



Enhancing the bilateral S&T Partnership with Ukraine

Deliverable Title	D4.8 – Former D4.10 Inventory of Ukrainian institutions as nucleus for National Platforms
Deliverable Lead:	NIP
Related Work-package:	WP4 – Supporting Ukrainian Working Groups and preparing measures to set-up Ukrainian Mirror Technology Platforms
Related Task:	Task 4.5 Preparatory measures to set up Ukrainian Mirror technology platforms to the EU Technology Platforms
Author(s):	Olena Koval, Vadym Yashenkov (NIP)
Dissemination level:	PU
Due submission date:	32
Actual submission:	41
Project Number	FP7-222712
Instrument:	Support Action
Start date of Project:	01/09/2008
Duration:	36 months

Project funded by the European Commission under the International Cooperation activity of the Capacities Programme of the 7th European Framework Programme for RTD (FP7).

I. Analysis of the ETPs concept from point of view to be established in Ukraine

Development of the so called European Technology Platforms (ETPs) broadly used in the EU countries is a potential tool for the initiation and implementation of research and development progress in social and economic areas. Technology Platforms are aimed at bringing together business, industry, researchers, and other relevant stakeholders to define research and development priorities and strategic frameworks and further implementation of the same.

The term “European Technology Platform” has been coined out by the European Commission to describe frameworks defining research and development priorities of the EU. Such frameworks will be the basis for the substantial amounts of funding of different research and development projects in direct relation to their implementation by small and medium-sized enterprises (SMEs) and industry. In particular, ETPs are developed to meet the demands of industry in a form of a demand for research and innovation aimed at the achievement of sustained renewable-resource-based development of the modern society.

The concept of European Technology Platforms makes it possible to provide for:

- a selection of strategic research issues;
- an analysis of market potential of different technologies;
- accounting for the opinions of all stakeholders: state, industry, research community, supervisory authorities, users and customers;
- an increased engagement of all member states of the EU;
- a mobilisation of public and private financial resources.

European Technology Platforms have been established on a share investment basis through an association of intellectual and financial resources of the EU and major industrial manufacturers in order to mainstream the research and innovation required for the purposes of the state-of-the-art industrial production.

Usually, formation of a European Technology Platform (ETP) is initiated by European business and different industrial associations of manufacturers etc., whose representatives are the members of a so called High Level Group. To develop a European Technology Platform, the initiators form an Advisory Committee comprising of representatives of the EU, research community, SMEs, consumers’ organisations and associations and different NGOs etc. In parallel, National Support Groups or National Technology Platforms can be formed comprising representatives of the committed countries and regions. In order to develop the scientific basis and research component of a TP, a Scientific Council can be created including leading experts in the relevant issues representing both academic and applied research communities.

Main objectives of ETPs established in the EU are as follows:

- promotion of the formed ETP and their goals and objectives in the European society and EU structures;
- development of a Strategic Research Agenda as the basic document substantiating the lines, reasons, aims and timing of research within the framework of an actual TP; and
- development of an Implementation Plan/Deployment Strategy of a ETP.

By now, 37 European Technological Platforms have been developing within the Seventh Framework Programme (FP7). On the basis of each ETP, the issues of education/training, standardisation and certification are discussed along with a discussion on a potential research and industrial co-operation and prerequisites for an establishment of partnerships and consortia.

D.4.8 Inventory of Ukrainian Institutions as nucleus for National Platforms

The use of such tool as European Technological Platforms is expedient in cases when the interests of enterprises are ill-structured and business and society have insufficient influence on the formation and selection of R&D strategic issues. European Technological Platforms are a potent tool focusing the interests of different stakeholders on actual industrial innovation issues.

Efficiency of a ETP depends on a number of factors: focusing on actual solutions for business and public sector development, strong involvement of business in the TP management; clear and transparent rules for all participants, and openness of a platform for new members.

Key factors essential for the success of a platform include:

- clear focusing of a European Technological Platform;
- multistructural management of a ETP, strong management and business involvement on the level of top managers and engagement of the representative of regulatory authorities;
- clear and transparent rules;
- individual approach to each ETP;
- openness of ETP for joining of new members.

The prerequisites for the formation of European Technological Platforms usually include:

- occurrence of strategic technological challenges;
- ambiguity (insufficient structuring) of business interests;
- insufficient influence of enterprises on strategic research and innovation;
- a need in formation of new research co-operation for the purposes of solution funding for strategic objectives;
- multiplicity of tools and channels of public support of research and innovation in certain areas;
- fragmentariness of research;
- industrial barriers between research organisations; and
- a need in multidisciplinary research.

EU experience makes it possible to define three phases of ETP operation:

Phase 1. Determination of the long-term (20 to 30 years) projected image of a sector – “Vision”.

Phase 2. Development of a Strategic Research Agenda.

Phase 3. Implementation of the Strategic Research Agenda

Formation of European Technological Platforms may be considered an auxiliary tool for the realisation of national priorities of research and innovation and development of research and industry intercourse. Some platforms will make it possible to clarify the priorities within the available tools of state support of innovations. Other platforms will serve a basis for the formation of a new research and industry co-operation that will make it possible to clarify the composition and mechanisms of implementation of target budgetary programmes on the basis of public/private partnership.

Such an approach is now broadly used in the EU countries: it forms the basis for the mid- and long-term research and innovation policy of the EU. Such approach makes it possible to employ the whole set of state-of-the-art technologies of management of research and innovation development from national and international projects down to soft forms in relation to the formation of the common vision of the prospects of research and innovation development for all participants, including states, private enterprises and research community. Therefore:

D.4.8 Inventory of Ukrainian Institutions as nucleus for National Platforms

Firstly, a European Technological Platform is a method of mobilisation of efforts of all stakeholders – different industries, business and research community – for the purposes of achievement of the ultimate goals in certain high-priority strategic areas.

Secondly, a European Technological Platform provides a mechanism of harmonisation and co-ordination of efforts of different industries, research and manufacturing infrastructures and programmes of regional development etc. made by the same within the available mechanisms of realisation of the national policy in the sphere of research and development, including National Target R&D Programmes, industrial strategies and programmes, and corporate innovation projects and programmes for economic development etc. Such TP-based mechanism includes the use of technological mapping, goal definition, formulation of indicators and signs of hitting the same, actual timing and distribution of responsibilities between the actual participants above all.

Thirdly, a European Technological Platform provides a procedure for an efficient partnership of private and public sectors and development of ideology of large-scale public projects.

II. Strategic approach and institutions as nucleus for set-up Ukrainian National technology platforms to the EU Technology Platforms

National RTD Priorities and State Programs as basis for creation of national TPs in Ukraine.

As a rule the TPs are created within the specific strategic goals, as regarding Ukraine it is possible to define the following areas as areas of strategic importance of the country.

State Priority: Information and Communication Technologies

2.1. New hardware solutions for advanced information and communication technologies.

2.2. Supercomputer hardware and software, telecommunication networks and systems. Cloud and Grid technologies.

2.3. Technologies and methods of software and systems development.

2.4. Intelligent information technologies. Integrated databases and knowledge systems. National information resources.

2.5. Technologies and instruments of mathematical modeling, optimization and system analysis to solve supercomplex problems of national importance.

2.6. Technologies and instruments for e-governance. Information-analytical systems, decision making support systems.

2.7. Technologies and instruments of information security.

State Programs implemented within the research and technological development priorities

NEW COMPUTER-AIDED SYSTEMS AND TECHNOLOGIES OF INFORMATIONAL SUPPORT OF SOCIETY

- National Research and Development Programme: “New Smart Computer-Aided Items Made in Ukraine”
 - o Development of smart high performance multiprocessor computers for problem solving in the spheres of economy, defence and education.
 - o Development of standard problem-oriented configurations of computer equipment on the basis of virtual programmed architectures.
 - o Development of competitive models of neurocomputers.

D.4.8 Inventory of Ukrainian Institutions as nucleus for National Platforms

- Development of problem-oriented systems and software and hardware for digital signal processing.
- National Research and Development Programme: “System Analysis, Methods and Control Environment of Processes of Different Nature, Methods of Optimisation, Software and Information Technologies in Complex Systems”
 - Development of methods, algorithms and software for system analysis of processes of different nature.
 - Development of software and technologies for a support of informational and analytical studies of complex distributive systems of organisation management.
 - Development of IT network technologies for electronic business.
- National Research and Development Programme: “Telecommunication Systems and Information Resources”
 - Development of promising telecommunication systems and technologies.
 - Development of a telecommunication infrastructure for data stream transmission on the basis of digital broadband microwave and optoelectronic systems and processes.

European Technology Platforms created to date in the field of ICT are:

Artemis: Embedded Systems

eMobility: the Mobile and Wireless Communications Technology Platform

ENIAC: Nanoelectronics

EUROP: the European Robotics Platform

ISI: Satellite Communications

NESSI: Networked Software & Services

NEM: the Networked and Electronic Media Initiative

Photonics21: Photonics

EPoSS: Smart Systems Technologies

Other initiatives have been launched by industry and ICT stakeholders which may develop into ETPs in the future. Two of these Platforms (ARTEMIS and ENIAC) have since become Joint Technology Initiatives.

Key (possible) actors of the national technology platform:

No	Institution	Web-site address
	Association IT Ukraine	http://www.itukraine.org.ua/static.php?id=3&lang=eng
	Institute for Applied System Analysis (IASA) National Technical University of Ukraine "The Kyiv Politechnic University	http://iasa.kpi.ua/?set_language=en
	Education Center of CyberBonic Systematics	http://edu.cbsystematics.com/
	Information and Computer Center of the National Taras Shevchenko University of Kyiv	http://cluster.univ.kiev.ua/eng/about
	East-Ukrainian National University named after Vladimir Dal	http://en.snu.edu.ua/index.php?mode=17
	International Software Technology Research Center TECHNOSOFT	
	Kharkov National University of Radio Electronics, faculty of Computer Engineering and Controldepartment of Design Automation	www.kture.kharkov.ua/
	Odessa National Academy of Telecommunication by name of A.S.Popov	http://www.onat.edu.ua/?set_lang=en
	Taras Shevchenko National University of Kyiv, Faculty of Cybernetics	http://unicyb.kiev.ua/en/
	Zaporizhia State Engeneering University	http://www.zntu.edu.ua/indexe.html
	Institute for Information Recording (Ukrainian National Academy of Science)	http://www.ipri.kiev.ua/
	Prospero Systems	www.prosperosystems.com.ua/

	Institute for Software Systems (Ukrainian National Academy of Science)	http://www.iss.org.ua/
	Cherkasy State technological University	http://www.chiti.uch.net/go.php/faculty/?alt=english
	Ukrainian Research & Academic Network (URAN network)	http://www.uran.net.ua/~eng/frames.htm
	Institute of Information Recording	http://www.ipri.kiev.ua/
	Institute of Artificial Intellect	http://iai.donetsk.ua/general/frameset.php3?l=e&p=r&f=/general/iai_main.php3?l=e
	V.M.Glushkov Institute of Cybernetics	http://www.icyb.kiev.ua/?lang=en&rnd=861

State Priority: Energy and Power Efficiency

- 3.1. Technologies efficient energy supply for construction buildings.
- 3.2. Electric power technologies.
- 3.3. Nuclear power technologies.
- 3.4. Technologies of power machine building.
- 3.5. Technologies of use of new fuels, used energy, renewable and alternative energy sources.
- 3.6. Heat pump technologies.

State Programs implemented within the research and technological development priorities

CUTTING-EDGE AND ALTERNATIVE TECHNOLOGIES IN THE ENERGY ECONOMY, INDUSTRY AND AGRICULTURAL SECTOR

- National Research and Development Programme: “Energy-Efficient and Energy-Saving Technologies of Power Generation, Transformation and Utilisation”
 - o Development of technologies aimed at a prolongation of service life and increase in the level of safety and energy-efficiency of heavy-duty power generation units of thermoelectric, hydroelectric and nuclear power plants.
 - o Development of facilities and processes increasing the energy efficiency of complex transformation of energy of the sun, wind, biomass and low-potential secondary energy resources.
- National Research and Development Programme: “Cutting-Edge Technologies of Development of Fuel & Energy Complex”
 - o Development of technologies of deployment of power systems and networks meeting the requirements of flexibility, frequency and environmental suitability.
 - o Energy supply systems on the basis of the processes of combined production of electric and heat energy.

- Development of technologies of oil & gas sector development, including export and import oil- and gas pipelines.
- Development of technologies and optimisation of the scope and structure of coal production.
- National Research and Development Programme: “New Generation Resource-Preserving Technologies in Mining and Metal Production Sector”
 - Development of processes of mining and enrichment of raw materials for metal production, including processes employing industrial waste.
 - Development of processes of smelting and multipurpose extra-furnace treatment of cast iron and steel, including processes for small metal production enterprises.
 - R&D aimed at an increase in the performance of production on the basis of primary and secondary non-iron metals.
- National Research and Development Programme: “Energy-Efficient and Resource-Saving Technologies, Equipment and Materials for Weld Assemblies and Relevant Processes”
 - Development of processes and equipment for arc and contact welding of steel, light metals and alloys.
 - Development of durable weld assemblies of low metal consumption and facilities for technical diagnosis, assessment and prolongation of service life of assemblies.
 - Development of processes and equipment for welding with high concentration of heat energy or combination of different kinds of energy.
 - Development of processes and equipment for relevant processes (including lining and spattering, cutting, soldering, disposal and recycling of industrial waste).
- National Research and Development Programme: “Energy-Efficient and Resource-Saving Technologies in Machine Building”
 - Development of processes of machine building for energy economy and retrofit and upgrading of such machine building.
 - Development of processes of manufacture of high-precision half-finished materials, parts made of composite materials and mass parts for machine building.
- National Research and Development Programme: “New Technologies of Manufacture, Storage and Processing of Agricultural Products”
 - Development of technologies of planting of grain crops.
 - Development of technologies of planting of technical and feed crops.
 - Development of high performance leguminous, technical and small-fruit crops resistant to biotic and non-biological environmental factors.
 - Development of technological, selection and genetic methods of enhancement of the performance of farming animal populations.
 - Development of technologies of manufacture, storage and packaging of food of high biological value.
- National Research and Development Programme: “New Generation Technical Facilities for the Agricultural Industry”
 - Development of highly adaptive machine complexes for plant production.
 - Improvement of the performance of R&D and employment of mobile energy facilities for agricultural sector.

- Development of equipment for the manufacture and employment of facilities for organic agriculture.

Following the national priorities, to achieve the objectives in this field the technology platform(s) may be established in Ukraine.

European Technology Platforms in the field of Environment are:

- European Biofuels Technology Platform - Biofuels
- Fuel Cells and Hydrogen Joint Technology Initiative - FCH-JTI
- European Technology Platform for the Electricity Networks of the Future
- European Technology Platform for Wind Energy - TPWind
- European Technology Platform for Renewable Heating & Cooling (ET-RHC)

Key (possible) actors of the national technology platform

No	Institution	Web-site address
1	State-owned Enterprise Ukrainian S&R Institute for Crude Oil Refining Industry "MASMA"	http://www.masma.ua/en
2	JSC "State Energy Generation Company "Centrenergy"	http://www.centrenergy.com/eng/index.html
3	Scientific and Technical Union of Power Engineers and Electrical Engineers of Ukraine	http://www.ntseu.net.ua/
4	Institute of General Energy of NASU	http://www.ienergy.kiev.ua/index.php?option=content&task=view&id=105&lang=uk
5	State Research and Design Technological Institute on Energy Development Perspectives "Energoperspektiva"	http://energoperspektiva.org.ua/about
6	Institute for Energy and Computer-Integrated Management Systems of Odessa National Polytechnic University	http://pei.opu.ua/
7	Pukhov Institute for Modelling in Energy Engineering of NASU	http://www.ipme.kiev.ua/
8	B.Verkin Institute for Low Temperature Physics and Engineering of NASU	http://www.ilt.kharkov.ua/
9	Institute of Physics of NASU	http://www.iop.kiev.ua/site/index_en.php
10	Ivano-Frankivsk National Technical University of Oil and Gas	http://eng.nung.edu.ua/

11	Ternopil Ivan Puluj National Technical University	http://www.tntu.edu.ua/?l=en
12	Donbass State Technical University	http://www.dmmi.edu.ua/eng/
13	Kyiv Institute for Nuclear Research of NASU	http://www.kinr.kiev.ua/index_en.html
14	Institute of Renewable Energy of NASU	http://www.ive.org.ua/
15	Scientific Engineering Centre “Biomass”	http://www.biomass.kiev.ua/index.php?lang=en
16	Institute of Engineering Thermophysics of NASU	http://www.ittf.kiev.ua/
17	Institute of Electrodynamics of NASU	http://www.ied.kiev.ua/
18	Coal Energy Technology Institute of NASU	http://www.nas.gov.ua/en/Structure/dptppe/icet/Pages/default.aspx
19	Gas Institute of NASU	http://www.gas.naverex.kiev.ua/
20	Institute for Problems of Nuclear Power Plants Safety	http://www.nas.gov.ua/en/Structure/dptppe/ipsnp/Pages/default.aspx
21	National Technical University of Ukraine "Kyiv Polytechnic Institute'	http://www.ntu-kpi.kiev.ua/
22	National Technical University "Kharkiv Polytechnic Institute"	http://www.kpi.kharkov.ua/?lang=en&main=main.html&news=yes

23	Pryazovsky State Technical University	http://www.pstu.edu/index.php?id=328
24	Ukrainian Engineering and Pedagogical Academy	http://www.education-in-ukraine.com/en/universities/ukrainian-engineering-and-pedagogical-academy-uepa.html
25	Sumy State University	http://www.sumdu.edu.ua/eng/
26	Kirovograd State Technical University	http://www.university-directory.eu/Ukraine/Kirovograd-State-Technical-University.html
27	Odessa State Academy of Refrigeration	http://www.osar.odessa.ua/index_en.php
28	A.N. Podgorny Institute for Mechanical Engineering Problems of NASU	http://www.ipmach.kharkov.ua/English/inen.htm
29	Institute of High-Energy Physic and Nuclear Physics of the National Science Center of Kharkiv Institute of Physics and Technology of NASU	http://www.kipt.kharkov.ua/en/ihepnp.html

State Priority: Efficient nature management

- 4.1. Technologies for sustainable use, saving and enrichment of biological resources and improving of their quality and safety, preservation of biodiversity.
- 4.2. Technologies of environment modeling and forecasting.
- 4.3. Technologies of utilization and removal of household and industrial waste.
- 4.4. Technologies of efficient water use, improving of sewage treatment and prevention of contamination of water facilities.
- 4.5. Technologies of treatment and prevention of air pollution by the pollutants.
- 4.6. Technologies of the efficient management and saving of soils and its fertility

State Programs implemented within the research and technological development priority

ENVIRONMENTAL CONSERVATION AND SUSTAINABLE DEVELOPMENT

- National Research and Development Programme: “Disposal and Decontamination of Hazardous Emissions and Discharges”
- Technologies of reduction of toxic air emissions from power engineering facilities, metal manufacture facilities and road traffic.
- National Research and Development Programme: “Biological Resources: Sustainable Use, Conservation and Enrichment”
- Quantitative and qualitative assessment of the condition of forest, marsh soil and arable resources under the condition of anthropogenic transformation of the environment and climatic changes.
- National Research and Development Programme: “Agricultural Technologies Aimed at the Prevention of Contamination and Destruction of Ecological Systems”.

European Technology Platforms in the field of Environment are:

Sustainable Chemistry (SusChem)

<http://www.suschem.org/>

European Technology Platform on Sustainable Mineral Resources (ETP SMR)

<http://www.etpsmr.org/>

Water Supply and Sanitation Technology Platform (WSSTP) <http://www.wsstp.eu/site/online/home>

Waterborne ETP (Waterborne) <http://www.waterborne-tp.org/>

Creation of the National Technology Platforms in the field of industry safety, resources protection and development of their cooperation with relevant ETPs will make input to development of the national and regional strategies, establishment of necessary institutional infrastructure, forecasting and successful implementation of the national programs.

Institution	Web-site address
National University of Life and Environmental Sciences of Ukraine (NUBiP)	http://nubip.edu.ua/en
Odessa State Environmental University	http://www.odeku.edu.ua/
Mechnikov Odessa National University	www.onu.edu.ua/en/

D.4.8 Inventory of Ukrainian Institutions as nucleus for National Platforms

Main astronomical Observatory	http://www.mao.kiev.ua/
Crimean Astrophysical Observatory	www.crao.crimea.ua/
Marine Hydrophysical Institute o	http://www.ocean.nodc.org.ua/
Institute of Biology of Southern Seas of the NASU (IBSS)	http://ibss.org.ua/Default.aspx?tabid=169
S.I.Subbotin Institute of Geophysics	http://www.igph.kiev.ua/
Institute of Ecology of Carpathians	http://www.ecoinst.lviv.ua/
Institute of Geological Sciences	http://www.igs-nas.org.ua/
Ukrainian Hydrometeorological Institute (UHMI)	http://www.uhmi.org.ua/eng/index.php
Scientific Centre for Aerospace Research of the Earth (CASRE) of the Institute of Geological Sciences	http://www.casre.kiev.ua/
National Antarctic Scientific Center	http://www.uac.gov.ua/en/main
National Technical University, Kyiv Polytechnic Institute	http://kpi.ua/
Institute of Geochemistry, Mineralogy and Ore Formation	http://igmr.relc.com/
B.Verkin Institute for Low Temperature Physics and Engineering	http://www.ilt.kharkov.ua/
Ukrainian research hydrometeorological institute	http://www.uhmi.org.ua/eng/index.php
Institute of Geophysics	http://www.igph.kiev.ua/about1.html
Tavrida National V.I.Vernadsky University	http://www.crimea.edu/tnu_eng/person_page/dzedolik/index.htm
Institute of Problems of Nature Management and Ecology	http://ippenan.com/
Scientific and Engineering Complex " E.O.Paton Institute of Electric Welding"	http://paton.kiev.ua/en
Science and Technology Diamond Concern "ALCON"	http://www.ism.kiev.ua/english/index.php?i=3

State Priority: Life sciences, new technologies of prevention and treatment of the most widespread diseases:

- 1.5 Technologies of producing of enzymatic, recombinative and bacterial agents.
- 5.2. Technologies of development of the molecular diagnostic and therapeutic instruments
- 5.3. Technologies of development of new medical drugs based on the directed elaboration of biologically active substances and use of nanomaterials.
- 5.4. Molecular biotechnologies of creation of the new organisms and products for agricultural, pharmaceutical and food industries.

State Programs implemented within the research and technological development priorities: CUTTING EDGE BIOTECHNOLOGIES; METHODS OF DIAGNOSIS AND TREATMENT OF THE MOST COMMON DISEASES

- National Research and Development Programme: “Microbial Biotechnologies”
 - o Development of methods of obtaining and long-term maintenance of commercially promising strains of micro-organisms for biotechnological production.

D.4.8 Inventory of Ukrainian Institutions as nucleus for National Platforms

- Development of biotechnologies of synthesis of probiotics, enzymes and amino acids.
- National Research and Development Programme: “Plant Biotechnologies and Biosafety”.
 - Obtaining of new lines and forms of plants with valuable features by using the methods of selection *in vitro* and cell and gene engineering.
 - Development of new technologies for obtaining and long-term storage (cryo-preservation) of cell cultures and plant tissues.
- National Research and Development Programme: “New Medicinal Products”.
 - Development of new medicinal products with targeted transport and multiple-vector pharmacodynamic characteristics.
 - Development of new indispensable medicinal products including products for substitution therapy of drug abuse, 3rd generation calcium antagonists and antibiotics of directed action.
 - Development and implementation of schemes and methods of preclinical studies of medicinal products for the purposes of verification and prediction of the safety, pharmacological activity and legitimisation of new medicinal products.
- National Research and Development Programme: “New Technologies and Methods of Diagnosis and Treatment of the Most Common Diseases”
 - Development of new highly informative methods of an early diagnosis of different diseases.
 - Development of new technologies of treatment of cardiovascular, cerebrovascular and oncological diseases.
 - Development of new information and telemedical technologies and means for their implementation.
- National Research and Development Programme: “Gene and Analytical Biotechnologies”
 - Development of technologies of gene therapy of insulin-independent diabetes and atherosclerosis.
 - Development of methods of molecular genetic diagnosis of congenital and oncological diseases.
 - Development of gene engineering methods of obtaining of human cytokines.
 - Development of biosensor systems for biotechnological process control.

In accordance with the national priority Life sciences, new technologies of prevention and treatment of the most wide-spread diseases the following **ETPs** can be taken as example:

Nanotechnologies for Medical Applications (NanoMedicine)
Sustainable Chemistry (SusChem)

Key (possible) actors for the national technology platform

No	Institution	Web-site address
	<u>V.N. Karazin Kharkiv National University</u>	http://www.univer.kharkov.ua/en

National Taras Shevchenko University <u>Department of Biochemistry</u> <u>Department of General and Molecular Genetics</u> <u>Department of Microbiology and Immunology</u>	www.univ.kiev.ua/en/
Institute for Single Crystals	www.isc.kharkov.com
<u>B.Verkin Institute for Low Temperature Physics and Engineering</u>	www.ilt.kharkov.ua/
R.E.Kavetsky Institute of Experimental Pathology, Oncology and Radiobiology of the NAS of Ukraine	www.onconet.kiev.ua
<u>Mechnikov Odessa National University</u>	www.onu.edu.ua/en/
Vernadsky Institute of General and Inorganic Chemistry	http://www.ionc.kar.net/index-en.html
International Centre of Molecular Physiology	http://biph.kiev.ua/center/
D.K.Zabolotny Institute of Microbiology and Virology	www.imv.kiev.ua
A.Palladin Institute of Biochemistry of the NASU	http://www.biochemistry.org.ua/index.php?lang=en
Institute of Food Biotechnology and Genomics of the NASU	http://ifbg.org.ua
<u>Kharkiv State Medical University</u>	www.knmu.net/
Bogomoletz Institute of Physiology of the NASU	http://wiki.biph.kiev.ua/en/Main_Page
Institute of Bioorganic chemistry and Petrochemistry	http://bpci.kiev.ua/inst.htm
<u>Institute of Molecular Biology and Genetics</u>	http://www.imbg.org.ua/main/index_e.htm
Institute of Cell Biology and Genetic Engineering of the National Academy of Sciences of Ukraine	http://www.cellbiol.lviv.ua/index.html
<u>Uzhgorod National University</u>	www.univ.uzhgorod.ua
Institute of Macromolecular Chemistry	www.makromol.kiev.ua
<u>Bukovinian State Medical University</u>	http://www.bsmu.edu.ua/en/index.asp
National University of Life and Environmental Sciences of Ukraine	http://nubip.edu.ua/en/

	The Institute for Problems of Cryobiology & Cryomedicine	http://www.cryo.org.ua
	National University of Food Technologies	http://www.nuft.edu.ua/
	O.O. Bohomoltsya National Medical University	http://nmu.edu.ua/eng/
	L.V. Gromashevsky Institute of Epidemiology and Infectious Diseases of the Academy of Medical Sciences of Ukraine	http://www.duieih.kiev.ua/new_site.htm
	M.D. Strazhesko Institute of Cardiology of the Academy of Medical Sciences of Ukraine	http://www.strazhesko.org.ua/

State Priority: New substances and materials

- 6.1. Targeted research in new materials, their combining and processing.
- 6.2. Development and application of the technologies of elaboration, combining and processing of the structural, functional and composite materials.
- 6.3. Development and application of nanotechnologies and nanomaterials technologies.
- 6.4. Development and application of technologies of receiving of chemical production new compounds.

State Programs implemented within the research and technological development priority:

NEW SUBSTANCES AND MATERIALS

- National Research and Development Programme: “New Functional and Smart Materials”
 - o Development of new oxide, plastic and semiconducting scintillators, radiation detectors and detecting systems on their basis.
 - o Development of industrial processes and establishment of a manufacture of mono-, micro- and macro-powders of synthetic diamonds and cubic boron nitride having special functionality.
 - o Development of processes of obtaining of oxide laser monocrystals for medical purposes ($\lambda = 2$ to $3 \mu\text{m}$), oxide and semiconductor monocrystals for transformable frequency lasers and oxide monocrystals for the transformation of laser frequency.
 - o Development of a new generation of pyroelectric multifunctional irradiation receivers.
 - o Development of technologies of obtaining of new biomaterials and items made of the same for the purposes of prosthetics and surgery.
- National Research and Development Programme: “New Structural Materials”
 - o Development of new high-strength low alloy (HSLA) steel with improved welding properties for the purposes of heavy-duty, transport and chemical machine building, metal production, construction and pipeline transportation.
 - o Development of new disperse and composite materials for steel microalloying and modification and development of process for the manufacture of such materials and equipment for their introduction into a melted metal.
 - o Development of new structural materials having high corrosive resistance in hydrogen and hydrogen sulphide environment, high-ductile cast iron and materials with strengthened wear- and heat-resistant surfaces.
 - o Development of promising aluminium and titanium alloys having increased heat and corrosion resistance for the purposes of aerospace engineering, machine building and medicine.
 - o Development of new composite materials on the basis of metal, ceramics and reinforced polymers for energy economy, engine building and aerospace engineering.
- National Research and Development Programme: “New Substances and Materials for Chemical Manufacture”

- Development of new organic substances and materials and composites on the basis of the same for the purposes of electronics, electric and computer equipment, and conducting, photoconducting, photochromic, luminescent and capacitor materials.
- Development of new inorganic materials having extreme service features, protective coatings for industrial equipment, and immobilising and compacting systems.
- Development of new polymer materials and polymer composites for different kinds of high-edge engineering.
- Development of new substances and materials for agricultural sector, environmentally acceptable state-of-the-art pesticides, retardants, plant growth regulators and products for veterinary medicine and livestock production.
- Development of high performance processes for the manufacture of a new generation of active pharmaceutical ingredients.

European Technology Platforms in the field of New substances and materials are:

Advanced Engineering Materials and Technologies (EuMAT)
 European Technology Platform on Smart Systems Integration (EPoSS)
 Future Manufacturing Technologies (Manufuture)
 Future Textiles and Clothing (FTC)
 Nanotechnologies for Medical Applications (NanoMedicine)
 European Steel Technology Platform (ESTEP)

Key (possible) actors for the national technology platform

No	Institution	Web-site address
	V. Lashkaryov Institute of Semiconductor Physics	http://web.isp.kiev.ua/index.php
	E.O.Paton Electric Welding Institute of the NAS of Ukraine (PWI)	http://paton.kiev.ua/
	Institute for Single Crystals	http://www.isc.kharkov.com/
	Kharkov Technologies (center of Small Business Development)	http://www.kt.kharkov.ua/English/
	National Technical University “Kharkov Polytechnic Institute”	http://www.kpi.kharkov.ua/?lang=en&main=*main&news=no
	<i>Physico-technological Institute of Metals and Alloys</i>	http://www.ptima.kiev.ua/index.php?lang=us
	National Technical University of Ukraine “Kyiv Polytechnic Institute“	http://inter.kpi.ua/
	Ukrainian state research institute of special steels, alloys and ferroalloys	http://ussi.nm.ru/
	B.Verkin Institute for Low Temperature Physics and Engineering	http://www.ilt.kharkov.ua/
	Yuriy Fedkovych Chernivtsi National University	http://www.chnu.cv.ua

D.4.8 Inventory of Ukrainian Institutions as nucleus for National Platforms

	Frantsevich Institute for Problems of Materials Science of the NASU	www.materials.kiev.ua
	Mechnikov Odessa National University, Scientific-Research Institute of Physics	http://www.onu.edu.ua/en/
	G. Kurdyumov Institute of Metal Physics	http://www.imp.kiev.ua/
	V.M. Bakul Institute of Superhard Materials	http://www.ism.kiev.ua/
	Science and Technology Diamond Concern "ALCON"	http://www.ism.kiev.ua/english/