 🌀 Include RITecC on the list of infrastructures of national interest; 🌀 Broaden participation in CERIC-ERIC and at the ELETTRA synchrotron.	Director General; Scientific Director; Economic Director; Legal Office; Public Procurement Dept.; Laboratory Heads.	2025–2030, with annual analysis of existing infrastructure and identification of potential funding sources
RDI DEVELOPMENT AND EFFICIENCY	a) Identify national and international project calls suitable for INCDFM researchers; b) Prioritize dissemination of results in high-impact journals and conferences; c) Establish an enabling framework for international patenting; d) Identify software solutions to minimize researchers' involvement in collateral activities (e.g., project management).	🌀 Increase the number of projects won in European competitions; 🌀 Increase efficiency and visibility of research; 🌀 Increase the quality and relevance of innovation; 🌀 Increase efficiency and flexibility of administrative activities.	Director General; Economic Director; Scientific Director; Scientific Council,	2025–2030, with annual review

MARKETING	a) Streamline the marketing service; b) Promote INCDFM's services within professional organizations; c) Promote notable results by videos shared on professional and social online platforms; d) Participate in Exhibitions, Fairs, Trade Shows, and brokerage events.	🌀 Build a database of current and prospective clients for scientific and technological services; 🌀 Increase funds attracted from the private sector; 🌀 Increase INCDFM's visibility in mass media and online platforms.	Director General; Scientific Director; Economic Director; Scientific Council	2025–2030, with annual plans and analyses
COOPERATION WITH INDUSTRY AND IP VALORIZATION	a) Promote framework contracts with private partners who regularly use INCDFM's research services; b) Establish strategic partnerships; c) Identify mechanisms to stimulate spin-off actions; d) Incubator/accelerator-type activities.	🌀 Maintain innovation-management certification; 🌀 Structure a portfolio of patents; 🌀 Build an SME network to capitalize on INCDFM results and expertise in advanced materials for high value-added domains; 🌀 Boost services offered to industry, including technology transfer.	Director General; Economic Director; Research Department; Marketing Service.	2025–2030, with annual plans and analyses

