



# **EUDEM2**

**The EU in Humanitarian Demining-  
State of the Art on HD Technologies, Products,  
Services and Practices in Europe**  
IST-2000-29220

## **EUDEM2 Technology Survey**

### **Humanitarian Demining related RTD in Central and Eastern Europe**

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VUB, B**

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EPFL, CH**

**Gdansk University of  
Technology  
GUT, PL**

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## 1. Introduction

This report has been created within the framework of the EUDEM2 *Technology Survey* activities ([www.eudem.info](http://www.eudem.info)). Its goal is to identify and detail demining related R&D activities in Central and Eastern (CE) Europe, as a first step towards drawing a complete picture of the research potential in these countries, a number of which will soon become new EC member states.

The report contains a listing with short descriptions of research centres and commercial companies, situated in 12 CE European countries, which are working on existing or innovative technologies partly or fully useful for advanced Humanitarian Demining (HD) applications.

These institutions have been localised using previous knowledge, publication research and active Internet based research. The following approach has been adopted:

1.1 Searching the Web sites of Universities and Scientific Institutions, and identifying those directly or indirectly involved in HD related research and development, in (*Country based Internet search*):

- ⌘ Belarus
- ⌘ Bosnia and Herzegovina
- ⌘ Czech Republic
- ⌘ Hungary
- ⌘ Latvia
- ⌘ Lithuania
- ⌘ Poland
- ⌘ Romania
- ⌘ Russia
- ⌘ Slovak Republic
- ⌘ Slovenia
- ⌘ Ukraine

1.2 Browsing the Internet to find and identify institutions involved in R&D on the following technologies (*Thematic Internet search*):

- ⌘ Metal detectors
- ⌘ Canine detection
- ⌘ Bio-sensors
- ⌘ Neutron activation detection
- ⌘ Magnetic field sensing
- ⌘ GPR including UWB solutions
- ⌘ Microwave (RADAR) detection
- ⌘ Infrared-NIR-TIR imaging
- ⌘ Active seismic-acoustic
- ⌘ Resonance detectors
- ⌘ Chemical detection
- ⌘ Charged particle detectors

1.3 *Analysing scientific publications* (conference proceedings, journals) related to detection, sensing and visualisation techniques and technologies, using the same criteria as above (*Scientific literature search*).

1.4 Analysing with more attention Web sites related to *Non-Destructive Testing* (NDT) and *military research*, in particular with the aim of identifying dual-use principles and systems.

1.5 Gathering E-mail addresses of potential interest and sending a short description of the EUDEM2 project with request for feedback (*Direct mailing*).

A Glossary contained in the Appendix completes the report, which consists of 67 individual entries.

DISCLAIMER: The references contained in this report are not all-inclusive and do not represent endorsement of the corresponding companies, institutions or systems.

## 2. List of Countries

All entries all listed in alphabetical order, first at the country level, then at the organisation level.

### BELARUS

Organisation Name:	<b>Institute of Engineering Cybernetics</b>
Type:	Scientific
Address:	Minsk, Belarus
Contact Person:	<b>V. P. Tuzlukov</b> E-mail: <a href="mailto:tuzluk@newman.bas-net.by">tuzluk@newman.bas-net.by</a>
Web site:	<a href="http://www.bas-net.by">www.bas-net.by</a>
General Description:	RADAR signal processing by employment of generalised algorithms for the detection of mines and mine-like targets. Detection of deep water mines and mine-like targets using the polarity coincidence generalised detector. Use of the statistical model of gravity for analysis of non-homogeneity in earth surface.
Publications:	<ol style="list-style-type: none"><li>1. Tuzlukov, V.P., Detection of Signals with Stochastic Parameters by Employment of Generalized Algorithm, Proc. of SPIE's Intern. Symposium</li><li>2. Symposium on AeroSense: Aerospace/Defense Sensing, Simulation and Controls, Orlando, Florida, 1997, USA, vol. 3079.</li><li>3. Tuzlukov, V.P., Noise Reduction by Employment of Generalized Algorithm, Proc of the 13th Intern. Conf. on Digital Signal Processing, 1997, (OSP97), Santorini, Greece.</li><li>4. Tuzlukov, V.P., Detection of Signals with Random Initial Phase by Employment of Generalised Algorithm, Proc. of the SPIE's Intern. Symposium on Optical Science, Engineering and Instrumentation, San Diego, 1997, California, USA, Vol. 3163.</li><li>5. Tuzlukov, V.P., Generalized Detection Algorithm for Signals with Stochastic Parameters, Proc of the 1997 Intern. Geoscience and Remote Sensing Symposium (IGARSS'97), Singapore.</li><li>6. Tuzlukov, V.P., Tracking Systems for Stochastic Signal Processing by Employment of Generalized Algorithm, Proc. of the First Intern. Conf. on Information, 1997, Communications and Signal Processing, Singapore</li></ol>
Organisation Name:	<b>United Institute of Informatics Problems National Academy of Sciences of Belarus</b>
Type:	Scientific
Address:	Belarus
Contact Person:	<b>A.M. Crot; P.P. Tkachova</b>
Web site:	
General Description:	Signal processing for acoustics/seismic sensors with fast measurement of Wiener kernels
Publications:	

## BOSNIA and HERZEGOVINA

Organisation Name: **Mine Action Center**  
Type: Governmental  
Address: BHMACH  
Marshall Tito Barracks BFPO 543  
Sarajevo BiH7000,  
Bosnia & Herzegovina  
Phone: +387 71 667310;  
Fax: +387 71 667311  
Contact Person: E-mail: [bhmak@bhmac.org](mailto:bhmak@bhmac.org)  
Director: [filip\\_f@bhmac.org](mailto:filip_f@bhmac.org)  
Web site: <http://www.bhmac.org/>  
General Description: Detection and Clearance, Mine Risk Education, Other  
Research and Technology, Survey and Mapping  
Publications: n.a.

## BULGARIA

Organisation Name: **Artillery and Air-Defence - Military Academy**  
Type: Scientific/Military  
Address: Bulgaria  
Contact Person: **A. D. Lazarov, Ch. N. Minchev**  
Web site: <http://www.pv-ma.bg/>  
General Description: ISAR image reconstruction applying the Kalman approach  
to linear frequency modulated signals  
Publications: 1. Lazarov, A.D.; Minchev, Ch. N., ISAR image  
Reconstruction and auto focusing procedure over phase  
modulated signals, Proc. Radar 2002, IEE Radar, Sonar and  
Navigation Professional Network, Edinburgh, 15-17  
October.

## CZECH REPUBLIC

Organisation Name: **Advanced Technology Group Praha**  
Type: Scientific/Commercial  
Address: Nad Kazankou 11  
171 00 Praha 7  
Czech Republic  
Phone + 420-2-6880111  
Fax +420-2-6271206  
Contact Person: **F. Peterka, PhD**  
Email: [fpet@mbox.vol.cz](mailto:fpet@mbox.vol.cz)  
Web site: <http://srs.dl.ac.uk/arch/cost-g8/> , <http://www.atg.cz/>  
General Description: COST ACTION G8: Non-destructive analysis and testing of  
museum objects  
Publications: 1. Peterka, F., Neutron Radiography and its role in  
protection of historical monuments, Proc. of 15<sup>th</sup> World  
Conference on Non-Destructive Testing 15-21 October

2000, Rome

2. Peterka, F., Memorandum of Understanding for the implementation of a European Concerted Research Action designated as COST Action 524 "Neutron imaging techniques for the detection of defects in materials"

Organisation Name: **Department of Technical Cybernetics and War Robotics  
Military Academy**  
Type: Scientific  
Address: K308 – PS 13  
Kounicova 65  
612 00 Brno  
Czech Republic  
Contact Person: **J.Kacer**  
Phone +420-5/41183558  
E-mail: [Jerry@cs.vabo.cz](mailto:Jerry@cs.vabo.cz)  
Web site: <http://www.vabo.cz/>  
General Description: Data fusion (neural networks) for mine detection based on a set of sensors: MD, GPR, IR, MECH (needles, hardness), and ultrasound.  
Publications: 1. Kacer J., Zpracovani znalosti pri robotickiem odminovani/Robots for mine detection and clearance, Humusoft: Conference MATLAB 2000, Praha  
2. Kacer J., Agregace znalostí senzoričkého systému pro robotické odminování, Humusoft: Conference MATLAB 2001, Praha

Organisation Name: **Department of Theory And Technology of Explosives  
Faculty of Chemical Technology - University of  
Pardubice**  
Type: Scientific  
Address: Palackého 1930,  
Pardubice,  
Czech Republik  
Fax: +420-40-511890  
Contact Person: **S. Zeman, Dr. Sc.**  
E-mail: [svatopluk.zeman@upce.cz](mailto:svatopluk.zeman@upce.cz)  
Phone: +420 46 603 8503  
Web site: <http://www.upce.cz/~kttv/en/>  
General Description: Publications: 1. V. Zeman, J. Kočí and S. Zeman: Electric Spark Sensitivity of Polynitro Compounds: Part II. A Correlation with Detonation Velocity of some Polynitro Arenes. HanNeng CaiLiao (Chin. Energetic Mat.) 7, 127-132, 1999  
2. V. Zeman, J. Kočí and S. Zeman: Electric Spark Sensitivity of Polynitro Compounds: Part III. A Correlation with Detonation Velocity of some Nitramines. HanNeng CaiLiao (Chinese Energetic Materials) 7, 172-175 (1999).

Organisation Name: **Energetic Materials Consulting**  
Type: Industrial  
Address: Palackého 1930,  
Pardubice,  
Czech Republik  
Fax: +420-40-511890

Contact Person: **B.Vetlicky**  
[b.vetlicky@seznam.cz](mailto:b.vetlicky@seznam.cz)

Web site: n.a.

General Description: Detection of explosive materials

Publications:

1. Vetlický B., J. Chládek: Underwater Incineration of Heterogenous Propellants. Journal of Propulsion and Power 15, 1999, 925-926
2. Per-Anders Persson Vetlicky B., Explosives Detection and Decontamination of the Environment , NATO Advanced Research Workshop, Prague, 1997, Czech Republic, November 11-13
3. Vetlický B. and Krupka M.: Response Fire Extinguishment System Based on Military Equipment. Proceedings of the NATO Advanced Res. Workshop: Transfer to Civil Application of Military Explosives on Prevention of Hazardous Fires and Explosions, Novosibirsk, May 1998.

Organisation Name: **Geofyzika a.s. General Geophysics Division**  
Type: Scientific/Commercial  
Address: Jecna 29a  
621 00 Brno  
Czech Republic  
Phone : +420(5)7264 272  
Fax : +420(5)4122 5089

Contact Person: **J.Hruska**  
E-mail : [hruska@gfb.cz](mailto:hruska@gfb.cz)

Web site: <http://www.gfb.cz/>

General Description: High sensitive metal detector for field use in military pyrotechnics, civil engineering, waste material localisation and archaeology, designed for detection of magnetic and electrically conductive non-magnetic targets, buried or in shallow water. Automatic compensation of varying ground conductivity (auto track) high suppression of disturbing signals. Three coils with different diameters are included in the standard set

Publications: 1. Hruska J. and Hubatka F., Landslides Monitoring by a High-Performance Ground Penetrating Radar System, GPR 2000, 8<sup>th</sup> Intern. Conf. on GPR, 23-26 May, Australia  
2. Hruska, J., Cermak J., and Sustek S., Mapping tree root systems with ground penetrating radar, Tree Physiology 1999, 19: 125-130.

Organisation Name: **Independent Advisor & Expert in Explosives**  
Type: Private Consultant  
Address: Sulova 1247  
156 00 Praha 5  
Zbraslav  
Czech Republic

Contact Person: **J. Chladek**, PhD  
E-mail: [chladekmail@seznam.cz](mailto:chladekmail@seznam.cz)

Web site: <http://www.chladek.cz/>

General Description: The Mine resistant (blast protective) boots model ZEMAN AM (ant-mine) offers several levels of protection

Publications: 1. Chladek J., Research & Development of Mine resistant Shoes, 1998, Report  
2. Chladek J., Czech Mine Boot Development, lecture on annual conference, World EOD Foundation, 1999, Sandown Park Conference Centre, UK

Organisation Name: **“VUPCH” Research Institute of Industrial Chemistry Synthesis**  
Type: Industry  
Address: 53217 Pardubice-Semtin,  
Czech Republic  
Phone: +420-40-682-5740

Fax: +420-40-682-2935

Contact Person: **P. Mostak**  
E-mail: [mhoracek@synthesia.cz](mailto:mhoracek@synthesia.cz)

Web site: <http://www.synthesia.cz/english/index.html>

General Description: EDT for plastic explosives.

Publications: 1. M. Horacek, P. Mostak & M. Stancl, Detection of plastic explosives, ISEE Proceedings Abstracts, 2001, International Society of Explosives Engineers

Organisation Name: **ZEMAN Shoe Ltd.**  
Type: Industrial  
Address: 765 02 Otrokovice  
Czech Republic

Contact Person: **L.Zeman**  
E-mail: [zemanl@zeman.cz](mailto:zemanl@zeman.cz)

Web site: <http://www.zeman.cz>  
<http://www.zemanshoe.com>

General Description: Mine Resistant Boots. The task of demining is highly dangerous. Deminers and humanitarian workers are at risk to injury every time they step onto a minefield. Jiri Chladek and the Zeman Company have developed a special boot to reduce risks when stepping on landmines.

Publications: 1. Strnad J., Majzlík J., Determination of resistance level of Blast Protective Boots mod. Zeman AM, Uni. of Pardubice, 2001, Dept. of Theory and Technology of Explosives  
2. ITC Zlin, Final Report No. 72330219/2001

## HUNGARY

Organisation Name: **“ATOMKI” Institute of Nuclear Research**  
Type: Scientific  
Address: P.O. box 51  
H- 4001 Debrecen  
Hungary  
Tel. + 36 52 417 266  
Fax + 36 52 416 181

Contact Person: Kiss Arpad Zoltan, PhD  
E-mail: [azkiss@atomki.hu](mailto:azkiss@atomki.hu)

Web site: <http://www.atomki.hu/>

General Description: COST ACTION G8: Non-destructive analysis and testing of museum objects

Publications: 1. [Borbély-Kiss I.](#), [Gesztelyi T.](#), [Elekes Z.](#), [Rajta I.](#), [Koltay E.](#), [Kiss Á. Z.](#): *Investigation of classical ring-stones and their imitations*. 5th International Conference on Non-Destructive Testing, Micro analytical Methods and Environmental Evaluation for Study and Conservation of Works of Art. ART'96. Budapest, Hungary, September 24-28, 1996. Proceedings. Budapest

- Organisation Name: **ER KAR Co. NDT Laboratory**  
Type: Scientific/Commercial  
Address: Budapest  
P.O. Box 67  
1601 Hungary  
Contact Person: **F. Fücsök**, Eur. Ing.  
Web site: <http://www.mta.hu/>  
General Description: Publications:  
1. Ferenc Fücsök, Experiences of the training of NDT personnel, WCNDT '96, New Delhi  
2. Ferenc Fücsök, Experiences and Problems of a Manual Ultrasonic Round – Robin Test, Int. Conf. MATEST'97
- Organisation Name: **Institute of Nuclear Research - Hungarian Academy of Sciences**  
Type: Academic  
Address: 4001-Debrecen  
Pf. 105  
Hungary  
Contact Person: **G. Csikai**, PhD  
E-mail: [csikai@falcon.atomki.hu](mailto:csikai@falcon.atomki.hu)  
Phone: +36 52 415 222  
Fax: +36 52 315 087  
Web site: <http://www.atomki.hu/>  
General Description: Possibilities for the location and identification of concealed objects are discussed. A special emphasis is focused on the detection of buried land-mines. Results obtained by using the so-called backscattering techniques and neutron-gamma gauge will be illustrated with respect to spatial resolution, depth sensitivity, stand-off sensitivity and detection limit. Advantages and limitations of prompt gamma, fast neutron transmission and backscattering methods will be presented together with the results obtained by Monte Carlo calculations using different MCNP codes.  
Publications: 1. Csikai J., "Detection of anti-personnel landmines using neutrons", Seminar, University of Padova
- Organisation Name: **“KFKI” Atomic Energy Research Institute**  
Type: Scientific  
Address: Budapest  
P.O. Box 49  
H-15-25 Hungary  
Phone: (361) 392 2298  
Fax: (361) 392 2299  
Contact Person: **Sz. Torok**, PhD  
E-mail: [sztorok@sunserv.kfki.hu](mailto:sztorok@sunserv.kfki.hu)  
Web site: <http://www.kfki.hu>  
General Description: Bulk explosive detection with nuclear methods

- Publications:
1. Sz. Török, J. Lábár, M. Schmeling, R. Van Grieken, X-ray Spectrometry, Anal. Chem. 1998, 70, 495R-517R
  2. S. Kurunczi, Sz. Török, J. Beal, Mercury collection from gas phase for XRF analysis, X-ray Spectrum, 1999, 28, 352-356.
  3. Alföldy, Sz. Török, R. Bergmann, P. Szabó, E. Láng, Composition, size distribution and deposition in the human lung of therapeutic cave aerosol J. Aerosol Sci. 1999, 30, S703-S704.
  4. Szalóki, Sz. B. Török, Chul-Un Ro, J. Injuk and R. Van Grieken, X-ray Spectrometry, Anal. Chem. 2000, 72, 211-233R.
  5. J. Osán, Sz. Török, J. Fekete and A. Rindby, Case Study of the Emission from Heavy-Oil Fueled Hungarian Power Plant, *Energy & Fuels* 2000, 14, 986-993.
  6. J. Osán, C.-U. Ro, I. Szalóki, A. Worobiec, J. de Hoog, P. Joos and R. Van Grieken  
Methodology for light element analysis of individual aerosol particles using thin-window EPMA  
*Journal of Aerosol Science* 31 (2000) S765-S766
  7. R. Van Grieken, K. Gysels, S. Hoornaert, P. Joos, J. Osán, I. Szalóki and A. Worobiec  
Characterisation of individual aerosol particles for atmospheric and cultural heritage studies  
*Water, Air and Soil Pollution* 123 (2000) 215-228
- Organisation Name: **“RMKI” - Research Institute for Particle and Nuclear Physics**
- Type: Scientific
- Address: Konkoly Thegeu 29-33  
H- 1121 Budapest  
Hungary  
Tel. + 36 1 3959289  
Fax + 36 1 3959151
- Contact Person: **Z. Szokefalvi-Nagy, PhD**  
E-mail: [sznagy@rmki.kfki.hu](mailto:sznagy@rmki.kfki.hu)
- Web site: <http://www.rmki.kfki.hu/>
- General Description: COST ACTION G8: Non-destructive analysis and testing of museum objects
- Publications:

## LATVIA

- Organisation Name: **Radar Systems Inc.**
- Type: Industrial
- Address: Pavasara Street 5-119,  
Riga, LV-1082,  
Latvia

Phone/fax: (+371)-7141041  
Contact Person: **M. Tokarev**  
Phone: (+7) 095 9391872  
E-mail: [tokarev@iname.com](mailto:tokarev@iname.com)  
E-mail: [radsys@radsys.lv](mailto:radsys@radsys.lv)  
Web site: <http://www.radsys.lv/>  
General Description: Radar Systems, Inc. was established in 1989 on the basis of Aviation Subsurface Radiolocation Problem Laboratory (ASRPL), Riga Aviation University ([RAU](#)), to become ASRPL's legal successor in research and development for: subsurface sounding techniques. hardware and software development for non-destructive environmental monitoring, engineering geological surveys, thickness measurements of sea and fresh water ice, etc.

Publications: n.a.

Organisation Name: **Riga Aviation University – RAU**  
Formerly Transport and Telecommunication Institute  
Type: Scientific  
Address: 1 Lomonosova str.,  
Riga  
LV-1019 Latvia  
Phone: +371-7100650  
E-mail: [admin@tsi.lv](mailto:admin@tsi.lv)

Contact Person: **K. Valery**  
Phone: +371 7100523  
Fax: +371 7100660  
E-mail: [kutev@tsi.lv](mailto:kutev@tsi.lv)  
Web site: <http://www.rau.lv/>  
General Description: The methods and facilities of subsurface radar sounding for geological, archaeological and ecological applications are investigated. Ground Penetrating Radar (GPR) can be used as main technical devices for many practical works in this area. Limitations as well as the advantages of the radar subsurface sounding methods over the traditional geophysical methods are investigated in detail by mean of solving the following problems: mathematical modelling of GPR; new methods for the digital processing of GPR signals; analysis of conditions for GPR signals propagation in different soils and development of the concrete demands for practical applications of GPR instrumentation. Examples of such applications are: radar measurements of snow cover height, freshwater ice thickness and ice accumulation to forecast floods; determination of lakes and rivers degree of silting; efficient detection of leakage in pipe-lines and underground storages.

Publications: 1.V.A.Kutev, S.Molokov and D.M.Emmrich  
Magnetohydrodynamic flow in a rectangular duct in a cusped magnetic field. 1999, Physics of Fluids, Vol. 11, Issue 4, pp. 931-939.

## POLAND

- Organisation Name: **Department of Biomedical Engineering  
Gdańsk University of Technology**
- Type: Scientific
- Address: Narutowicza 11/12  
80-952 Gdańsk  
Poland  
Phone: +48 58 347 1384  
Fax: +48 58 347 1757
- Contact Person: **J. Wtorek, PhD**  
E-mail: [jaolel@biomed.eti.pg.gda.pl](mailto:jaolel@biomed.eti.pg.gda.pl)
- Web site: <http://www.med.eti.pg.gda.pl/>  
<http://www.pg.gda.pl/>  
<http://www.eti.pg.gda.pl/>
- General Description: Electroimpedance tomography
- Publications:
1. J. Wtorek, L. Józefiak, A. Poliński, J. Siebert, An Averaging Two-Electrode Probe for Monitoring Changes in Myocardial Conductivity Evoked by Ischemia, IEEE Trans. Biomed. Eng., vol. 49(3), str. 240-246, 2002.
  2. A. Bujnowski, J. Wtorek, B. Truyen, An active electrode for EIT based on mixed measurement technique, Proc. 2 EMBEC, Vienna, 2002
  3. A. Mączyński, J. Wtorek, A ring-based probe for determination of the skin conductivity, Proc. 2 EMBEC, Vienna, 2002
  4. Wtorek J., Jozefiak L., Penkowski M., Kochanska B., Truyen B., and Bottenberg P., Detection of dental lesions by means of immittance measurements – an in vitro study, Proc. 2 EMBEC, Vienna, 2002
- Organisation Name: **Division of Nuclear Quadrupole Resonance  
Faculty of Physics  
Spectroscopy - Adam Mickiewicz University**
- Type: Scientific
- Address: Coll. Physicum  
ul. Umultowska 85  
61-614 Poznań  
Poland
- Contact Person: **M. Ostafin, PhD**  
Email: [ostifnqr@main.amu.edu.pl](mailto:ostifnqr@main.amu.edu.pl)  
Phone: +48 061-8273-255
- Web site: <http://www.amu.edu.pl/>  
<http://main.amu.edu.pl/>
- General Description: Nitrogen NQR Detection of Explosives
- Publications: M.Ostafin, B.Nogaj, Detection of Plastic Explosives in Luggage with <sup>14</sup>N Nuclear Quadrupole Resonance Spectroscopy, Applied Magnetic Resonance, 2000, 19, 571-578

Organisation Name: **“IF-FM” Photo physics and Laser Lab. - Polish Academy of Sciences**  
Type: Scientific  
Address: Fiszera 14,  
80-952 Gdansk,  
Poland  
Phone: +48 583411271  
Fax: +48 583416144  
Contact Person: **G. Sliwinski**  
E-mail [gerards@imp.gda.pl](mailto:gerards@imp.gda.pl)  
Web site: <http://www.pg.gda.pl/>  
General Description: NDT, COST ACTION G8: Non-destructive analysis and testing of museum objects  
Publications: 1. Frankowski M, Sliwinski G., Schwentner N. TE Investigation of doped inert gas solids for cryogenic lasers Journal Of Low Temperature Physics 2001, Vol 122, Iss 3-4 PP 443-449

Organisation Name: **Institute of Electronics - Silesian Technical University**  
Type: Scientific  
Address: Gliwice,  
Poland  
Contact Person: **P. Szyngiera, MSc**  
E-mail: [szyna@boss.iele.polsl.gliwice.pl](mailto:szyna@boss.iele.polsl.gliwice.pl)  
Web site: <http://www.polsl.gliwice.pl/rau/einfo.html>  
General Description: Development of methods for the identification of metal objects by electromagnetic means  
Publications: 1. Szyngiera P. Bezkontaktowy pomiar konduktywności metali nieferromagnetycznych, XXXII Międzyuczelniana Konferencja Metrologów, 2000, Rzeszów

Organisation Name: **Institute of Geological Sciences - Wroclaw University**  
Type: Scientific  
Address: pl. M. Borna 9  
50-204 Wroclaw  
Phone: +(48)+(71)+3759297  
Fax.: +(48)+(71)+3759371  
Contact Person: **A. Szyrkiewicz, PhD**  
E-mail: [aszyn@ing.uni.wroc.pl](mailto:aszyn@ing.uni.wroc.pl)  
Web site: <http://www.ing.uni.wroc.pl/~aszyn/gpr.html>  
General Description: Ground Penetrating Radar, Identification of Metal Objects by Electromagnetic Means  
Publications: Szyrkiewicz A, GPR monitoring of the flood-bank/levees. In: Noon, D.A., Stickley, G.F., Longstaff, D. (Eds): “Eighth International Conference on Ground Penetrating Radar”, 2000, SPIE, vol. 4084: 85-90. Bellingham, Washington, USA.

Organisation Name: **Institute of Optoelectronics**  
**Military University of Technology**  
Type: Scientific/Military  
Address: 2 Kaliskiego str.  
00-908 Warsaw  
Poland  
Phone: +48 22 683 77 17  
Fax: +48 22 666 89 50  
Contact Person: **W. Skrzeczanowski, PhD,**  
E-mail: [wskrzecz@wat.waw.pl](mailto:wskrzecz@wat.waw.pl)  
Web site: <http://www.wat.waw.pl/>  
General Description: NDT, COST ACTION G8: Non-destructive analysis and testing of museum objects  
Publications: 1. Skrzeczanowski, W., Measurement capabilities of a compact thermal type standard of energy unit of pulse laser radiation, Proceedings of SPIE Volume: 4517  
2. Skrzeczanowski W., Laser wavelength meter: analysis of measurement uncertainties, pp.182-188, Proceedings of SPIE Volume: 3745

Organisation Name: **Military Institute of Armament Technology**  
Type: Scientific/Military  
Address: Zielonka  
Poland  
Phone: +48-22-6833403  
Fax.: +48-22 7718308  
Contact Person: **W. Swiderski, PhD**  
E-mail: [zak\\_13@witu.mil.pl](mailto:zak_13@witu.mil.pl)  
Web site: n.a  
General Description: NDT, IR thermal detection of buried mines  
Publications: 1. P. Pregowski, W. Swiderski, T. Walczak, K. Lamorski, Buried mine and soil temperature prediction by numerical model, Proc. of Conf. 15th World Conference on Nondestructive Testing, 15-21 October 2000, Roma (Italy)  
2. P. Pregowski, W. Swiderski, Detection of minefields using IR sensing and time-domain treatment method, Proc. of Conf. Detection Technologies for Mines and Mine-like Targets, SPIE, 1997 Vol. 3079, p.791-800.  
3. P.Pregowski, W Swiderski, Application of IR thermography for detection of the buried mines – prediction and procedures, Proc. of MATEST'99, Cavtat, 1999, Oct., 227-232.  
4. P.Pregowski, W Swiderski, W.T. Walczak, K. Lamorski, "Buried mine and soil temperature prediction by numerical model", Proc. of Conf. Detection Technologies for Mines and Mine-like Targets, SPIE AeroSense Conf., Orlando, 2000, 25-27 April.

Organisation Name: **Pregowski InfraRed Services**  
Type: Scientific/Commercial  
Address: ul. Zachodzącego Słońca 36  
01-495 Warszawa  
Phone/Fax: (22) 6383909  
Phone: (22) 6854330  
E-mail: [pirs@pirs.pl](mailto:pirs@pirs.pl)  
Contact Person: **P. Pręgowski, PhD**  
E-mail: [p.pregowski@pirs.pl](mailto:p.pregowski@pirs.pl)  
Web site: <http://www.pirs.pl/>  
General Description: The elaborated model enables the simulation of prediction as the basis for experiments, which otherwise would be difficult or impossible to perform. Obtained results in the quantitative form, explain the causes of our troubles in determining what is what and why just the particular spot marks the mine – proving a few weak sides of the thermographic method. Even small differences in soil moisture and/or density distributions can become a source of false alarms. These relationships occur particularly strong for low moisture and high density of soil. The importance of these effects decreases when diurnal amplitude of temperature changes increases. To increase the model's accuracy in representation of the real-world, some modernisation, as e.g. more detailed description of the surface, feature influences and conductivity of water vaporising or energy changes caused by water vaporising and condensation of vapour in the soil are planned. In the present state, elaborated models are unsuitable for the field application.  
Publications: 1. P. Pregowski, W. Swiderski, T. Walczak, K. Lamorski, Buried mine and soil temperature prediction by numerical model, Proc. of Conf. 15th World Conference on Nondestructive Testing Roma (Italy) 15-21 October 2000  
2. P. Pregowski, W. Swiderski, - "Detection of minefields using IR sensing and time-domain treatment method", Proc. of Conf. Detection Technologies for Mines and Mine-like Targets, 1997, SPIE Vol. 3079, p.791-800.  
3. P. Pregowski, W Swiderski "Application of IR thermography for detection of the buried mines - prediction and procedures", Proc. of MATEST'99, Cavtat, 1999, Oct., 227-232  
4. P.Pregowski, W Swiderski, W.T. Walczak, K. Lamorski, "Buried mine and soil temperature prediction by numerical model", Proc. of Conf. Detection Technologies for Mines and Mine-like Targets, SPIE 2000, AeroSense Conf., Orlando, 25-27 April

## ROMANIA

Organisation Name: **“IFIN”- Institute of Atomic Physics Cyclotron Laboratory**  
Type: Scientific  
Address: Atomistilor 1  
Bucharest Romania  
Phone: +401 7807040 ext. 4401  
Fax: + 401 4231701  
Contact Person: **B. Constantinescu**  
E-mail: [bconst@sun3vme.ifa.ro](mailto:bconst@sun3vme.ifa.ro)  
Web site:  
General Description: NDT, COST ACTION G8: Non-destructive analysis and testing of museum objects  
Publications:

## RUSSIA

Organisation Name: **2<sup>nd</sup> Central Scientific Research Institute, Ministry of Defence of Russian Federation**  
Type: Scientific/Military  
Address: 170005 Tver  
Contact Person: **V. Kaplun**  
Web site:  
General Description: Development of a database for radio-location (RADAR) of explosives  
Publications: V. Kaplun, S. Nesterov  
Methods of Building a Database of Radiolocation  
Characteristics of Explosive Substances for their Localization and Identification,  
“Detection of Explosives and Landmines”  
NATO Science Series-II. Mathematic, Physics and Chemistry-Vol.66  
Kluwer Academic Publishers, 2002, ISBN1-4020-0692-6

Organisation Name: **15<sup>th</sup> Central Scientific Research Institute, Ministry of Defence of Russian Federation**  
Type: Scientific/Military  
Address: 143430 Nahabino, Krasnogorsk, Moscow region, Russia  
Contact Person: **R.R. Iliutschenko**  
Web site:  
General Description: R&D for complex landmine detection and clearing  
Publications: 1. R. R. Iliutschenko  
The High Efficiency Complex for Detection of Landmines  
“Detection of Explosives and Landmines”  
NATO Science Series-II. Mathematic, Physics and Chemistry-Vol.66  
Kluwer Academic Publishers, 2002, ISBN1-4020-0692-6

- Organisation Name: **“Almaz” JSC Central Design Bureau**  
Type: Scientific  
Address: Leningradsky prospect 80, 125178 Moscow  
Contact Person: **J.A.Konyaev, A.S.Rumyantsev**  
Web site:  
General Description: Involved in the development and the production of a novel mine clearing vehicle  
Publications: The high efficiency complex for detection of landmines (co-authors)
- Organisation Name: **Centre of Instrument Engineering for Geophysics and Ecology - Russian Academy of Sciences, Siberian Branch**  
Type: Scientific  
Address:  
Contact Person: I.A. Buryakov  
Web site:  
General Description: EDT - Devices for discovering explosives by chromatographic vapour analyse  
Publications: 1. I.A. Buryakov  
Detection of Explosive Vapors in Ambient Air by Ion Nonlinear Drift Spectrometry Method, “Detection of Explosives and Landmines”  
NATO Science Series-II. Mathematic, Physics and Chemistry-Vol.66  
Kluwer Academic Publishers, 2002, ISBN1-4020-0692-6
- Organisation Name: **Cherenkov Laboratory of Lebedev Physical Institute Russian Academy of Science**  
Type: Scientific  
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E-mail: [raevsky@saturn.lpi.troitsk.ru](mailto:raevsky@saturn.lpi.troitsk.ru)  
Web site:  
General Description: Bulk explosive detection with GAMMA ray activation of explosives  
Publications: 1. A.I.Karev, V.G.Raevsky  
The High Efficiency Complex for Detection of Landmines, “Detection of Explosives and Landmines”  
NATO Science Series-II. Mathematic, Physics and Chemistry-Vol.66  
Kluwer Academic Publishers, 2002, ISBN1-4020-0692-6

Organisation Name: **Department of Experimental Nuclear Physics  
Saint-Petersburg State Technical University**  
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195251 St.-Petersburg  
Russia  
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Phone: (812) 510-12-47, 552-7531  
Fax: (812) 552-75-31  
Web site: <http://www.unilib.neva.ru/>  
General Description: R&D for the detection and destruction of explosives by high energy beams e.g. LASERS  
Publications: N.A. Ivanov, V.I. Novikov  
Radiation Beam Technologies in Detection and Destruction of Explosives  
“Detection of Explosives and Landmines”  
NATO Science Series-II. Mathematic, Physics and Chemistry-Vol.66  
Kluwer Academic Publishers, 2002, ISBN1-4020-0692-6

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Phone: +7-0112-442108(H)  
Fax: +7-0112-469805(U)  
Web site: <http://www.albertina.ru/>  
General Description: R&D projects related to land mine detection: 540 articles, 40 patents  
Publications: 1. V.S.Grechishkin, E.M.Shishkin, Org. Magn. Resonance, 5, 1-4, 1973.  
2. E.O.Azisev, V.S.Grechishkin et al, Izvest. AN SU, Physics, 42, 2182-2185, 1978.  
3. V.S.Grechishkin, R.V.Grechishkina, Izvest. Vuzov, Fizika, N12, 109-110, 1998; N8, 92-93, 2001.  
4. V.S.Grechishkin, Z.Naturforsch. Part a: Physics, 45a, N3-4, 559-564, 1990; Appl. Phys. A55, 505-507, 1992,  
5. V.S.Grechishkin, Appl. Phys. A58, 63-65, 1994; Izv. Vuzov, Fizika, N12, 107-109, 1994.  
6. V.P.Anferov, V.S.Grechishkin et al, Nuclear spin resonance, LGU, 1990.  
7-10. V.S.Grechishkin, N.Ja,Sinjavsky, UFN, 189, N10, 195-218, 1993, N4, 167, 413-427, 1997.  
11. V.S.Grechishkin, 16th Congress NQR, Leipzig, p-16, 1999; NQR-DLME, Ljubljana, p.38-40, 2000.

12. V.S.Grechishkin, R.V.Grechishkina, NQR mine-detectors, patent N2157002, 27.09.2000;
13. V.S.Grechishkin, V.V.Korostelev, Device for detection NQR in explosives and narcotics in baggage, patent N2128832, 10.04.1999;
14. V.S.Grechishkin et al, System NQR for control of baggage and detection of mines, patent N2165104, 10.04.2001.
15. V.S.Grechishkin et al, Izvestija Vuzov, Fizika, N6, 101-105, 2000.
16. V.S.Grechishkin, Nuclear Quadrupole Interactions in Solids, M.Science, 1973, 264 p.
17. V.S.Grechishkin, O.P.Selchikhin, The problems of Mathematical and Physical sciences, 78-79, 2001, Kaliningrad.
18. V.S.Grechishkin, Detection of explosives and landmines, v.66, 217-225, 2002, Netherlands.
19. V.S.Grechishkin et al, Optica I Spectroscopia, 94, N3, 582-585, 2002.
20. V.S.Grechishkin et al, Izv.Vuzov, Fizika, N6, 92-94, 2002.
21. V.S.Grechishkin et al, Optics and Spectroscopy, 94, N3, 392-394, 2003.
22. V.S. Grechishkin  
The Problem of Military TNT in NQR Mine Detector  
"Detection of Explosives and Landmines"  
NATO Science Series-II. Mathematic, Physics and Chemistry-Vol.66  
Kluwer Academic Publishers, 2002, ISBN1-4020-0692-6

Organisation Name: **"Energia" - Korolev Rocket and Space Corporation**  
Type: Research Centre  
Address: Moscow  
Russia  
Contact Person: **A. G. Chernokalov**  
Web site: <http://www.energia.ru/english/>  
General Description: Detecting of anti-tank mines having dielectric sheath under curved rough surface by ground penetrating radar with long pulse duration  
Publications:

Organisation Name: **Engineering Institute "VNIITRANSMASH" - Joint-stock company "MUROMTEPLOVOZ"**  
Type: Scientific/Industrial  
Address:  
Contact Person: V.A. Kemurdjian, A.L. Kemurdjian, A.V Osipov, A.A Lobanov, I.Raevsky  
Web site:

General Description:	Involved in the development and the production of a novel mine clearing vehicle
Publications:	Application of Mobile Vehicles for Humanitarian De-Mining (co-authors)
Organisation Name:	<b>GPR Laboratory</b>
Type:	<b>Saint-Petersburg State Technical University</b>
Address:	Scientific Polytechnicheskaya st., 29 195251St.-Petersburg Russia
Contact Person:	<b>E. L. Svechnikov</b>
Web site:	E-mail: <a href="mailto:radar@radio.stu.neva.ru">radar@radio.stu.neva.ru</a> <a href="http://www.unilib.neva.ru/">http://www.unilib.neva.ru/</a> <a href="http://radio.rphf.spbstu.ru/">http://radio.rphf.spbstu.ru/</a>
General Description:	Working on ground penetrating radars (GPR) since 1980's laboratory has developed several types of high-resolution subsurface radars. Current efforts are concentrated on improving wide band antennas and transceivers, introducing more effective signal processing, development of more effective and user-friendly software, collecting more theoretical and experimental information about microwaves' propagation in different materials, forward and inverse scattering problems, combined use of GPR with other non-destructive evaluation methods (metal detectors, resistivity method). Besides designing new radar systems, we also investigate interesting objects using existing equipment (mainly different FMCW and pulse GPR). This work gives us better understanding of customers' needs and capabilities/limitations of different methods. We also give consultations on the problems of non-destructive evaluation of different constructions. One of the latest developments of our laboratory not related to GPR work was a millimetre wave scanning radar sensor for robotic automation and vehicle collision avoidance.
Publications:	Short-Range High-Resolution FMCW GPR
Organisation Name:	<b>Institute for Problems in Mechanics</b>
Type:	Scientific
Address:	
Contact Person:	<b>D. Klimov., S. Kalichenko, V. Odintsov</b>
Web site:	
General Description:	Main problems for field and special demining
Publications:	

Organisation Name: **Joint Institute for Nuclear Research (JINR)**  
Type: Scientific  
Address: Joliot-Curie 6  
141980 Dubna  
Moscow region  
Russia  
Contact Person: **V.M. Bystritsky, A.I. Ivanov, M.G. Sapozhnikov**  
Web site: <http://www.jinr.ru/>,  
<http://www.jinr.dubna.su/plan/ptp-2003/e371045.htm>  
General Description: EDT with associated particle imaging technique (Bulk explosive detection with nuclear methods)  
Publications:

Organisation Name: **Krylov Shipbuilding Research Institute**  
Type: Scientific/Commercial  
Address: 1961158 St. Petersburg  
Contact Person: **V.S. Kyzuyurov, A. I. Laykin**  
Web site:  
General Description: EDT using X-Ray systems  
Publications: V.S. Kyzuyurov, A. I. Laykin  
The Operational Experience and Prospect of Development of the Devices for Detection of Explosive Substances by the Thermal Neutron Radiation Analysis Method, "Detection of Explosives and Landmines"  
NATO Science Series-II. Mathematic, Physics and Chemistry-Vol.66  
Kluwer Academic Publishers, 2002, ISBN1-4020-0692-6

Organisation Name: **MEDPASS**  
Type: Scientific/Commercial  
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193315, St-Petersburg  
Phone: 7-812-589-38-89  
Contact Person: E-mail: [scippnw@glasnet.ru](mailto:scippnw@glasnet.ru)  
Web site:  
General Description: Second International Conference on Landmines in Russia, CIS and the Caucasus Tbilisi, Georgia Organised by the Russian Committee of "IPPNW";  
Protective anti-mine suites and boots with modifiable level of protection for military and humanitarian demining, tested by MOD of Russia  
Publications:

Organisation Name: **Ministry of Defence of the Russian Federation - MO RF**  
Type: Governmental/Military  
Address: 103160 Moscow K-160  
Location: Znamenka str., 19 or Myasnitskaya 37 (Reception Office)

- Tel: (095) 296-8900 (information)  
n.n.
- Contact Person:  
Web site: <http://rian.ru/mo/mo.htm>
- General Description: The Ministry of Defence of the Russian Federation was established on March 16, 1992 by the Edict of the President. Russian MoD is a successor to and caretaker of the MoD of the former USSR with respect to troops, units and property, inherited by Russia after break-up of the USSR
- Publications: n. a.
- 
- Organisation Name: **“MIPT” - Moscow Institute of Physics and Technology**  
Type: Scientific/Commercial  
Address: Moscow  
Russia
- Contact Person: **S. V. Druchinin**  
E-mail: [sergey@wave.mipt.ru](mailto:sergey@wave.mipt.ru)  
Web site: <http://www.mipt.ru/eng/index.esp>
- General Description:  
Publications: A.G. Chernokalov, \*S.V. Druchinin, \*\*S.V. Izyumov (Korolev Rocket Prospecting" Russia. Ltd.) Detecting of anti-tank mines having dielectric sheath under curved rough surface by ground penetrating radar with long pulse duration
- 
- Organisation Name: **Novosibirsk State Technical University - NSTU**  
Type: Scientific  
Address: street: K. Marks, 20  
630092 Novosibirsk  
Russia
- Contact Person:  
Web site: <http://www.nstu.ru/>
- General Description:  
Publications: Soliton (solitary) wave theory and inverse-scattering method
- 
- Organisation Name: **Omsk State Pedagogical University**  
Type: Scientific  
Address: Naberezhnaya Tukhachevskogo, 14, 644099, Omsk, Russia.
- Contact Person: **P.P. Bobrov**  
E-mail: [common@omsk.edu](mailto:common@omsk.edu)  
Web site: <http://www.omgpu.omsk.edu/en/>
- General Description:  
Publications: 1. W. V. Dmitriev, I. M. Schetkin, Searching dielectric heterogeneities in the ground by using noise generator signals  
2. W. V. Dmitriev, I. M. Schetkin, Detection of dielectric inclusions in the ground by using magnetic loops

- Organisation Name: **“Project” Scientific Research Institute**  
Type: Scientific/Commercial  
Address: Mokrushina, 9, Tomsk  
634045 Russia  
Phone: +7 (3822) 722654  
Contact Person: **Y. Potilitsin**  
Web site:  
General Description: Developer and producer of mine detectors (non-linear locators?)  
Publications:
- Organisation Name: **Remote Sensing Laboratory,  
R&D Institute of Applied Mathematics and Mechanics,  
Bauman State Technical University**  
Type: Scientific  
Address: Bauman State Technical University; Russia  
Contact Person: **S.I. Ivashov**  
E-mail: [sivashov@rslab.ru](mailto:sivashov@rslab.ru)  
Web site: <http://www.english.rslab.ru/>  
General Description: R&D for remote sensing in humanitarian demining  
Publications:
- Organisation Name: **Research Institute of Special Materials**  
Type: Scientific/Commercial  
Address: 194044 St. Petersburg  
Contact Person: **A.A. Shemaev**  
Web site:  
General Description: R&D for the detection and destruction of explosives by high energy beams e.g. LASERS  
Publications: A.A. Shemaev  
Radiation Beam Technologies in Detection and Destruction of Explosives,  
“Detection of Explosives and Landmines”  
NATO Science Series-II. Mathematic, Physics and Chemistry-Vol.66  
Kluwer Academic Publishers, 2002, ISBN1-4020-0692-6
- Organisation Name: **Sa T.C. Ratec Ltd.**  
Type: Commercial  
Address: Okjabrskay Quay  
193079 St. Petersburg  
Contact Person: **Y.I. Olshansky, S.G. Fillippov**  
Web site:  
General Description: R&D for application of the TNA technique and development of instrumentation  
Publications: Y.I. Olshansky, S.G. Fillippov  
The Operational Experience and Prospect of Development

of the Devices for Detection of Explosive Substances by the Thermal Neutron Radiation Analysis Method, "Detection of Explosives and Landmines" NATO Science Series-II. Mathematic, Physics and Chemistry-Vol.66 Kluwer Academic Publishers, 2002, ISBN1-4020-0692-6

Organisation Name: **Saint-Petersburg State Technical University**  
Type: Scientific  
Address: Polytechnicheskaya st., 29  
195251 St.-Petersburg  
Russia  
Contact Person: **A.B. Gousov**  
E-mail: [gousov@radio.stu.neva.ru](mailto:gousov@radio.stu.neva.ru)  
Web site: <http://www.unilib.neva.ru/>  
General Description: Low cost mm-wave electronically scanned antennas are developed for various civilian and military applications. The antenna is based on a planar integrated ferrite travelling wave structure and is controlled by the magnetising of ferrite elements. The mathematical model of antenna and the software for calculations were developed; experimental antenna samples were tested at frequency bands 35-37 and 75 GHz, as well as 11-12 GHz. The antenna has low profile design with thickness about half-wavelength. The beam control is very simple: 1D-scanning is provided by 1 control current only, for 2D-scanning 2 control currents are enough. Depending on antenna aperture the beam width can be from 50 to 10, insertion loss 2-4 dB.  
Publications: Cherepanov A.S., Zaitsev E.F., Electronically Scanned MMW Antennas

Organisation Name: **Scientific Research Institute of Steel**  
Type: Scientific  
Address: Dubninskaya str, 81"а", Moscow,  
127411 Russia  
Phone +7 (095) 4857070  
Fax +7 (095) 4854395  
Contact Person:  
Web site:  
General Description: Protective clothes for humanitarian demining  
Publications:

Organisation Name: **"SNIIP" Scientific-engineering Centre - Minatoma Russia**  
Type: Scientific/Commercial  
Address: Raspletina Str. H.5, 123060 Moscow  
Phone: (095) 748-52-26, Fax: (095) 943-00-63  
Contact Person: E-mail: [support@sniip.ru](mailto:support@sniip.ru)

Web site:	<a href="http://www.sniip.ru/">http://www.sniip.ru/</a>
General Description:	Development of landmine detectors
Publications:	
Organisation Name:	<b>“TsNIIRES JSC” - The Central Research Institute of Radio &amp; Electronic Systems</b>
Type:	Scientific/Commercial
Address:	69, Prospect Mira, P.O. Box 101 Moscow, 129626 Russia
Contact Person:	<b>S. Ivashov</b> Head of the Remote Sensing Laboratory E-mail: <a href="mailto:sivashov@rslab.ru">sivashov@rslab.ru</a>
Web site:	<a href="http://www.rslab.ru/english/">http://www.rslab.ru/english/</a>
General Description:	GPR and MD landmine sensor, MMW-radiometer On the basis of the developed method was designed and is started in pilot production the RASCAN radar, intended for sounding of building designs with the high resolution
Publications	Makarenkov V.I., Razevig V.V., Sablin V.N., Sheyko A.P., Vasilyev I.A. Wide-span systems of mine detection
Organisation Name:	<b>United Institute of Geology, Geophysics and Mineralogy Academy of Sciences, Novosibirsk Branch</b>
Type:	Scientific
Address:	pr. Universitetskii, 3 630090, Novosibirsk Russia
Contact Person:	<a href="mailto:tych@uiggm.nsc.ru">tych@uiggm.nsc.ru</a> E-mail: <a href="mailto:root@majak.nsk.su">root@majak.nsk.su</a>
Web site:	<a href="http://www-sbras.nsc.ru/">http://www-sbras.nsc.ru/</a> , <a href="http://www.noan.nstu.ru/">http://www.noan.nstu.ru/</a>
General Description:	The applied gas analyser kit provides operative search and identification of explosives and drugs. The gas analyser kit involves two types of instruments: a gas chromatograph (GC) and an ion non-linearity drift spectrometer (INLDS). This provides operative search and identification of explosives and drugs. The GC is based on two new technologies: a multi-capillary column and a non-recombination detector. INLDS is based on a radically new method of separating and analysing trace gas ions at sub-part-per billion concentration. Tests have been completed. Engineering mock-ups have been designed. The project aim is the development of a working prototype, production of small batch, and preparations for a pilot production.
Publications:	Identification of explosives and drugs by means of the gas analysers.

Organisation Name: **V. G. Khlopin Radium Institute**  
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E-mail: [ISTC1050@atom.nw.ru](mailto:ISTC1050@atom.nw.ru)  
Web site: <http://www.atom.nw.ru/rie/structs.htm>  
General Description: nuclear physics research, GPR and neutron based EDT  
Publications: 1. Kuznetsov A., Smirnov V., Vakhtin D., Vorobjev, I.  
Detection of Explosives and Landmines Methods and Field  
Experiences  
2. D.N. Vakhtin, A.V. Evsenin, A.V. Kuznetsov, O.I.  
Osetrov, M.D. Zubkov  
Decision-Taking Procedure for Explosives Detection by  
Nuclear Technique  
3. V.P. Averianov, A.S. Vishneveski, I.B. Vorobiov, M.D.  
Zubkov, A.V. Kuznetsov  
Explosives Localisation and Pre-Identification Based on  
UHF Electromagnetic Waves  
4. M.N. Chubarov  
A Neutron-Gamma Method and Apparatus Detection and  
Identification of Hidden Objects in Brick (Concrete) Walls  
“Detection of Explosives and Landmines”  
NATO Science Series-II. Mathematic, Physics and  
Chemistry-Vol.66  
Kluwer Academic Publishers, 2002, ISBN1-4020-0692-6

Organisation Name: **“Vector” Scientific organization**  
Type: Scientific  
Address:  
Contact Person: **Y. Berezuev**  
Web site:  
General Description: Test filters of explosives vapour for dog training.  
Publications:

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E-mail: [upsysekr@savba.sk](mailto:upsysekr@savba.sk)  
Web site: <http://www.ui.savba.sk/>  
General Description: Scepko, P.  
Publications: Humanitarian Demining – a Big Challenge for Robotic Research
- Organisation Name: **Institute of Measurement Science - Slovak Academy of Sciences**  
Type: Scientific  
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SK 842 19, Bratislava,  
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Phone: +421 2 5477 5949 ext. 2504 ,  
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Web site: <http://www.um.savba.sk/>  
General Description: COST ACTION G8: Non-destructive analysis and testing of museum objects  
Publications: n.a.
- Organisation Name: **Institute of Physics - Slovak Academy of Sciences**  
Type: Scientific  
Address: Dubravska c. 9,  
SK-84228 Bratislava,  
Slovak Republik  
Phone: 421 2 59410535  
Fax: 421 2 54776085  
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E-mail: [fyzihlav@savba.sk](mailto:fyzihlav@savba.sk)  
Web site: <http://www.fu.savba.sk/>  
General Description:  
Publications:
- Organisation Name: **WAY INDUSTRY, a.s.**  
**Bozena Minesweeping unit**

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Address: WAY INDUSTRY, a.s.  
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Fax: +421-2-43 337 529  
Web site: <http://www.way-industry.sk/>  
General Description: Mechanical mine-clearance equipment  
Publications: n.a.

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Web site: <http://www.ijs.si/>  
General Description: Development of physical-mathematical methods for the  
signal processing of NQR signals  
Publications: Seliger J., Arčon D., Apih T., Cevc P., Trontelj Z., Žagar V.  
H – <sup>14</sup>N Double Resonance and Polarisation Enhanced <sup>14</sup>N  
NQR of TNT from Land Mine

## UKRAINE

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E-mail: [diascarb@public.ua.net](mailto:diascarb@public.ua.net)  
Web site:  
General Description: Passive Mine Detection by Estimation of Statistical  
Properties of the Natural Electromagnetic  
Background Radiation  
Publications: n.a.

Organisation Name: **Institute of Plasma Electronic and New Methods of Acceleration - National Scientific Centre "Kharkov Institute of Physics and Technology"**

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Web site: <http://www.kipt.kharkov.ua/Baseinfeng/ipenma.html>

General Description: A device of relativistic microwave electronics - virtod is designed and constructed, allowing a wide-range control of the parameters of high-power microwave radiation of ultra-short pulse duration (USPD) with a 160-600 MW pulse power in the operating-frequency range between 3 and 10 GHz.

Publications: V. Kaplun, S. Nesterov  
Methods of Building a Database Radiolocation Characteristics of Explosive Substances for their Localization and Identification, "Detection of Explosives and Landmines" NATO Science Series-II. Mathematic, Physics and Chemistry-Vol.66 Kluwer Academic Publishers, 2002, ISBN1-4020-0692-6

Organisation Name: **Institute for Radio Physics & Electronics - National Academy of Sciences of Ukraine**

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Web site: <http://ire.up2.org/>

General Description: Radio-Physics and Microwave Electronics Solid-State Physics and Biophysics Radio-Wave Propagation and Remote Sensing of Earth from Airborne and Space-Borne Platforms

Publications: G.P. Pochanin, I.E. Pochanina, Pulse Radiation of a Curved Loaded Wideband Dipole (Ukraine, Kharkov, IRE NASU) 4<sup>th</sup> Intern. Conf. Antennas, Radiocommunication Systems & Means (ICARSM'99) May 25-28, 1999, Voronezh, Russia

Organisation Name: **Lviv State University**

Type: Scientific

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Web site:	<a href="http://www.polynet.lviv.ua/Institute/ITR/">http://www.polynet.lviv.ua/Institute/ITR/</a>
General Description:	The main field of the research includes Radar (active) and Radiometry (passive) Imaging Systems with high longitudinal and spatial resolution object recognition on the base of the obtained image. The main activity is focused on the systems functioning from the fixed position in space (i.e. without aperture synthesis) using antenna beam scanning. To increase longitudinal and spatial resolution the applied spectral analysis methods and inverse ill-posed problem solution approach are mainly used in research.
Publications:	<ol style="list-style-type: none"><li>1. I.Prudyus, S.Voloshynovskiy, T.Holotyak. Computer modeling of radiometry imaging system with different types of antennas //Proceeding of Second International Conference "Antenna Theory and Techniques", May 20-22, 1997, Kyiv, Ukraine, pp.101-103.</li><li>2. I. Prudyus, S.Voloshynovskiy, R.Kuzjakiv. Comparative analysis of continuum antennas and sparse arrays with signal processing in remote sensing problem //Proceeding of Second International Conference "Antenna Theory and Techniques", May 20-22, 1997, Kiev, Ukraine, pp.183-185</li></ol>
Organisation Name:	<b>Ukrainian Society for NDT - USNDT</b>
Type:	Scientific
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Web site:	<a href="http://www.usndt.com.ua/">http://www.usndt.com.ua/</a>
General Description:	Ukrainian Society for Non-Destructive Testing and Technical Diagnostics is a professional creative public organisation uniting on a voluntary basis scientists, researchers, engineers, workers, lecturers and students working or studying in the field of non-destructive testing and technical diagnostics (NDT&TD).
Publications:	n.a.

### **3. Summary and Conclusions**

This report, created within the framework of the *EUDEM2 Technology Survey* activities ([www.eudem.info](http://www.eudem.info)), has to be understood as a first step towards drawing a complete picture of the demining related R&D potential in Central and Eastern European countries, a number of which will soon become new EC member states.

A significant number of activities, which can be partly or fully useful for advanced Humanitarian Demining (HD) applications, have been identified and detailed using previous knowledge, publication research, active Internet based research and direct replies (the latter unfortunately in low numbers). (Emphasis has been put, in this first release, in documenting lesser known R&D efforts rather than already well known ones, such as those carried out in Croatia.)

It is our hope that this report will help drawing attention to these activities, with the longer term aim of integrating CE countries fully, or at least involving them, into European HD and security related programmes. This is true for the new member states as well as for Russia, in which a total of 29 activities (out of 67), some funded and/or assisted by NATO, are already being carried out.

## Appendix

### Glossary

<b>APL</b>	Anti-Personnel Landmine
<b>CIS</b>	Community of Independent States
<b>EC</b>	European Community
<b>EDT</b>	Explosive Detection Technique
<b>FMCW</b>	Frequency Modulated Continuous Wave
<b>GHz</b>	Giga Hertz
<b>GPR</b>	Ground Penetrating RADAR
<b>HD</b>	Humanitarian Demining
<b>IR</b>	Infra Red
<b>IST</b>	Information Society Technologies
<b>MD</b>	Metal Detector
<b>MECH</b>	Mechanical
<b>MoD</b>	Ministry of Defence
<b>MW</b>	Micro Wave
<b>n. a.</b>	Not applicable
<b>NDT</b>	Non-Destructive Testing
<b>NIR</b>	Near Infra-Red
<b>n. n.</b>	Not named
<b>RTD</b>	Research and Technology Development
<b>TD</b>	Technical Diagnostics
<b>TIR</b>	Thermal Infra-Red
<b>UWB</b>	Ultra Wide-Band
<b>USSR</b>	Union of Socialist Soviet Republics

The abbreviations commonly used, as well as those only having a clear meaning in the original language (and therefore placed within brackets), are not included.