Project no.	**INCO-CT-2005-017240**
Project acronym:	**INDUMAT**
Project title:	**Strengthening of the RDI potential for advanced materials and composites to enhance the performance of the electrical industry**
Instrument:	**SPECIFIC SUPPORT ACTION**
Thematic Priority:	3. Nano-technologies and nano-sciences, knowledge-based functional materials, new production processes and devices. 5. Food Quality and Safety 6. Sustainable Development, Global Change and Ecosystems

Final Activity Report

Period covered: from 01/05/05 to 30/04/08
Date of preparation: ……..

Start date of project:18/04/05
Duration: 36 months

Project coordinator name: **Prof. Dr. WILHELM KAPPEL**
Project coordinator organization name: National Research and Development Institute for Electrical Engineering ICPE – CA.

Table of contents Periodic ACTIVITY Report

This 'Final ACTIVITY Report' is only one part of the 3 documents for Final Report for 'INDUMAT', the other parts being:

-Final MANAGEMENT Report

Section 1 - Justification of major cost items and resources
Section 2 - Including Form C, Financial statement per activity for the contractual reporting period
Section 3 - Summary Financial Report,

Publishable executive summary

Strengthening of the RDI potential for advanced materials and composites to enhance the performance of the electrical industry

Summary description of project objectives:

The INCDIE ICPE–CA Bucharest was founded in 2001 and became a national institute in 2004. ICPE–CA was splitted from a big research institute specialized in electrical engineering and active from the `50, so, the background of ICPE–CA is an experiences over 50 years.The main activities, focused on electric engineering technologies and materials, include research projects and various services for SMEs (consulting, design, training, technology transfer). The institute's philosophy is to respond to the industry demands, supporting the requirements of industrial beneficiaries. The research laboratories of ICPE-CA are active in the priority areas 3, 5 and 6 of the FP6. ICPE-CA needs to strengthens its position as the most important RDI player in the field of electrical engineering materials for Romania, through developing a new generation of materials, in order to design and to manufacture new advanced components and devices and finally to be integrate into the ERA.
The INDUMAT aims to reinforce the ICPE-CA RDI capacity by **improvement of the infrastructure** and improving **the excellence,** in order to participate in EC FP consortium.
The specific project objectives are:

- Improvement of the infrastructure;

By endowing ICPE-CA with scientific equipments of new generation, with high impact in the improvement of the research capacity in advanced materials for electrical engineering.
Better equipment means:

- ✓ Strengthening the RDI potential of ICPE–CA;
- ✓ Improvement of research excellence;
- ✓ Enhanced networking.

- Improvement of the excellence in research;

Scientist training in famous foreign excellence centers from MS* countries, hosting of scientist from abroad to held lectures about specific problems in material science, in order to assure the access of the researchers to the newest scientific information's.

- Promotion of young researchers;

To assure the continuity of the activity in ICPE-CA, a better occupation rate of the young generation, avoiding the" brain drain" abroad, to exploit the initiative of young high educated people creating a more attractive research environment.

- Dissemination of the research results;
  - ✓ The significant scientific findings, achieved by the ICPE-CA from important research project are disseminated at significant international conferences and by publication in the open literature. All publications are acknowledged of European Commission via "The 6th Framework Programme";
  - ✓ At the national level are organized scientific conferences;
  - ✓ The significant technical research findings, achieved by the ICPE–CA from research projects are disseminated at significant International Exhibitions ;
- Promoting technology transfer for industry;

Organizing round table to develop scientific and technological partnerships with domestic and MS partners and to promote best technological achievements which can be transferred in the industry. Finding more opportunities for technological transfer. Developing connections with industry advised by panels with members from: University Centers, other Research Institutes - potential powerful tool to make investment in the research more attractive to business while also benefiting public research.

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* Member States

- Improvement of joint RDI activity with Romanian and European universities.

Higher scientific level, proposals for joint research work with Romanian and European universities.
For reaching the project objectives, the best approach is to mobilize already existing and emerging human and material resources in order to create synergies and additional momentum.

Contractors involved:

Main Coordinator:	National Research and Development Institute for Electrical Engineering ICPE – CA, Bucharest, Romania, **Prof. Dr. WILHELM KAPPEL.**
Contractor:	National Research and Development Institute for Electrical Engineering ICPE – CA, Bucharest, Romania, **Prof. Dr. WILHELM KAPPEL.**

Co-ordinator contact details:

INCDIE ICPE-CA, **tel:** 0040-21-346.82.97, **e-mail**: kappel@icpe-ca.ro

Work performed – The work of the SSA is divided into 4 Work Packages:

WP1: Renewal of S&T equipment

The objectives of WP: Improvement of the infrastructure and reinforcement of the research capacity have been achieved by:

- ✓ Identification of the equipments;

There were identified the scientific equipments needed for ***high quality and innovative research activity.***

- ✓ Market prospection. Offer evaluation;

It was performed a market prospection and then a public auction for each equipment. An announcement for participation was press released, according to the national rules. Best offer, in each case, was selected.

- ✓ Equipments upgrading;

Following to the public auctions, there were commissioned and installed the following scientific equipments:

- Equipment for thin layer deposition by sputtering;
- Scanning Tunneling Microscope;
- Impedance Analyzer;
- Elemental Analyzer;

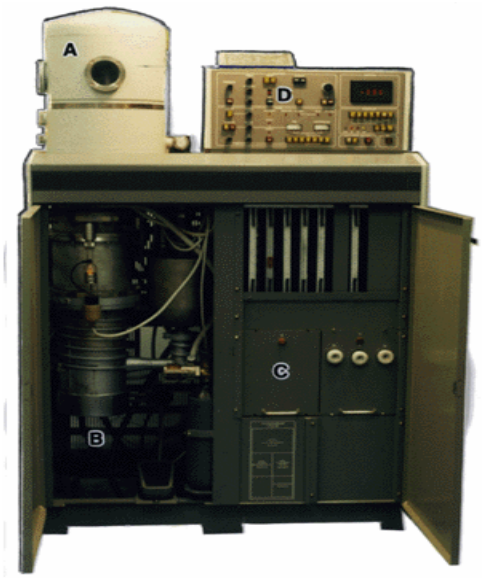
Training stages were performed at the coordinator site, ICPE-CA for each equipment following to installation and acceptance. The costs incurred for these activities are included in the equipment cost.

Equipment for thin layer deposition by sputtering:

Allocated budget (as specified in Annex 1): 90,000 EUR
Main technical requirements:

- Laborator equipment;
- Excellent deposition rates for metals (pur elements and alloys), dielectrics and ceramics;
- Ultra high adhesion;
- Temperature control of the thin layer substrate;
- Designed for sequential deposition;
- Full computer control.
- Training stage after acceptance.

Public auction organized according to the national rules on May 18, 2005.
Method: best technical/price offer.
Equipment: Equipment for thin layer deposition in vacuum typ MDS
Supplyer: **SC MEDAPTEH s.r.l – ROMANIA**
Agreed price: **76 200 EURO**



Actual technical data:

- Laborator equipment
- Deposition by magnetron sputtering in DC and RF
- Deposition by other termic methods and elctronic gun
- Thermal and ionic treatments of the deposition
- Film thickness measurment instrument
- Training stage for two people

The equipment was installed on 28 November ’05 in to a special laboratory. The cost have been covered by INCDIE ICPE-CA effort.

- Trained people: th. Dorina Vlad.
- Trainer: eng. Valentin Midoni.
- Period: 28 November - 05 December ‘05

Objectives:

- Deposition by magnetron sputtering in DC and RF;
- To use the equipments into full operation.

Equipment installation site.

Equipment operating for sputtering deposition.

Results:

- The trained people produce samples :
  - Carbon thin layer on ceramic (SITAL);
  - Alumina thin layer on glasses;
  - Magnesium thin layer on glasses;

- Alumina thin layer on CoNiTi Alloys;
- Co thin layer on glasses;
- Ni thin layer on glasses;
- Aluminum thin layer on glasses;
- Sandwich thin layer: Co/Alumina/Co on glasses;
  Pa/Ni/Co on glasses.

➢ The equipment is used into full operation for research projects.

Scanning Tunneling Microscope:

Allocated budget (as specified in Annex 1): 85,000 EUR
Main technical requirements:

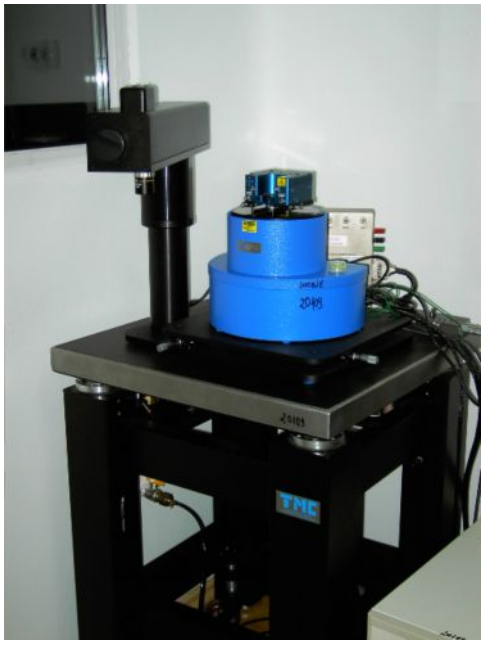
- Contact, Lateral Force Microscopy (LFM), Tapping Mode, PhaseImaging, Scanning Tunneling Microscopy (STM);
- Probe cartridge for contact AFM, TappingMode AFM and STM;
- Mounted contact AFM probes, Mounted non-contact AFM probes and Platinum/Iridium cut STM tips;
- Unmounted Gold-coated contact AFM probes and Unmounted Gold-coated, sharpened contact AFM probes;
- Magnetic Force Microscopy Tool Kit.
- Force Modulation Microscopy.
- Conductive AFM;
- Operation Manuals;
- Nanomanipulation software for Scanning Probe Microscope and nanolithography software.

Public auction organized according to the national rules on May 25, 2005.
Method: best technical/price offer.
Equipment: **CP –II model CP-100-10**.
Supplyer: **Veeco Instruments GmbH - GERMANY**
Agreed price: **95 058 EURO**

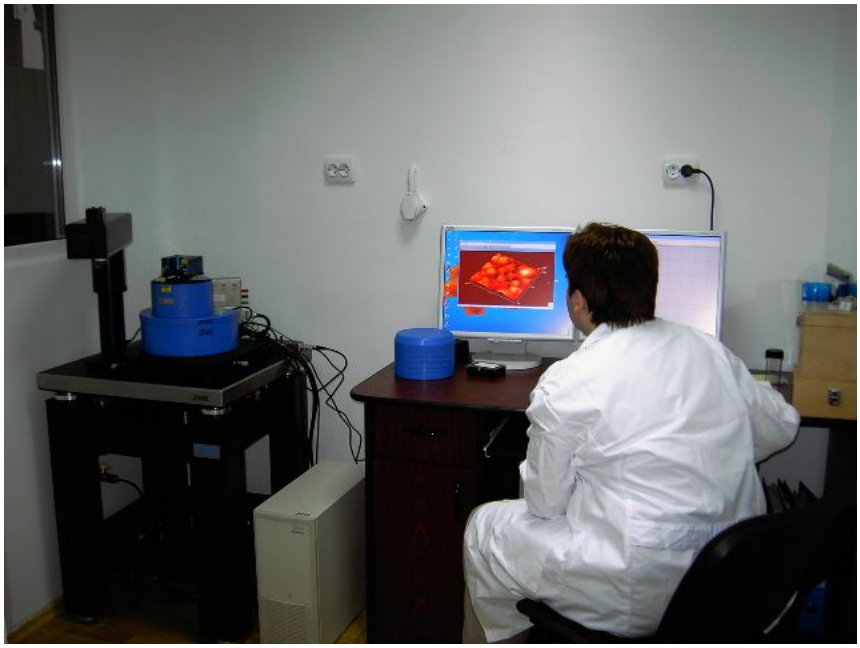
Actual technical data:

- Standard configuration Scanning Tunneling Microscope;
- Tools kit for Magnetic Force Microscopy model PSIT-005
- Force Modulation Microscopy model PSFM-2000
- Atomic Force Microscopy conductiv model APCPA-2400
- Soft modul for nanomanipulation model APML-0018
- Soft modul for nanolitography model APNL-0019

The equipment was installed on 22 October ’05 into a special laboratory. The cost have been covered by INCDIE ICPE-CA effort.
After the trainig stage the equipment entered into full operation.



Equipment installation site.



Equipment operating for microstructural analysis.

- Trained people: phys. Delia Patroi and phys. Silvia Hodorogea.
- Trainer: eng. Frank Andreas from **Veeco, Germany**.
- Period: 22-31 October '05

Objectives:

- To operate in Contact Mode and Tapping Mode;
- To use the equipments into full operation.
  - scanner calibration;
  - Magnetic Force Microscopy;
  - Scanning Tunneling Microscopy;
  - Force Modulation;
  - Nanolithography;
  - Nanomanipulation, perform nanomanipulation on Au ball/mica sample.

Results:

- The trained people are able deeply investigate new and advanced materials developed in INCDIE ICPE-CA in the frame of National Research Programe.
- The equipment is used into full operation for research projects.

Elemental Analyzer:

Allocated budget (as specified in Annex 1): 80,000 EUR
Main technical requirements:

I. Microsonde analyzer

- Upgrading a CAMSCAN 3 type SEM (Cambridge Instruments 1981)
- Qualitative, quantitative spatial distribution.

or

II. X – ray spectrometer

- Non-destructive sample analysis
- Multi – element detection for elements sodium to uranium;
- Sensitivity from PPM to 100% concentration levels;
- Analysis in air and vacuum;

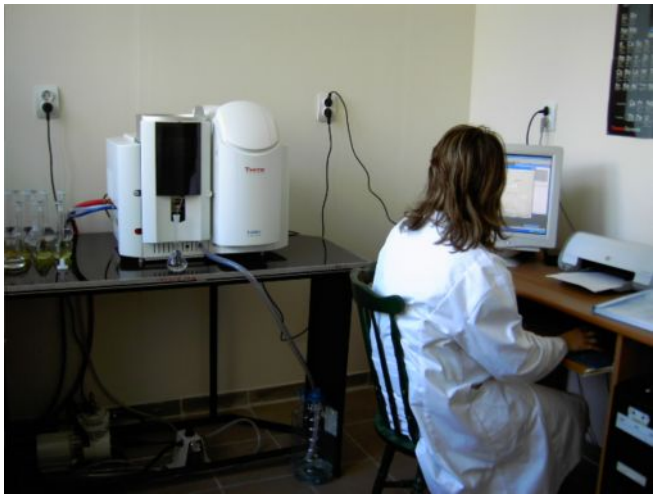
- Qualitative, quantitative spatial distribution.

Public auction organized according to the national rules on July 29, 2005.
Method: best technical/price offer.
Equipment: **Equipment for elemental analysis**
Supplyer: **Thermo ELECTRON CORPORATION Cambridge - UK**
Agreed price: **65 207 EURO**

Actual technical data:

- SOLAAR S4 AA SPECTRO (WIDE RANGE PMT);
- SOLAAR FAAS VALIDATOR ;
- Cathode Lamp: Antimony, Arsenic, Beryllium, Bismuth, Boron, Caesium, Dysprosium, Gadolinium, Gallium, Germanium, Indium, Iridium, Lead, Lithium, Mercury, Neodynium, Niobium, Osmium, Palladium, Phosphorus, Praseodymium, Rhenium, Rhodium, Samarium, Selenium, Tantalum, Tellurium, Terbium, Thallium, Tin, Tungsten, Vanadium, Yttrium, Zirconium, Ca/Mg, Na/K, Co/Fe, Cu/Mn/Ni, Cr/Mo, Al/Si/Ti, Ag/Au/Pt, Ba/Sr, Cd/Zn;
- Pc Station SOLAAR;
- Arrestor, Gas Regulator and AAS FUME Extractor;
- Microwave Labstation for Rapid Sample Preparation;
- System of data aquistion and color Inkjet Printer.

The equipment was installed on 06 January ’06 into a special laboratory. The cost have been covered by INCDIE ICPE-CA effort.
After the trainig stage the equipment entered into full operation.



Equipment installation site.

Microwave Labstation - Sample Preparation.

- Trained people: chim. Alina Ciocanete.
- Trainer: eng. M.Balas from **RONEXPRIM, ROMANIA.**
- Period: 06-13 January ’06

Objectives:

- To perform test for Ni evaluation in aer/acetilen flame;
- To perform test for Cr evaluation in azot/acetilen flame
- Equipment calibration on Fe;

- Manipulation of Microwave Labstation for Rapid Sample Preparation.

Results:

- The trained peoples was performed analyses to evaluate :
  - Fe from sand;
  - Cu from FeCu alloys;
  - Ag obtained by chemical precipitation;
  - Ti from FeTi alloys;
  - Al, Mg, Ca, Fe from electrolytic solution.
- The equipment is used into full operation for research projects.

Impedance Analyzer

Allocated budget (as specified in Annex 1): 80,000 EUR
Main technical requirements:
Set-up measurement including:

- Vector network analyzer up to 4 GHz;
- Spectrum analyzer up to 13 GHz;
- System for EMF measurements with isotropic antenna;
- Probe set for measurements of E and H near-field;
- Trainings for users;

Major deviation for Impedance Analyzer.
The first public auction for Impedance Analyzer was cancelled since offers received do not fulfill technical requirements. It was organized the second public auction.
Finally succeed and Contract signed on 26 April '06. The equipment delivered in 6 weeks after.

Method: best technical/price offer.
Equipment: **Impedance analyzer and measurement set-up of frequency dependent attenuation in material media**
Supplyer: **ROHDE &SCHWARZ Osterreich Gesellschaft m.b.H , AUSTRIA**
Agreed price: **86180 EURO** from which:
22,645.00 EUR covered by INCDIE ICPE-CA effort.

Vector network analyzer

Portable EMF measurement system

Actual technical data:

- Vector network analyzer, 2 ports, 300 kHz - 4 GHz;
- Calibration kit N, 50 Ohm TOSM 0 - 18 GHz;
- Spectrum analyzer 9 kHz - 13 GHz, -140 - +30 dBm;
- Tracking generator for FSP, 9 kHz - 3 GHz, I/Q modulator;
- Measurements with NRP power sensors;

- Portable EMF measurement system 30 MHz - 3 GHz, 1 mV/m - 100 V/m;
- Probe set E and H near field, measurements, 100 kHz - 2 GHz;
- Basics of Network Vector Analyzers and ZVB operation training;
- FSP and TS-EMF operation training.


Impedance analyzing set-up for measuring materials.

- Trained people: eng. Jana Pintea, phys. Eros Patroi, eng. Remus Erdei and eng. Phys. Iulian Iordache.
- Trainer: Eng. Arno Holl from **ROHDE &SCHWARZ Osterreich Gesellschaft m.b.H , AUSTRIA.**
- Period: 05 – 08 June '06.

Objectives:

- ➢
- ➢ To use Vector Network Analyzer **ROHDE &SCHWARZ, ZVB 4,** up to 4 GHz;
- ➢ To use Spectrum Analyzer **ROHDE &SCHWARZ, FSP 13,** up to 13 GHz;

Results:

- ➢ techniques developd in the laboratory:
  - transmission/reflection line technique,
  - open ended coaxial probe technique,
  - free space technique,
  - resonant technique.
- ➢ Measured materials: dielectric materials, polymer composite materials, rubber composite materials and magnetic composite materials.

All activities that have been set up under this work package are posted on the project website: http://fp6.icpe-ca.ro/index.php?m=117.

⇨ All equipments comissioned in the project are working and fully exploit.

⇨ Trained researchers are prepared to develop ***high quality and innovative research activities*** and exploit the new scientific equipments in complex scientific research projects.

⇨ **The activities perfoormed in WP1** were described at large in the 1st Report and in the 2nd Report benig **finalized** with training activities at the end of the 2nd Reporting Period.

WP2: Strengthening the human RDI potential of the Institute

The objectives of WP: Improvement of research excellence, reinforcement of the human research capacity and promotion of young researchers has been achieved by:

- **scientist training** in famous foreign excellence centers from MS* countries:

The schedule of the scientist training organized in the frame of INDUMAT project was as fallows:

I. The 1st Reporting Period

- *1 - young researcher trained at* ***VITO Mol, Flemish Institute for Environmental and Technological Research*****,** April 5 -15, 2005, Belgium;
- *1 - young researcher trained at* ***Instituto Electtrotecnico Nazionale Galileo Ferraris, Torrino*****,** August 8 – September 3, 2005, Italy;
- *10 - young researchers trained at* ***European Summer School "New Experimental Approaches to Magnetism",*** Constanta, September 7-16, 2005, Romania.: *IFW Dresden – Institute for Metallic Materials*, **Germany**; *Faculteit der Werktuigbouwkunde, Universiteit Twente*, **Netherlands**; *Max Plank Institut fur Mikrostrukturphysik*, **Germany**; *Freie Universitat Berlin, Institut fur Experimentalphysik*, **Germany**; *CEA-Grenoble*, **France**; *Laboratoire de Cristallographie du CNRS, Universite J. Fourier et Institut Laue Langevin*, France; *Laboratoire Louis Neel – Grenoble*, **France**; *Instituto de Ciencia de Materiales de Aragon, Universidad de Zaragoza-CSIC*, **Spain**; *Eindoven University of Technology*, **Netherlands**; *Institute of Physics, Polish Academy of Sciences*, **Poland**; *Leibniz Institut fur Festkorper – und Werkstoffforschung Dresden*, **Germany**.
- *1 - young researcher trained at* **Universidad Carlos III Madrid**, October 9-23, 2005, Spain.

II. The 2nd Reporting Period

- *2 - young researchesr trained at* ***Summer School "Advanced Characterisation Techniques based on Large Scale Facilities, KMM-NoE Integrated Post Graduate School, Skill Path, Second Intensive Session"***Ancona, Italia; 11.03.2007 – 17.03.2007;
- *1 - young researcher trained* ***Summer School "Environment Physico-Chemistry – from laboratory experiment to environemental campagne"*** Iasi, Romania 02.07.2006 – 14.07.2006;
- *2 - young researchesr trained at* ***Course "Harmonizing work rights legislation with EU directives"*** Jupiter, Romania 28.08.2006 – 01.09.2006;
- *4 researchers trained at* ***"Structural Funds expert trainning"*** Bucuresti, Romania29.05.2006 – 23.10.2006;
- *2 - young researchesr trained at* ***Summer School "The 3rd Summer School on Emerging Technologies in Biomedicine"*** Patras, Grecia 01.07.2006 – 09.07.2006;
- *1 - young researcher trained* ***"Powder Metallurgy Training Courses"*** Laboratoire Louis Neel – Grenoble, Franta; 23.06.2006 – 03.07.2006;
- *2 - young researchesr trained at* ***Course "Kerr Effect Microscopy Based"*** Instituto Electtrotecnico Nazionale Galileo Ferraris, Torrino, Italia, 11.04.2006 – 24.04.2006;
- *2 - young researchesr trained at* ***Summer School "KMM-NoE Integrated Post Graduate School, Skill Path, First Intensive Session"*** Cracovia, Polonia; : 27.05.2006 – 03.06.2006

III. The 3rd Reporting Period

- *1 - young researcher trained at* ***Course MINDE Micro and Nano Deposition,*** Athens, Greece; 14.10.2007 – 19.10.2007;
- *1 - young researcher trained at* ***Summer School "Nanosciences&Nanotechnologies, NN07"*** Thessaloniki, Greace; 13.07.2007 – 20.07.2007

* Member States

- *6 - young researchers trained* at ***Summer School: "On Neutron Physics for Investigations of Nuclei, Condensed Matter and Life Sciences",*** Baia Mare, Romania; 11.09.2007 – 16.09.2007

The objectives of WP2, improvement of research excellence and reinforcement of the human research capacity had been fully and successfully achieved, having at the end of the project 34 young researchers trained and specialized in:

- Materials science technology, advanced methods of investigations and modeling – with emphasizing especially on ***Nanosciences & Nanotechnologies;***
- Microsystems design and application in power electronics and electrical engineering;
- In particularly a special attention was drawn for ***harmonizing work rights legislation with EU directives*** as well as ***Accessing EU funds through different instruments.***

The activities perfoormed in WP2 regarding young researchers trained are described in detail in **deliverable D3** "*Trainning report and brief desription of scientific network*"**.**

- **visiting fellows** - hosting of scientists from abroad to held lectures about specific problems in material science.

Along the project development this meet 32 visiting fellows hosted in Romania and coming from:

- Chemical Research Center, Hungarian Academy of Sciences - Prof. Horvat M., Prof. Lelak Jaroslav and Prof. Kalman Erika;
- Laboratoire de Cristallographie du CNRS, Universite J. Fourier et Institut Laue Langevin, France - Prof. Fiorillo F., Prof. Lebour H. and Prof. Dec.Jonnet P.
- Science Academy from Moldova – Prof. Bologa M.;
- Fraunhofer Institute for Reliability and Microintegration (IZM Munich),- Prof. K. Bock, Germany;
- MicroTEC Gesellschaft für Mikrotechnologie GmbH, - dr. R. Goetzen, Germany;
- Technical University Poznan. Prof. M. Jurczyk, , Poland;
- Universitea Bar Ilan din orasul Ramat Gan –Prof. Dr.Aharon Gedanken Israel;
- ENVIPARK - Dr. Massimo Perucca, Director of Clean NT Centre, Italia;
- Liege University- Prof. Dr. Christian Grandfils, Director of Biomaterials Centre (CEIB)Belgium;
- Institutul Politehnic din Torino Prof. Mario Rosso, Italia;
- Universitatea Sileziana de Tehnologie din Katovice Prof. Malgorzata Sopicka Lizer –Polonia;
- Liege University - Prof. Jacqueline Lecomte, Belgium;
- Institutul de Metale si Tehnologii, Ljubljana - Prof. Matjaz Torkar, Slovenia;
- Institutul de Sudura si Calitate - Helena Gouveia, Portugalia;
- Universitatea din Cantabria - Dr. Jose A Alvarez, Spania;
- INESCO Ingenieros S.L.- Dr. Sergia Cicero, Spania.
- Max-Planck Institut für Mikrostruktur Physik, Berlin – Dr. J. Bachmann, , Germany
- Institute of Electronic Structure and Laser, Foundation for Research and Technology – Dr. A. Lappas, – Hellas, Greece.
- Fachbereich Physik, Universität Osnabrück – Dr. M. Neumann, Germany,
- Landolt-Börnstein Springer Verlag, Berlin – Dr. R. Poerschke, Germany
- Institute of Metallurgy of the Ural Division of the Russian Academy of Sciences, Ekaterinburg – Dr. N. E. Dubinin, Russia
- MicroMaterials Center, Fraunhofer IZM Berlin – Dr. Keller Jurgen, Germany
- Politechnic University Milano - Prof. Pietro Luigi CAVALOTTI – Italy.
- Chemical Research Center, Hungarian Academy of Sciences;
- Institute of Materials Science and Engineering Poznan, University of Technology Poznan, Poland;
- Osnabruck University, Germany;
- Laboratoire de Cristallographie du CNRS, Universite J. Fourier et Institut Laue Langevin, France;
- ZENIT Zentrum fur Innovation und Technik Duisburg, Germany;
- Faculteit der Werktuigbouwkunde, Universiteit Twente, Netherlands.

- **hired young researchers**:
  - 8 young graduated people were hired at INCDIE ICPE-CA in the 1st Reporting Period and continued to sustain their activity in the 2nd Reporting Period;
  - 2 young gradated people were hired at INCDIE ICPE-CA in the 2nd Reporting Period.
  - 3 young graduated people were hired at INCDIE ICPE-CA in the 3rd Reporting Period and we shall continue to sustain their activity over the end of the project.

⇨ All these young researchers are already involved in research projects in the frame of National Research Programm.

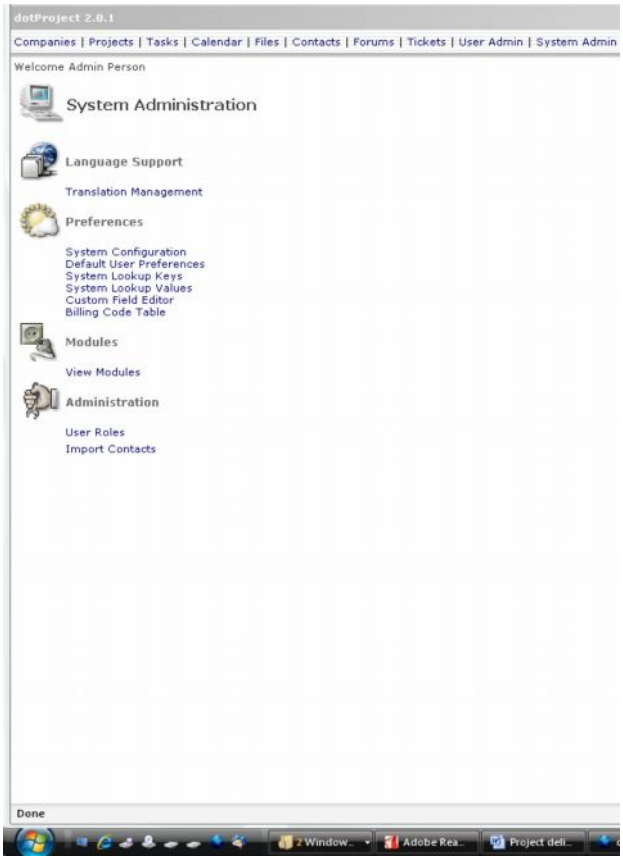
- **electronic library** was broadened; it was set up an Intranet and a faster Internet connection by:
  - optical fiber – upgraded Internet connection to bandwidth 4M;
  - set up Intranet for access to the e-library and inside institute communication.
  - renewed submission to the Internet connection to bandwidth 4M

- It was implemented an integrated solution for using and administration of e-library, e-journal and Intranet based on an open source solution – Dot Project.

- The solution was configured according to our vision regarding faster ways to communicate and to administrate projects. Bassically each task in our Institute can be trated as a project developed in time, with allocated resources and money.

- The implementation of an open source solution is, on the other hand, a guarantee for using and developing software practically without any limitation.

- One of the reason for setting up an Intranet and a faster Internet connection, was for faster ways for communication inside and outside Institute, including EU Research Centers.



- The costs incurred here were related to computer with accessories purchasing, optical fiber installation, and fast Internet connection.

- **access to the newest information** was continued by:
  - on-line subscriptions for Springer Link and Science Direct access data base;
  - books commissioned: The Encyclopedia of Materials: Science and Technology – 11 volume set, 2001 Edition.
  - software commissioned: Infolytica – Infolytica Limited.
  - renewed on-line subscriptions for Springer Link and Science Direct access data base;
  - finalising own books and journals electronic library;

Books commissioned

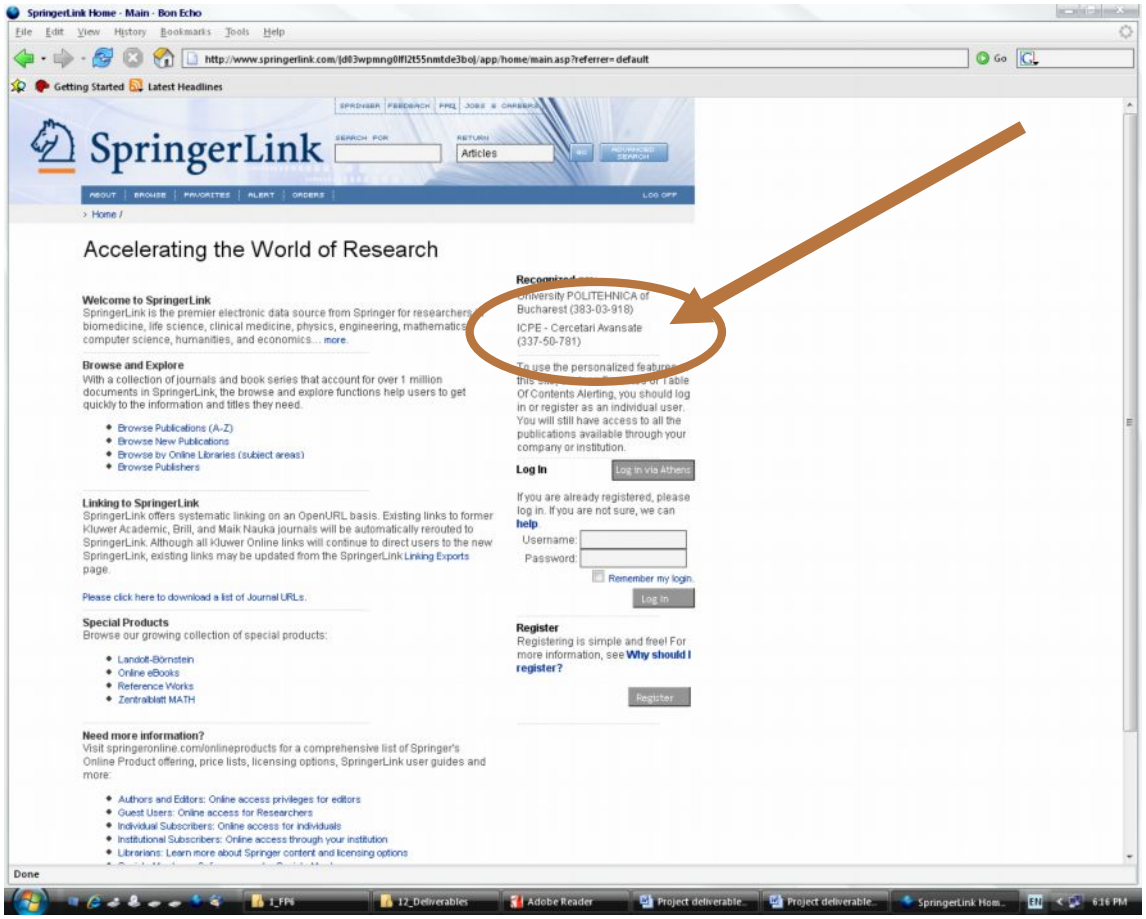
Encyclopedia of Materials: Science and Technology -books commissioned on 08 September '05.

- an authoritative first reference source for the increasingly broad and multidisciplinary field of materials.
- up-to-date reference work from Elsevier Science published in September 2001.
- First Edition in an 11-volume set.
- Subject areas: Functional Phenomena. Fundamental Core Theory. Structural Materials. Structural Phenomena. Polymers and Materials Chemistry. Functional Materials**.**

Journal on-line subscription

Science Direct access data base-subscription made on 09 March '06.

- CARBON;
- COMPOSITES partA: Applied Science and manufacturing
- FUEL CELLS BULLETIN;
- INTERNATIONAL JOURNAL OF HYDROGEN ENERGY;
- METAL POWDER REPORT;
- PROGRESS IN MATERIAL SCIENCE.



- ⇨ The submission for bandwidth 4M was renewed in the 3rd Reporting Period.
- ⇨ The on-line subscriptions were renewed in the 3rd Reporting Period.
- ⇨ The activities concerning the access to the newest information will be continued and sustained over the end of the project.
- ⇨ **The activities perfoormed in WP2, as described at large in the 1st, 2nd and 3rd Report were finalized.**

WP3: Development of research strategies

The objectives of WP: dissemination of the research results: scientific, technical and technological, promoting technology transfer for industry and improvement of joint RDI activities with Romanian Universities have been achieved by:

- **attendance of researchers to International Conferences and Workshops**:
  - *attendance to abroad conferences and workshops: 57 persons at 31 Conferences and Workshops*

- SEIPC 2005, Bejaia, Alger, June 4 -8, 2005 :
- EUROMAT 2005, Prague, Czech Republic, September 5 – 8, 2005:
- EuronanoForum 2005, Edinburgh, Scotland, September 5 – 9, 2005.
- ELECTROMOTION 2005, Lausanne, Switzerland, September 27 – 29, 2005
- Thermal Analysis Seminar, Budapest, Hungary, October 30 – November 6, 2005.
- EUROPM 2005, Prague, Czech Republic, October 2 - 6, 2005.
- ECPMA 2005, Belgrad, Yugoslavia, October 5 – 9, 2005.
- VEKOR Conference – Balatonfured, Budapest, Hungary, October 11–13, 2005.
- POLYTRONIC 2005 Wroclaw, Poland 23-26 October 2005.
- International Workshop "Electromagnetic Fields of Welding Devices", Mol, Belgium, 05.04.2006 – 15.04.2006;
- International Workshop "Magnetism and Metallurgy", Freiberg, Germany, 21.05.2006 – 23.05.2006;
- International Workshop "Piemont Region O.P.E.R.A. Project (Old Parchment: Evaluating Restoration and Analysis)", Torino, Italy, 10.11.2006 – 14.11.2006;
- International Conference "Materiaux 2006", Dijon, Franta, 13.11.2006 – 17.11.2006;
- International Conference "9-th European Symposium on Thermal Analysis and Calorimetry ESTAC 9", Cracovia, Poland, 26.08.2006 – 02.09.2006;
- International Conference "ICEM 2006", Channia, Greece, 02.09.2006 – 05.09.2006;
- European Congress on Advanced Materials and Processes EUROMAT 2007, Nürnberg, Germania 10-13 septembrie, 2007: 2 persons;
- EuMaT Brokerage Event, 20-21 february 2007, Leuven, Belgia: 4 persons.
- EuMaT Brokerage Event, 6-7 january 2008, Bilbao, Spain: 2 persons.
- 10th Int. Conf. and Exhibition of the European Ceramic Society, June 18 - 21, 2007, Berlin, Germany: 1 persons;
- 4th Int. Workshop on Nanosciences & Nanotechnologies NN07 16 - 18 July 2007, Thessaloniki, Greece: 2 persons;
- International Materials Forum 2007 *" Frontiers in Materials Science& Technology- Focus: Functional Materials* Bayreuth 2-3 August – 2 persons;
- ECASIA '07 – 12thEuropean Coference on Application of Surface and Interface Analysis – Brussels, Belgium September 9-14, 2007- 2 persons;
- "Embedded Components Workshop" Fraunhofer – IZM and TechSearch International Inc, 11 – 13.11.2007, München, Germany – 3 persons;
- 3rd Yearly International Symposium on EU Founds - 17 – 19. 03.2008 – 2 persons;
- 2nd Fraunhofer Symposium Micro Energy Technology, 27 November 2007, Freiburg Germany – 3 persons;
- Power MEMS 2007 November 28-29 Freiburg, Germany - 3 persons;

- 8th International Workshop "Be-Flexible" Thin Semiconductor Devices" 05.11.2007 München, Germany – 2 persons;
- 6thInternational Workshop "Flexible Electronic Systems" 06.11.2007 München, Germany – 2 persons;
- HYTETRA – Brokerage Event on Hydrogen Technologies ; 23 -24 April 2008 at Hanovra - 6 persons;
- The 36th International Meeting of Patents, technics and New Products – Geneva, 2-6 April, 2008.

    - *attendance to domestic conferences and workshops: 33 persons at 11 Conferences and Workshops*.

- URB-CORR, *5th International Conference „Study and control of corrosion in the perspective of sustainable development of urban distribution grids"* Sibiu, Romania, June 11 -12, 2005.
- ROPM 2005 Sinaia, Romania, July 7 – 9, 2005.
- ARM-4, Constanta, Romania, September 4 - 6, 2005.
- EM Compatibility, Cluj, Romania, September 22-23, 2005
- SIITME 2005, Cluj, Romania, September 23 -24, 2005
- *International Workshop "Workshop for Preparing Romanian Experts for FP7 Programm",* Timisoara, Romania, 25.10.2006;
- *International Conference "Biommedd' 2006",* Iasi, Romania, 09.11.2006 – 11.11.2006;
- *International Conference "Materials for Electrical Engineering*" Bucuresti, Romania, 15.06.2006 – 17.06.2006.
- *The 5th National Conference "NEW RESEARCH TRENDS IN MATERIAL SCIENCE",ARM – 5* Sibiu, 5 – 7 septembrie 2007 – 10 persons;
- URB-CORR *6th International Conference „Study and control of corrosion in the perspective of sustainable development of urban distribution grids"* Cluj Napoca, Romania 20 – 23 iunie 2007: 2 participants.
- *The First International Proficiency Testing Conference* Sinaia 11-13 October 2007, Romania- 1 participant

The activities performed in WP3 regarding attendance of scientis to Confereneces are described in detail in **deliverable D6** "*Written Report about attendance of scientis to Confereneces with copies of presented papers*"**.** *(the paper copies of presented papers were sended by post)*

- **organized Workshops and Conferences:**

Until the end of 3rd reporting period were organized 4 Conferences 7 Workshops

- The 4th National Conference "NEW RESEARCH TRENDS IN MATERIAL SCIENCE" ARM-4 *Constanta, Romania* September, 4 - 6, 2005

Participants: 175 (161 participants from Romania- Univeristies, Research Centers; 14 participants from abroad).
Paper presented oral and posters: 258

ARM-4 *Constanta, Romania* September, 4 - 6, 2005

General Manager of INCDIE ICPE-CA, prof. dr. Wilhel Kappel, speaking in the opening session of the conference ARM-4.

- The 5th International Conference "NEW RESEARCH TRENDS IN MATERIAL SCIENCE" ARM-5 *Sibiu, Romania, 5th – 7th September, 2007*

Participants: 350 (300 participants from Romania- Univeristies, Research Centers; 50 participants from abroad).
Paper presented oral and posters: 258

ARM-5 *Sibiu, Romania, 5th – 7th September, 2007*

ARM-5, opening session.

- ✓ *Third.International Conference on Powder Metallurgy* ROPM 2005, Sinaia July 7-9, 2005
- ✓ *URB-CORR 6th International Conference „Study and control of corrosion in the perspective of sustainable development of urban distribution grids"* Cluj Napoca, 20 – 23 iunie 2007
- ✓ *Electrical Engineering Materials and Applications*, Bucharest, September 21, 2005.
- ✓ *EM Compatibility*, Cluj Napoca, September 22-23, 2005

- ✓ *Workshop de Compatibilitate bio-electromagnetica: metode de caracterizare si materiale de protectie* Timisoara**,** 25 – 26 Mai 2007;
- ✓ *Al 2-lea Seminar IUCN-Romania, Fizica neutronilor in studiul nucleelor, a starii condensate si a stiintelor vietii,* Baia Mare, 11 – 16 septembrie 2007;
- ✓ *Al 4-lea Workshop de Compatibilitate Electromagnetica CEM 2007* Universitatea de Nord – Baia Mare, 18 – 19 septembrie, 2007;
- ✓ *Brevetul de inventie, instrument si motor al dezvoltarii tehnologice* CCIB, 29 - 30 noiembrie 2007
- ✓ *Electrotehnica romaneasca in perspective europeana* Sediul AGIR – Bucuresti, 18 – 19 decembrie 2007;

The activities performed in WP3 regarding the organized Workshops and Conferences are confirmed by "*Proceedings of organized conferences and workshops*" as require **deliverable D7**.

- **attendance to National Exhibitions**:

  - TIB'2005, October 4-8, 2005, Bucharest, Romania;
  - TIB'2006, October 3-7, 2006, Bucharest, Romania
  - TIB'2007 October 2-6, 2007, Bucharest, Romania - Institute attendance at Research Exhibition organized and ***finaced by Romanian Research Ministry.***

TIB 2005

TIB 2005

TIB 2006

The activities performed in WP3 regarding attendance to exhibitions are described in detail in **deliverable D8** "*Short report about attendance to exhibitions*".

- **specific problems identification and strategies for involvement of in EC FP by organizing round table :**

Round table room completed and operational

- esignated and arranged a special room for scientific meetings and round tables;
- endowed with new electronic equipments especially for dissemination of information's: photocopy machine, laptop, projector.

- Photocopy machine
- KONICA MINOLTA
- BIZHUB C350

- Laptop TOSHIBA TECRA S-130

Meeting in the new round table room

- The costs incurred from the project were for electronic equipments: photocopy machine, laptop, projector and consumables.
- The rest of the costs incured for arangement of the special room have been covered by INCDIE ICPE-CA effort.

Achievments so far

- Round table room completed and operational.

At the end of the Project were organized 27 round table from wich :
- 22 round table with participation of domestic SME's, University Centers, other Research Institutes organized at INCDIE ICPE-CA site as well as in most important romanian industrial centers.
- 5 round table dedicated to scientific cooperation, technological transfers, participation in EC FP projects.

- "Promoting of the Partnership in the Field of Biomaterials"- participants: . M. Jurczyk, TU Poznan, Poland, "Presentation of the Institute of Materials Science and Engineering Poznan, Poland", INCDIE ICPE-CA researchers;

- Round Table Organized at CCIB "Patenting Swervices for Industry and Research and Development" participants: Jenő KÜRTÖSSY, Hungary Patenting Office;. Gerhard LOSENICKY, Austrien Patenting Office, researchers, industrial partners;
- Consortium for FP7 Project proposal HIPERCOATS participants: Lizer – Universitatea Sileziana de Tehnologie din Katovice Polonia; Prof. Jacqueline; Lecomte, Universitatea din Liege, Belgia – Sef catedra materiale metalice; Prof. Matjaz Torkar, Institutul de Metale si Tehnologii, Ljubljana, Slovenia; Prof. Borijov Sustarsic; Institutul de Metale si Tehnologii, Ljubljana, Slovenia, - Sef department; Dr. Ing.Helena Gouveia, Institutul de Sudura si Calitate, Portugalia; Dr. Jose A Alvarez –Universitatea din Cantabria, Spania; Dr. Sergia Cicero - INESCO Ingenieros S.L.,Spania
- Round Table: "Tendencies in biomaterials for tissue reconstructions and health care products" presented 2 invited lectures:
- "Eco-efficient plasma processes for biomedical surface functionalisation" Dr. Massimo Perucca, Director al Clean NT Centre din ENVIPARK Italia,
- "Functionalized biodegradable polyesters for medical/pharmaceutical applications"Prof. Dr. Christian Grandfils, Director al Biomaterials Centre (CEIB) din Liege University
- Round table "*Research in the Field of Materials*" organized in the frame of National Conference ARM – 5, September 5th, Sibiu, Romania;

The activities perfoormed in WP3 regarding the partnerships with Universities are described in detail in **deliverable D9** "*Report about scientific partnerships with Univeristies*".
The activities perfoormed in WP3 regarding round tables and their impact upon scientific cooperation, technological transfers, participation in EC FP projects are described in detail in **deliverable D10** "*Report about round tables and their impact upon scientific cooperation, technological transfers, participation in EC FP projects*".

⇨ **The activities perfoormed in WP3, as described at large in the 1st, 2nd and 3rd Report were finalized.**

WP4: Management and co-ordination

The objective of WP: Coherent watching of all milestones to achieve the aim of the proposal has been achieved so far as the project progress.

- The Project Review Committee (PRC) meets periodically to review and assess project progress, including the proper prioritization of time, effort, and resources to be applied.

⇨ **The activities perfoormed in WP4, are finalized with "***Final monitoring and financial report"***.**

Results achieved so far and expected end results

The project is reaching all of its major objectives. This is due to the overwhelming interest and commitment of Project management team as well as of the Institute's employees in this project. Both the work itself and the results of this work far exceed our expectations.

Improvement of the infrastructure (O1).

Results achieved so far at the end of 3rd Reporting Period:

- INCDIE ICPE-CA with the new equipments: *Thin layer deposition by sputtering; Scanning Tunneling Microscope; Elemental Analyzer; Impedance Analyzer*, has an enhanced capacity to perform high quality research activity in the frame of National and EU research programm;
- Acquired European knowledge level for young trained scientists;
- Renewed submission to the Internet connection to bandwidth 4M;
- Renewed on-line subscriptions for Springer Link and Science Direct access data base;
- Finalised own books and journals electronic library.

End results: Infrastructure improved, European knowledge level for young researchers trained, broadened scientific library.

Reinforcement of RDI capacity (O2); Promotion of young researchers (O4).
Results achieved so far at the end of 3rd Reporting Period:

- young researchers were trained and are involved in research projects – national level;
- more links with European academic and research media; developed consortia for FP7; 2 FP7 projects awarded:
  - Capacities – REGPOT 2007 – 2 "*Promotion of Competence to Up-grade the RTD Potential in Science and Technology"* PROCUST;
  - Capacities – REGPOT 2008 – 1 "*Developing RTD Potential of INCDIE ICPE-CA in the Field of Hydrogen and Fuel Cell Technologies"* – ICPE-HyFC.
- 1 project awarded, European consortia, in the frame of COST Programm:
  - OC 2007 -1-884, *Emerging EMF Technologies and Health Risk Management.*
- 2 project proposals in the frame of **E.ON Research Initiative**: E.ON International Call for research Grant Proposal 2008 – Application of nanotechnology in the Energy Business:
  - "*Enhanced CIGS-PV systems based on nanotechology – CIGS*"
  - *"New water repellent materials. Lotus effect surfaces to prevent wind turbine freezing phenomena".*
- hired young graduated people and promoted young researchers in research project – national level;

End results: European knowledge level, Enhanced networking, Reinforcement RDI potential of the institute.

Improvement of the excellence in research (O3); Dissemination of the research results (O5); Promoting technology transfer (O6); Improvement of joint RDI activity with Romanian universities (O7).
Results achieved so far:

- scientific researchers from INCDIE ICPE-CA disseminated findings at National and International Conferences;
- Workshops and Conferences organized;
- Activities for technological transfers:
  - technology for metal-graphite lead-free – SC ROFEP SA, technology for carbon-ceramic rezistors – SC ROSEAL SA;
  - one transfer project of NdFeB high energy magnets fabrication, towards a spin-off company SC ROMNEOMAG SRL;
  - one knowledge transfer project for a research management integrated system EXMAN.
  - Participation in consortia with Universities and SMEs in the frame of National Research Programm – INNOVATION; projects leads by SMEs:
    - ❖ 3 projects in consortia with: SC MICROELECTRONIA (SME), UPB Bucharest and INCDIE ICPE-CA;
    - ❖ 2 projects in consortia with: SC ROSEAL SA (SME), Romanian Acxademy – Timisoara branch and INCDIE ICPE-CA.
  - The ECOMAT ICPE-CA Technology and Business Incubator developed and sustained by the National Institute for Research and Development in Electrical Engineering ICPE-CA and represents the instrument which sustain the formation and the development of the infrastructures entities for innovation and technology transfer. It will have a capacity of 10 incubation modules which will provide for SEM's office spaces, laboratories, work rooms, depositions spaces and also equipments and tools.
- Romanian Technological Platform EuMaT-Ro was developed. Prof. Dr. Wilhelm Kappel, representing EuMaT-Ro, is an active member in EuMaT Steering Comitee.

End results: Joint Activity Proposals with partners from MS, Higher scientific level, proposals for joint research work, more connections to the industry, more opportunities for technological transfer, increased participation in FP7.

Intentions for use and impact

The potential impact of the project consists from an *economic impact* and a *scientific impact*. The *economic impact* consist from performing technical results promoting new technology transfer, a better IPR management and on the other side the *scientific impact* emerge from increased knowledge, and involvement in EC FP projects.

The impact of the EU specific support actions enabled by this project, exceed our expectations. Therefore, this project **increase the capacity of INCDIE ICPE-CA** to achieve the fully capability **to promote an active RTD** based on a **people focused knowledge management**.

The realization of the full potential research of the INCDIE ICPE-CA's S&T potential create the premises to became **a highest quality research center in Europe**.

Renewal of S&T equipment: New scientific equipments afford us to develop high quality and innovative research activities in the frame of national projects as well as in international cooperation. It is our feeling that we shall be able to bring a **more substantial contribution to European Research Area**.

Better equipment reinforced the regional research capacity, enhanced the quality of research carried out, catalysed the cooperation and communication with centers having similar scientific interest and enhanced the potential for active participation in FP7 projects.

Strengthening the human RDI potential of the Institute: By this support action INCDIE ICPE-CA became active in to diminishing "brain drain" by hiring young graduated people. It were created better working conditions, better carrier opportunities and more facile access to scientific information and hi-tech infrastructure.

To be employed at INCDIE ICPE CA represents a real opportunity for young people.

A reinforced human research capacity gived us a well trained research staff which can carry out a high quality research activity, a better regional human research capacity required in national research programs and an improved capacity to participate in FP7 projects.

Development of research strategies: Were created the premises for technological transfer and potential powerful tool to make investment in the research, more attractive to business while also benefiting public research.

This will continue and increase in the future.

For more details please refer to "Results achieved so far and expected end results".

Developing partnerships with academic media and industrial partner increased:

- the capacity of INCDIE ICPE-CA, to be involved in the improvement of economical and social cohesion;
- the participation to the the building of a knowledge society that can be reached only with the contribution of strong Universities and Industrial partners which respond to the socio-economic needs of the country.

Section 1 – Project objectives and major achievements during the reporting Period

As agreed in Annex 1 to the SSA Contract	Done by 30 April '08
WP1: Renewal of S&T equipment The objectives of the 1st WP are to improve the Institute's infrastructure and to reinforce the research capacity. Endowing ICPE-CA with scientific equipments of new generation, with high impact in the improvement of the research capacity in advanced materials for electrical engineering.	
D1: Equipment upgrading-written report	Public auctions were organized. Scientific equipments were commissioned and installed: • Equipment for thin layer deposition by sputtering (28 November '05) • Scanning Tunneling Microscope (22 October '05) • Elemental Analyzer (06 January '06) • Impedance Analyzer (contract signed on 26 April '06, and delivered in 6 weeks after.) *Written Report about equipment upgrading in the 1st Report.*
D2: Training evaluation report	Training stages were performed at the coordinator site, ICPE-CA for each equipment following to installation and acceptance. *Written Report about trainning on specific techniques in the 2nd Report.*
M1: Equipment operational, after 12 month	✓ Thin layer deposition by sputtering operational from 28 November '05. ✓ Scanning Tunneling Microscope operational from 22 October '05. ✓ Elemental Analyzer operational from 06 January '06. ✓ Impedance Analyzer operational from 05 June '06. *Reached in the 1st Reporting Period.*
M2: Training report on specific techniques	Training stages following to installation and acceptance: ✓ Thin layer deposition by sputtering – 28 November - 05 December '05 ✓ Scanning Tunneling Microscope – 22-31 October '05 ✓ Elemental Analyzer – 06-13 January '06 ✓ Impedance Analyzer – 05 – 08 June '06. *Reached in the 2nd Reporting Period.*
As results of 1st WP: the infrastructure improving and acquiring European knowledge level for young trained scientists;	Scientific equipments are operational. 8 young scientists trained.

As agreed in Annex 1 to the SSA Contract	Done by 30 April '08
WP2: Strengthening the human RDI potential The objectives of the 2nd WP are to improve the research excellence, to reinforce the human research capacity and promote young researchers and based on these more young people involved in high quality research activities and new chances to produce new knowledge.	
D3: Training report and brief descriptions of scientific network.	• *10 - young researchers* trained at European Summer School "New Experimental Approaches to Magnetism", Constanta, September 7-16, 2005, Romania - professors from EU Universities. • *1 - young researcher* trained at Universidad Carlos III Madrid, October 9-23, 2005, Spain. • *1 - young researcher* trained at Instituto Electtrotecnico Nazionale Galileo Ferraris, Torrino, August 8 – September 3, 2005, Italy. • *1 - young researcher* trained at VITO Mol, Flemish Institute for Environmental and Technological Research, April 5 -15, 2005, Belgium. • *2- young researchers trained at Summer School* "Advanced Characterisation Techniques based on Large Scale Facilities, KMM-No Integrated Post Graduate School Skill Intensive Session" Ancona,Italia;11.03.200717.03.2007; • *1-young researcher* examinated for research fellowship at Instituto ElecttrotecnicoNazionale GalileoFerraris,Torrino,Italia;25.02-02.03.2007; • *1- young researcher trained at Summer School* Summer School "Environment Physico-Chemistry – from laboratory experiment to environemental campagne"Iasi,Romania; 02.07.2006 - 4.07.2006; • *2- young researchers trained at Course* "Harmonizing work rights legislation with EU directives"Jupiter,Romania;28.08.– 01.09.2006; • *4- researchers trained at Course* "Structural Funds expert trainning"Bucuresti, Romania; 29.05.2006 - 3.10.2006; • *2- young researchers trained at Summer School* "The 3rd Summer School on Emerging Technologies in Biomedicine"Patras, Grecia; 01.07.2006 – 09.07.2006; • *1-young researcher trained at* "Powder Metallurgy Training Courses"Laboratoire Louis Neel–Grenoble,France; 23.06.2006 –03.07.2006; • *2- young researchers trained at Course* "Kerr Effect Microscopy Based" Instituto Electtrotecnico Nazionale Galileo Ferraris, Torrino, Italia; 11.04.2006 – 24.04.2006; • *2- young researchers trained at Summer School*

	"KMM-NoE Integrated Post Graduate School, Skill Path, First Intensive Session"Cracovia, Polonia; 27.05.2006 – 03.06.2006; • *1 - young researcher trained* - Course MINDE Micro and Nano Deposition, Athens, Greece, 14.10.2007 – 19.10.2007; • *1 - young researcher trained* - Summer School "Nanosciences&Nanotechnologies, NN07", Thessaloniki, Greace, 13.07.2007 – 20.07.2007; • *6 - young researchers trained* - Summer School: "On Neutron Physics for Investigations of Nuclei, Condensed Matter and Life Sciences", Baia Mare, Romania, 11.09.2007 – 16.09.2007. *Written Report about Trainning and brief desription of scientific network in the 3rd Report.*
D4: Written Report about new scientific journals and books.	✓ subscription made for Springer Link Platform) – (01 December '05. ✓ subscription made for Science Direct – (09 March '06). ✓ books commissioned - (08 September '05) ✓ software commissioned - Infolytica (09 September '05) *Written Report about new scientific journals and books in the 1st Report.*
D5: Intranet access to the e-library: access report	✓ optical fiber installed – upgraded Internet connection to bandwidth 4M (04 April '06) ✓ e-library broadened - (09 March '06). ✓ set up the Intranet – (19 April '06). *Access Report in the 1st Report.*
M3: On-line and on-paper subscriptions scientific journals/books, Open electronic library	✓ almost entirely Springer Link journal data base – on-line access. ✓ 6 journals Science Direct – on-line access ✓ The on-line subscriptions was renewed yearly ✓ 11 volume set of Encyclopedia – on paper ✓ 1 software commissioned and installed. ✓ new e-library configured ✓ The submission for bandwidth 4M was renewed yearly. ✓ The activities concerning the access to the newest information will be continued and sustained over the end of the project. *Reached in the 1st, 2nd and 3rd Reporting Period.*
M5: Scientist training abroad	3 - young researchers trained abroad. in the 1st Reporting Period. 10- young researchers trained abroad. in the 2nd Reporting Period. 8 – young researchers trained abroad in the 3rd Reporting Period. *Reached in the 3rd Reporting Period.*
M6: Visiting fellows.	Visiting fellows – 6 hosted scientists. in the 1st

	Reporting Period. Visiting fellows – 6 hosted scientists. . in the 2nd Reporting Period. Visiting fellows – 20 hosted scientists. in the 3rd Reporting Period. *Reached in the 3rd Reporting Period.*
M7: Hiring and promoting young researchers	✓ 8 young graduated people hired at INCDIE ICPE-CA in the 1st Reporting Period. ✓ 2 young gradated people were hired at INCDIE ICPE-CA in the 2nd Reporting Period. ✓ 8 young pople hiered in the 1st Reporting Period are supported also in the 2nd Reporting Period. ✓ 3 young graduated people were hired at INCDIE ICPE-CA in the 3rd Reporting Period. ⇨ All these young researchers are involved in research projects in the frame of National Research Programm. *Reached in the 3rd Reporting Period.*
Results: Broadening the scientific library. Enhanced networking. European knowledge level. Reinforcement RDI potential of the institute.	• Builded own books and journals electronic library. • Young researchers were trained and are involved in research projects – national level; • More links with European academic and research media: 2 FP7 projects awarded, One project awarded, European consortia, in the frame of COST Programm and Two project proposals in the frame of **E.ON Research Initiative**: E.ON International Call for research Grant Proposal 2008 – Application of nanotechnology in the Energy Business; • Hired young graduated people and promoted young researchers in research project – national level;

As agreed in Annex 1 to the SSA Contract	**Done by 30 April '08**
WP3: Development of research strategies. The objectives of the 3rd WP are to disseminate the research results: scientific, technical and technological; to promote technology transfer for industry and to improve the joint RDI activities with Romanian Universities.	
D6: Written Report about attendance of scientist to Conferences with copies of presented papers.	Disseminated research results: ➢ attendance to abroad conferences and workshops • 10 persons at 9 abroad Conferences in the 1st Reporting Period • 9 persons at 6 Conferences in the 2nd Reporting Period. • 38 persons at 15 Conferences and Workshops in the 3rd Reporting Period ➢ attendance to domestic conferences and workshops:

	• 17 persons at 5 Conferences. in the 1st Reporting Period • 4 persons at 3 Conferences in the 2nd Reporting Period. • 12 persons at 2 Conferences in the 3rd Reporting Period *Written Report about attendance of scientist to Conferences with copies of presented papers in the 3rd Report.*
D7: Proceedings of organized conferences and workshops.	• Proceedings of organized Workshops and Conferences: 4 Conferences • *The 4th National Conference "NEW RESEARCH TRENDS IN MATERIAL SCIENCE",ARM – 4* Constanta, Romania, September, 4th -6th 2005 • *The 5th National Conference "NEW RESEARCH TRENDS IN MATERIAL SCIENCE",ARM – 5* Sibiu, Romania, September 5 – 7, 2007 • *Third.International Conference on Powder Metallurgy* ROPM 2005, Sinaia July 7-9, 2005 • *URB-CORR 6th International Conference „Study and control of corrosion in the perspective of sustainable development of urban distribution grids"* Cluj Napoca, 20 – 23 iunie 2007 7 Workshops • *Electrical Engineering Materials and Applications*, Bucharest, September 21, 2005. • *EM Compatibility*, Cluj Napoca, September 22-23, 2005 • Workshop de Compatibilitate bio-electromagnetica: metode de caracterizare si materiale de protectie Timisoara**,** 25 – 26 Mai 2007; • Al 2-lea Seminar IUCN-Romania, Fizica neutronilor in studiul nucleelor, a starii condensate si a stiintelor vietii, Baia Mare, 11 – 16 septembrie 2007; • Al 4-lea Workshop de Compatibilitate Electromagnetica CEM 2007 Universitatea de Nord – Baia Mare, 18 – 19 septembrie, 2007; • Brevetul de inventie, instrument si motor al dezvoltarii tehnologice CCIB, 29 - 30 noiembrie 2007 • Electrotehnica romaneasca in perspective europeana Sediul AGIR – Bucuresti, 18 – 19 decembrie 2007; **"***Proceedings of organized conferences and workshops***"** *in the 3rd Report.*
D8: Short report about attendance to exhibitions	✓ One attendance of INCDIE ICPE-CA at TIB'2005, October 4-8, 2005, Bucharest, Romania. in the 1st Reporting Period

	✓ One attendance of INCDIE ICPE-CA at TIB'2006, October 4-8, 2006, Bucharest, Romania. in the 2nd Reporting Period. ✓ One attendance of INCDIE ICPE-CA at Research Exhibition organized and finaced by Romanian Research Ministry in the frame of TIB'2007, October 2-6, 2007, Bucharest, Romania. *Written Short Report about attendance to exhibition in the 3rd Report.*
D9: Report about scientific partnerships with Universities.	✓ Developed collaborations with European Universities. ✓ Developed collaboration with European Tehnological Platform – EuMaT. *Written Report about scientific partnerships with Univeristies in the 3rd Report.*
D10: Report about round tables and their impact upon scientific cooperation, technological transfers, participation in EC FP projects.	✓ 12 organized round tables at Institute site. in the 1st Reporting Period ✓ 5 round tables at Institute site with participants from: University Centers, Research Institutes and Industrial Companies in the 2nd Reporting Period. ✓ 10 round tables at Institute site with participants from: University Centers, Research Institutes and Industrial Companies. in the 3rd Reporting Period ✓ the round tables were dedicated to scientific cooperation, technological transfers, participation in EC FP projects. *Written Report about round tables and their impact upon scientific cooperation, technological transfers, participation in EC FP project in the 3rd Report.*
D11: Short written report about completion of the meeting (round table room).	✓ designated and arranged a special room. ✓ endowed with new electronic equipments especially for dissemination of information's. *Written Report about completion of the meeting (round table room) in the 1st Report.*
D12: Functional e-journal on the website of the Institute.	Launched e-journal on INCDIE ICPE-CA web site (link) – 4 numbers/year – 1st issue March '06. *Reported in the 1st Report.*
M4: Round table room.	Round table room completed, October '05. *Reached in the 1st Reporting Period.*
M8, M10: Attendance to National and International conferences	Scientific researchers attended to 40 Conferences. *Reached in the 3rd Reporting Period.*
M9: Organizing workshops and conferences	✓ Organized 7 Workshops and 4 Conferences; *Reached in the 3rd Reporting Period.*
M11: National exhibition	2 attendances with INDUMAT support The attendance of INCDIE ICPE-CA at Research Exhibition organized in the frame of TIB'2007, October 2-6, 2007, Bucharest, Romania was finaced by Romanian Research Ministry *Reached in the 3rd Reporting Period.*
M12: Specific problem identifications and round tables.	Consortia in EC FP and technological transfer towards SMEs. *Reached in the 3rd Reporting Period.*

Results: Room for round tables; Joint Activity Proposals with partners from MS; Higher scientific level, proposals for joint research work, connection to the industry; More opportunities for technological transfer; Potential powerful tool to make investment in the research, more attractive to business while also benefiting public research; Increased participation in EC FP.	• 2 awarded FP7 Projects. • One project awarded, European consortia, in the frame of COST Programm. • Two project proposals in the frame of **E.ON Research Initiative** • 3 technological transfers to SC ROFEP SA, to SC ROSEAL SA and one towards a spin-off company SC ROMNEOMAG SRL. • The ECOMAT ICPE-CA Technology and Business Incubator developed • Developing tools for investment in research through Romanian Technological Platform EuMaT-Ro is represented by prof. Wilhelm Kappel in EuMaT Steering Committee. o Participation in consortia with Universities and SMEs in the frame of National Research Programm – INNOVATION; projects leads by SMEs: ❖ 3 projects in consortia with: SC MICROELECTRONIA (SME), UPB Bucharest and INCDIE ICPE-CA; ❖ 2 projects in consortia with: SC ROSEAL SA (SME), Romanian Acxademy – Timisoara branch and INCDIE ICPE-CA.

Section 2 – Work package progress of the period

WP1: Renewal of S&T equipment

❖ *Work package objectives and starting point of work at beginning of reporting period*

The objectives of the 1st WP are to improve the Institute's infrastructure and to reinforce the research capacity:

❖ *Progress towards objectives – tasks worked on and achievements made with reference to planned objectives, identify contractors involved.*

Only INCDIE ICPE-CA has been involved in this work.
- All the scientific equipments commissioned and installed;
- Training stages performed at the coordinator site, ICPE-CA for each equipment following to installation and acceptance.

❖ *Deviations from the project work programme, and corrective actions taken/suggested: identify the nature and the reason for the problem, identify contractors involved*

- There have been no deviations or corrective actions taken or suggested.

❖ *List of deliverables, including due date and actual/foreseen submission date (Table 1)*

Table 1: Deliverables List

Del. no.	Deliverable name	Work package no.	Date due	Actual/ Forecast delivery date	Estimated indicative person-months *)	Used indicative person-months *)	Lead contractor
D1	Equipment upgrading-written report	WP1	April '06	April '06	20	20	1
D2	Training evaluation report	WP1	April '07	Apil `07	28	28	1

***) if available**

Table 2: Milestones List

Milestone no.	Milestone name	Work package no.	Date due	Actual/Forecast delivery date	Lead contractor
M1	Equipment operational, after 12 month	WP1	April '06	April '06	1
M2	Training report on specific techniques	WP1	April '07	April`07	1

M1: This objective has been met , the equipments are operational: Thin layer deposition by sputtering (28 November '05); Scanning Tunneling Microscope (22 October '05); Elemental Analyzer (06 January '06); Impedance Analyzer (05 June '06).
M2: This objective has been met, the training stages were performed following to installation of the equipments.

WP2: Strengthening the human RDI potential

❖ *Work package objectives and starting point of work at beginning of reporting period*

The objectives of the 2nd WP are to improve the research excellence, to reinforce the human research capacity and promote young researchers and based on these more young people involved in high quality research activities and new chances to produce new knowledge.

❖ *Progress towards objectives – tasks worked on and achievements made with reference to planned objectives, identify contractors involved*

Only INCDIE ICPE-CA has been involved in this work.
These objectives have been met through:

- young researchers training:

✓ *10 - young researchers* trained at European Summer School "New Experimental Approaches to Magnetism", Constanta, Romania - professors from EU Universities.
✓ *1 - young researcher* trained at Universidad Carlos III Madrid, Spain.
✓ *1 - young researcher* trained at Instituto Electtrotecnico Nazionale Galileo Ferraris, Torrino, Italy.
✓ *1 - young researcher* trained at VITO Mol, Flemish Institute for Environmental and Technological Research, Belgium
✓ *2- young researchers trained at Summer School* "Advanced Characterisation Techniques based on Large Scale Facilities, KMM-No Integrated Post Graduate School Skill Intensive Session";
✓ *1-young researcher* examinated for research fellowship at Instituto ElecttrotecnicoNazionale GalileoFerraris;
✓ *1- young researcher trained at Summer School* Summer School "Environment Physico-Chemistry – from laboratory experiment to environemental campagne"
✓ *2- young researchers trained at Course* "Harmonizing work rights legislation with EU directives";
✓ *4- researchers trained at Course* "Structural Funds expert trainning"
✓ *2- young researchers trained at Summer School* "The 3rd Summer School on Emerging Technologies in Biomedicine";
✓ *1-young researcher trained at* "Powder Metallurgy Training Courses"Laboratoire Louis Neel;
✓ *2- young researchers trained at Course* "Kerr Effect Microscopy Based" Instituto Electtrotecnico Nazionale Galileo Ferraris;
✓ *2- young researchers trained at Summer School* "KMM-NoE Integrated Post Graduate School, Skill Path, First Intensive Session";
✓ *1 - young researcher trained* - Course MINDE Micro and Nano Deposition, Athens, Greece, 14.10.2007 – 19.10.2007;
✓ *1 - young researcher trained* - Summer School "Nanosciences&Nanotechnologies, NN07", Thessaloniki, Greace, 13.07.2007 – 20.07.2007;
✓ *6 - young researchers trained* - Summer School: "On Neutron Physics for Investigations of Nuclei, Condensed Matter and Life Sciences", Baia Mare, Romania, 11.09.2007 – 16.09.2007.

- visiting fellows - hosted scientists from:
  - ✓ Chemical Research Center, Hungarian Academy of Sciences;
  - ✓ Institute of Materials Science and Engineering Poznan, University of Technology Poznan, Poland;
  - ✓ Osnabruck University, Germany;
  - ✓ Laboratoire de Cristallographie du CNRS, Universite J. Fourier et Institut Laue Langevin, France;
  - ✓ ZENIT Zentrum fur Innovation und Technik Duisburg, Germany;
  - ✓ Laboratoire de Cristallographie du CNRS, Universite J. Fourier et Institut Laue Langevin, France;
  - ✓ Science Academy from Moldova.
  - ✓ Faculteit der Werktuigbouwkunde, Universiteit Twente, Netherlands
  - ✓ Fraunhofer Institute for Reliability and Microintegration (IZM Munich, Germany;
  - ✓ MicroTEC Gesellschaft für Mikrotechnologie GmbH, Germany;
  - ✓ Technical University Poznan, Poland;
  - ✓ Bar Ilan University, Ramat, Israel;
  - ✓ ENVIPARK, Clean NT Centre, Italia;

- ✓ Liege University- Biomaterials Centre (CEIB), Belgium;
- ✓ Institutul Politehnic din Torino, Italia;
- ✓ Sileziana University of Tehnology, Katovice, Polonia;
- ✓ Liege University, Belgium;
- ✓ Institute for Metal and Technology, Ljubljana, Slovenia;
- ✓ ISQ, Portugalia;
- ✓ Cantabria University, Spain;
- ✓ INESCO Ingenieros S.L., Spain.
- ✓ Max-Planck Institut für Mikrostruktur Physik, Berlin, Germany
- ✓ Institute of Electronic Structure and Laser, Foundation for Research and Technology, Hellas, Greece.
- ✓ Fachbereich Physik, Universität Osnabrück, Germany,
- ✓ Landolt-Börnstein Springer Verlag, Berlin, Germany
- ✓ Institute of Metallurgy of the Ural Division of the Russian Academy of Sciences, Ekaterinburg, Russia
- ✓ MicroMaterials Center, Fraunhofer IZM Berlin, Germany
- ✓ Politechnic University Milano, Italy.

- hiring young researchers:
  - ✓ 8 young graduated people hired at INCDIE ICPE-CA in the 1st Reporting Period.
  - ✓ 2 young gradated people were hired at INCDIE ICPE-CA in the 2nd Reporting Period.
  - ✓ 8 young pople hiered in the 1st Reporting Period are supported also in the 2nd Reporting Period.
  - ✓ 3 young graduated people were hired at INCDIE ICPE-CA in the 3rd Reporting Period

- On-line and on-paper subscriptions scientific journals/books, open electronic library.
  - ✓ almost entirely Springer Link journal data base – on-line access.
  - ✓ 6 journals Science Direct – on-line access
  - ✓ The on-line subscriptions was renewed yearly
  - ✓ 11 volume set of Encyclopedia – on paper
  - ✓ 1 software commissioned and installed.
  - ✓ new e-library configured
  - ✓ The submission for bandwidth 4M was renewed yearly.
  - ✓ The activities concerning the access to the newest information will be continued and sustained over the end of the project.

❖ *Deviations from the project work programme, and corrective actions taken/suggested: identify the nature and the reason for the problem, identify contractors involved*

- There have been no deviations or corrective actions taken or suggested.

❖ *List of deliverables, including due date and actual/foreseen submission date (Table 1)*

Table 1: Deliverables List

Del. no.	Deliverable name	Work package no.	Date due	Actual/ Forecast delivery date	Estimated indicative person-months *)	Used indicative person-months *)	Lead contractor
D3	Training report and brief descriptions of scientific network.	WP2	April '08	April '08	22	20	1
D4	Written Report about new scientific journals and books.	WP2	April '06	April '06	3	3	1
D5	Intranet access to the e-library: access report.	WP2	April '06	April '06	3	3	1

***) if available**

Table 2: Milestones List

Milestone no.	Milestone name	Work package no.	Date due	Actual/Forecast delivery date	Lead contractor
M3	On-line and on-paper subscriptions scientific journals/books, Open electronic library.	WP2	April '07	April '07	1
M5	Scientist training abroad	WP2	April '08	April '08	1
M6	Visiting fellows.	WP2	April '08	April '08	1
M7	Hiring and promoting young researchers	WP2	April '08	April '08	1

M3: The objective has been fulfilled. The submission for bandwidth 4M was renewed. The on-line subscriptions were renewed. The activities concerning the access to the newest information will be continued and sustained over the end of the project.
M5: Until the end of 3rd reporting period 34 - young researchers were trained abroad.
M6: Until the end of 3rd reporting period 32 – visiting fellows. As a result, more links with European academic and research media – opportunities for enhanced networking.
M7: The objective has been met through hiring more 3 young graduated people and promoting young researchers to apply for national research grants. Until the end of 3rd reporting period 13 – young graduated people hired.

WP3: Development of research strategies.

❖ *Work package objectives and starting point of work at beginning of reporting period*

The objectives of the 3rd WP are to disseminate the research results: scientific, technical and technological; to promote technology transfer for industry and to improve the joint RDI activities with Romanian Universities.

❖ *Progress towards objectives – tasks worked on and achievements made with reference to planned objectives, identify contractors involved*

Only INCDIE ICPE-CA has been involved in this work.
These objectives have been met through:

- attendance of researchers to Conferences:
  - ✓ attendance to 30 abroad conferences and workshops:
  - ✓ attendance to 10 domestic conferences and workshops:

- organized Workshops and Conferences:
  - ✓ 7 Workshops;
  - ✓ 4 Conferences.
- attendance to National Exhibitions.
  - ✓ 2 attendance to National Exhibition TIB' 2005, TIB'2006;
  - ✓ One attendance of INCDIE ICPE-CA at Research Exhibition organized and finaced by Romanian Research Ministry in the frame of TIB'2007, October 2-6, 2007, Bucharest, Romania;
- specific problems identification and strategies for involvement of in EC FP:
  - ✓ Were organized 27 round tables at Institute site with participants from: University Centers, Research Institutes and Industrial Companies.
  - ✓ the round tables were dedicated to scientific cooperation, technological transfers, participation in EC FP projects, as result:
    - o 2 FP7 projects awarded,
    - o 1 project awarded, European consortia, in the frame of COST Programm and
    - o 2 project proposals in the frame of **E.ON Research Initiative**: E.ON International Call for research Grant Proposal 2008 – Application of nanotechnology in the Energy Business;
    - o 3 technological transfers to SC ROFEP SA, to SC ROSEAL SA and one towards a spin-off company SC ROMNEOMAG SRL.
    - o The ECOMAT ICPE-CA Technology and Business Incubator developed.
    - o Developing tools for investment in research through Romanian Technological Platform EuMaT-Ro is represented by prof. Wilhelm Kappel in EuMaT Steering Committee.
    - o Participation in consortia with Universities and SMEs in the frame of National Research Programm – INNOVATION; projects leads by SMEs:
      - ❖ 3 projects in consortia with: SC MICROELECTRONIA (SME), UPB Bucharest and INCDIE ICPE-CA;
      - ❖ 2 projects in consortia with: SC ROSEAL SA (SME), Romanian Acxademy – Timisoara branch and INCDIE ICPE-CA.

❖ *Deviations from the project work programme, and corrective actions taken/suggested: identify the nature and the reason for the problem, identify contractors involved*

- There have been no deviations or corrective actions taken or suggested.

❖ *List of deliverables, including due date and actual/foreseen submission date (Table 1)*

Table 1: Deliverables List

Del. no.	Deliverable name	Work package no.	Date due	Actual/Fore cast delivery date	Estimated indicative person-months *)	Used indicative person-months *)	Lead contract or
D6	Written Report about attendance of scientists to Conferences with copies of presented papers	WP3	April '08	April '08	24	24	1
D7	Proceedings of organized conferences and workshops	WP3	April '08	April '08	39	39	1
D8	Short report about attendance to exhibitions	WP3	April '08	April '08	20	15	1
D9	Report about scientific partnerships with Universities.	WP3	April '08	April '08	10	10	1

D10	Report about round tables and their impact upon scientific cooperation, technological transfers, participation in EC FP projects	WP3	April '08	April '08	40	40	1
D11	Short written report about completion of the meeting (round table room)	WP3	April '06	April '06	8	8	1
D12	Functional e-journal on the website of the Institute	WP3	April '06	April '06	6	6	1

***) if available**

Table 2: Milestones List

List all milestones, giving date of achievement and any proposed revision to plans.

Milestone no.	Milestone name	Work package no.	Date due	Actual/Forecast delivery date	Lead contractor
M4	Round table room	WP3	April '06	April '06	1
M8, M10	Attendance to National and International conferences	WP3	April '08	April '08	1
M9	Organizing workshops and conferences	WP3	April '08	April '08	1
M11	National exhibition Higher scientific level, proposals for joint research work, connection to the industry More opportunities for technological transfer	WP3	April '08	April '08	1
M12	Specific problem identifications and round tables	WP3	April '08	April '08	1

M4: The objective has been fulfilled. Round table room completed and operational.
M8, M10: Until the end of 3rd Reporting period 47 scientific researchers disseminated findings at 24 Conferences.
M9: The objective has been met through 9 Workshops organized and 4 Conferences.
M11: The objective has been fulfilled through:

- 2 FP7 projects awarded,
- 1 project awarded - COST Programm
- 2 project proposals **- E.ON Research Initiative**
- 3 technological transfers.
- 1 Technology and Business Incubator developed.
- 5 projects - National Research Programm – INNOVATION - projects leads by SMEs.

M12: Until the end of 3rd Reporting period 27 round tables organized. Developing tools for investment in research through Romanian Technological Platform EuMaT-Ro. The Romanian Technological Platform is represented by prof. Wilhelm Kappel in the European Technological Platform EuMaT Steering Committee.

Section 3 – Consortium management

The objective of project management is to coherently watch all milestones to achieve the aim of the proposal. Appropriate management framework linking together all the project components and maintaining communications with the Commission.

Management structure of the project:

The Project Coordinator, (PC)	Directly responsible for the Reports send to EC: • 3 reports to the EC and final Report. ➢ Oversee the promotion of gender equality in the project; ➢ Establish and exercise processes to revise the project strategic plan regularly, incorporating progress in efforts as goals are achieved.
Co-Project Coordinator, (Co-PC)	➢ responsible for day-to-day Workpackages management; ➢ holds responsibility for the planning and direction of the overall project program, with the Coordinator of each Workpackage;
Workpackage Coordinator, WpCs	➢ produce a six months plan of work for his WP; ➢ will produce an internally six month reports on its results and progress.

The objective of WP has been achieved so far as the project progress.

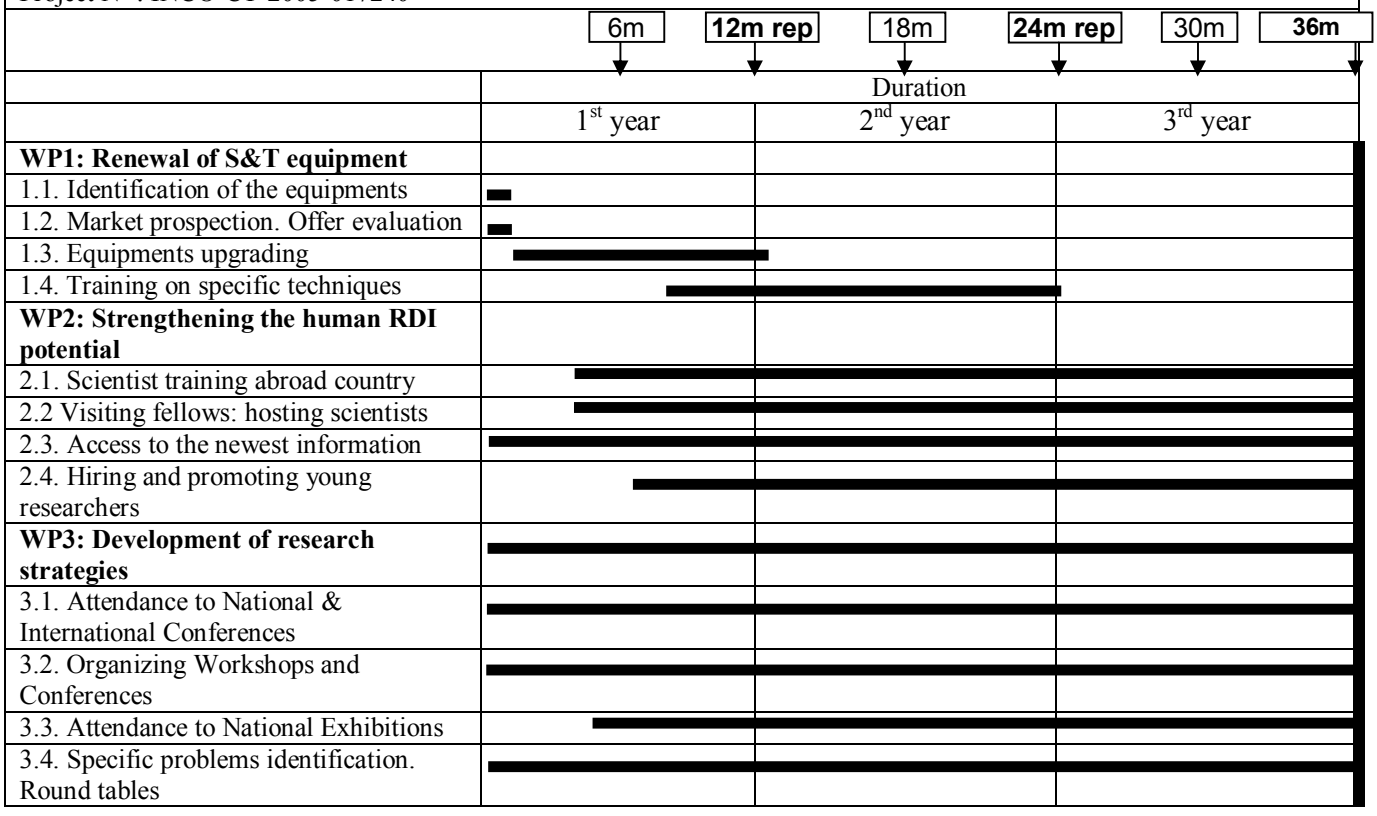
- The Project Review Committee (PRC) have been meet periodically to review and assess project progress, including the proper prioritization of time, effort, and resources to be applied.
- The management and co-ordination activities were performed through the committee.

Management of resources: The coordinator received and allocated the grant from the Commission. The Coordinator was responsible for the administration of expenses and ensured that the administration was audited according to standards accepted by the Commission.

Workpackages – Plan and Status Barchart

Acronym: INDUMAT

Project N° : INCO-CT-2005-017240



Section 4 – Other issues

Projects which were subject to requirements and/or recommendations concerning ethical issues.

During contract negotiations there were no actions concerning ethical issues in the project's work agreed.
However the activity developed in the frame of INDUMAT proposal conforms to current legislation and regulation in Romania, EU and UEN declaration and conventions.
The management of INCDIE ICPE-CA, has a tradition in equal opportunities between women and men.

Annex I – Plan for using and disseminating the knowledge

Section 1 - Exploitable knowledge and its Use

This is not applicable to this project since doesn't produce exploitable knowledge.

Section 2 – Dissemination of knowledge

- The management of the project INDUMAT take in account that in the "knowledge – era" research should be considered together with education and industry. So there are included actions referring to links with the academic world in the way of preparing of the young students to be involved in research area. Permanent contacts with industry help to spread awareness and knowledge to develop new technologies leading to new work places. In this way were performed training stages for the people involved in these new activities.
- The significant scientific findings, achieved by INCDIE ICPE-CA from important research project were disseminated at international conferences and by publication in the open literature including through INCDIE ICPE-CA's e-Journal of Romania Electrical Engineering aimed to transform it into an international e-journal.

Knowledge generated	Use	Dissemination
• specific problems identification • strategies for involvement of in EC FP • Drafted tools for investment in research	meetings with University Centers, Research Institutes and Industrial Companies Workshop specially dedicated for developing the activities in the frame of EuMaT Platform in Romania	Public: web, printed

Section 3 - Publishable results

This is not applicable to this project, since doesn't produce exploitable knowledge.