
Nonprofit organization
«Nizhny Novgorod Cancer Research Center Foundation»

# Investment project «Creation of a high-technology medical center «Nizhny Novgorod Cancer Research Center (NNCRC)»

**SUMMARY**

Nizhny Novgorod
June 2006

## Table of Contents

## 1. Main initiators

- Institute of Applied Physics of the Russian Academy of Sciences (IAP RAS);
- Nizhny Novgorod State Medical Academy (NNSMA);
- Russian Federal Nuclear Center – VNIIEF (RFNC-VNIIEF);
- Nizhny Novgorod State University (NNSU).
- Nizhny Novgorod Banking House (NBD Bank)

## 2. Main idea and attractiveness to investors

***Title***

Investment project for creation of a high-technology medical center «Nizhny Novgorod Cancer Research Center (NNCRC)».

***Type***

It is a comprehensive project to establish and develop a social and innovation infrastructure of regional and federal significance. The project will create institutional conditions to obtain leading positions on the world biomedical market, modernize the healthcare and education systems, facilitate innovations and high-technologies in these areas and increase their accessibility for people.

***Background***

The initial situation in the Nizhny Novrogod region may be characterized by the following factors:

- high rate of cancer morbidity and mortality;
- established medical and scientific schools in Nizhny Novgorod;
- high-tech developments and high scientific potential in the Nizhny Novgorod region;
- scarcity of natural resources in the Nizhny Novgorod region;
- growing need for improved quality and duration of life.

According to estimations made by academician V.Chissov, the Chief Oncologist of the Russian Federation, the situation with cancer in the Nizhny Novgorod Region is among the worst in Russia. Cancer morbidity rate is one of the highest in the Prevolzhsky Federal Region and in Russia (381.0 cancer patients per 100 000 people versus Russia's average of 317.4). There is a shortage of specialized cancer treatment beds in hospitals (over 600 new beds needed). About 40% of cancer patients die within one year after being diagnosed. 80% of diagnostic and treatment equipment needs to be modernized.

Modern oncology has reached impressive results and currently requires new approaches to cancer treatment based on most recent scientific achievements and high-tech methods of early diagnosis and combined treatment.

The scientific and research potential in the Nizhny Novgorod region is unique: Institute of Applied Physics of the Russian Academy of Sciences (IAP RAS), Nizhny Novgorod State University (NNSU), Nizhny Novgorod State Medical Academy (NNSMA), Russian Federal Nuclear Center – VNIIEF (RFNC-VNIIEF) and other scientific, R&D and medical institutions. There are up-to-date developments for early detection and combined treatment of cancer and other diseases. These developments are now being used by the Russian healthcare system and their commercialization is underway abroad. Some of them have no world analogs.

Combined efforts of these institutions may provide easy access to up-to-date cancer treatment, saving lives of thousands of people and returning them to normal activity. In addition, this will improve competitiveness of the Nizhny Novgorod Region and Russia on the rapidly growing market of biomedical technologies, and will give a new impetus to the innovation development in the Nizhny Novgorod Region and Russia as a whole.

The amount of the development and application of biomedical technologies is constantly increasing all over the world. The total turnover of the world's biomedical technology market reaches tens of billions USDs with an annual increase by 2-3 times. In Russia this amount may become comparable with raw material export, provided adequate attention is received from the government and strategic investors.

In October 2004 a nonprofit organization "NNCRC Foundation" was established to implement the innovation project for creation of the high-technology medical center NNCRC. In March 2005 a Close Joint-Stock Company "NNCRC" was founded to work with commercial investors (main founder and share holder is the nonprofit organization "NNCRC Foundation").

***Strong points of the project in the Nizhny Novgorod region***

- Practical integration of high technologies and healthcare including:
  - Early diagnosis using most recent tomographic technologies;
  - Cellular and molecular therapy;
  - Proton radiation therapy.
- Development of social infrastructure of national significance.
- Experience in applying high tech developments to practical medicine in Russia and abroad, e.g., in USA.
- The project is strongly supported by Russian scientific and medical communities, businessmen and official authorities in the Nizhny Novgorod Region.
- It is an interdisciplinary project that is oriented to a comprehensive approach and stage-by-stage implementation in the interests of practical healthcare.
- A network model of interactions between main components of NNCRC ensures integration of social projects with various investment and innovation projects.
- The project promotes interregional and international cooperation.

***Analogs***

In Russia, there are currently no systemic projects that would simultaneously involve healthcare, science, education, high technologies, service and business infrastructure, etc. Foreign analogs of the NNCRC may include the Clinical Center in Cleveland (USA), Cancer Center in Houston (USA), and National Institute of Oncology in Milan (Italy).

***Attractiveness to investors***

The NNCRC project's attractiveness to investors includes the following components:

- *Innovations* – high tech developments and recognized scientific schools in the Nizhny Novgorod Region: bioimaging, cellular and molecular therapy and proton radiation therapy;
- *Medicine* – rendering high-quality medical services;
- *Infrastructure* – covering the whole innovation cycle from idea to application and effectively investing at any commercialization stage;
- *Trends* on the world investment market in the field of high technologies, biotechnology and medicine.

***Necessary requirement***

Active role of the government is essential for successful implementation of the project and participation of commercial investors. This will provide guarantees and lower investment risks.

On March 22, 2006 the Investment Council of the Governor of the Nizhny Novgorod region adopted resolution No.9-2-12 on

- Allocation of land for designing and constructing the NNCRC facilities;
- Joint application for federal budget funding of the project
- Current co-operation between the Government of the Nizhny Novgorod Region and the NNCRC Foundation for project implementation

***Relevance***

The systemic approach to the NNCRC project implementation fits well with the tasks set forth by President Vladimir Putin in 2005-2006:

- taking leading positions on world markets of high technologies;
- diversification of Russian economy and transition to high-tech-based development of the economy;
- modernization of healthcare and education systems with stronger positions of high technologies;
- increased accessibility to state-of-the-art technologies, including high medical technologies in oncology;
- constructing new high tech medical centers in Russian regions.

## 3. Objective, tasks and results of the project

***Main objective***

To provide easy access, high efficiency and good quality of medical healthcare by creating favorable conditions for:

- Cancer prevention and high-quality treatment using state-of-the-art procedures and equipment;
- Development, application and elaboration of new biomedical technologies for early detection and combined treatment of cancer;
- Rendering accompanying services.

***Important tasks***

1) Design and construction of a modern high-tech scientific and medical center including:

- Cancer Clinical Center;
- Proton Therapy Facility;
- Education & Research Center;
- Biomedical Technology Park;
- A system of business, engineering and recreational infrastructure.

2) Creating conditions for continuously generating high-tech innovations based on systemic interactions and well-organized innovation process involving science, education, high technologies and healthcare system, including:

- Early diagnosis using most recent tomographic technologies;
- Cellular and molecular therapy;
- Proton radiation therapy.

3) Integrating social, innovation and investment projects and bringing private investments to NNCRC with the aim, among all, to repay budget and commercial funds allocated to the project.

4) Developing international and interregional cooperation in order to form stable competitive advantages, take leading positions on the world's biotechnology market and actively participate in the formation of new biotechnology markets, due to the following factors:

- Training specialists in new interdisciplinary fields;
- Creating work places and providing adequate work conditions for highly-skilled specialists;
- Concentrating and structuring high-tech developments in one medical research center, thus accumulating attention of leading specialists in biotechnology.

5) Development of an efficient administrative, logistic and financial system for NNCRC operation. This will ensure competitiveness and high quality of cancer treatment services.

***Structure***

A schematic outline of the NNCRC structure is presented in Fig. 2.1. Main interactions of NNCRC components and products turnover are shown in Fig.2.2.

***Tasks of NNCRC components***

1) The logical nucleus of NNCRC is a state-of-the-art Cancer Clinical Center with the following tasks:

- Detection and treatment of cancer using state-of-the-art technologies;
- High-tech services in oncology and other medical areas;
- Creation of an informative and analytical system of early cancer diagnosis and prevention – cancer screening;
- Up-to-date rehabilitation and recovery services and palliative care services;
- Formulating needs in scientific developments;
- Tests and application of new methods and devices;
- Carrying out special projects for new tomography and microscopy methods, cellular and molecular therapy, photodynamical therapy, controlled hyperthermia, etc.

2) Proton Therapy Clinical Facility is a special project of RFNC-VNIIEF (creating accelerators for proton radiation therapy), IAP RAS (use of high-power lasers for proton sources), NNSMA (proton radiation treatment procedures), NNSU (training of specialists in cooperation with NNSMA) and the NNCRC Foundation (organizational support).

The project aims at:

- creating a proton therapy clinical center that would widen the range of medical services the NNCRC will provide to the citizens of the Nizhny Novgorod Region and neighboring regions;
- introducing new services to the market of radiation therapy clinical centers, including sale of proton accelerators, training of personnel and providing methodology for creating such centers.

*Note: In Russia there are only 3 experimental non-medical proton therapy centers and no clinical centers. In the world, 11 photon therapy clinical centers are available with a growing trend to develop and create new clinical centers (9 more will be opened in 2006, totaling 35 clinical centers by 2008). RFNC-VNIIEF is ready to combine efforts of leading Russian institutions working in the field of photon radiation therapy in Moscow, Dubna, Novosibirsk, St-Petersburg and foreign companies.*

3) Education & Research Center will solve the following tasks:

- Conducting interdisciplinary scientific researches and development activities in biomedicine and nanomedicine for healthcare;
- Bringing developments to the stage of practical applications, developing the innovation system in medicine;
- Bringing investments to biomedicine and application of biomedical developments, etc.;
- Training specialists in new and interdisciplinary fields;
- Introducing new training technologies;
- Training high-skilled administrative staff and teams for healthcare and other areas.

4) Biomedical Technology Park is a special project for creating a biomedical technology park that would be closely linked with the Clinical Center and Education & Research Center to form a favorable environment for commercialization of biomedical innovations and application of high medical technologies in healthcare.

Main tasks:

- Development, testing and practical use of a set of organizational, financial, administrative and legal solutions to accelerate and increase the efficiency of commercialization of biotechnology innovations;
- Bringing investments to biomedicine development and applications, etc.

5) Business, engineering and recreational infrastructure will aim at providing high-quality conditions for efficient work of the NNCRC as a whole and all its components and rendering services to patients, clients, partners, Nizhny Novgorod citizens and visitors including organization and running forums, conferences, exhibitions and seminars in oncology and biomedicine.

**NNCRC structure**

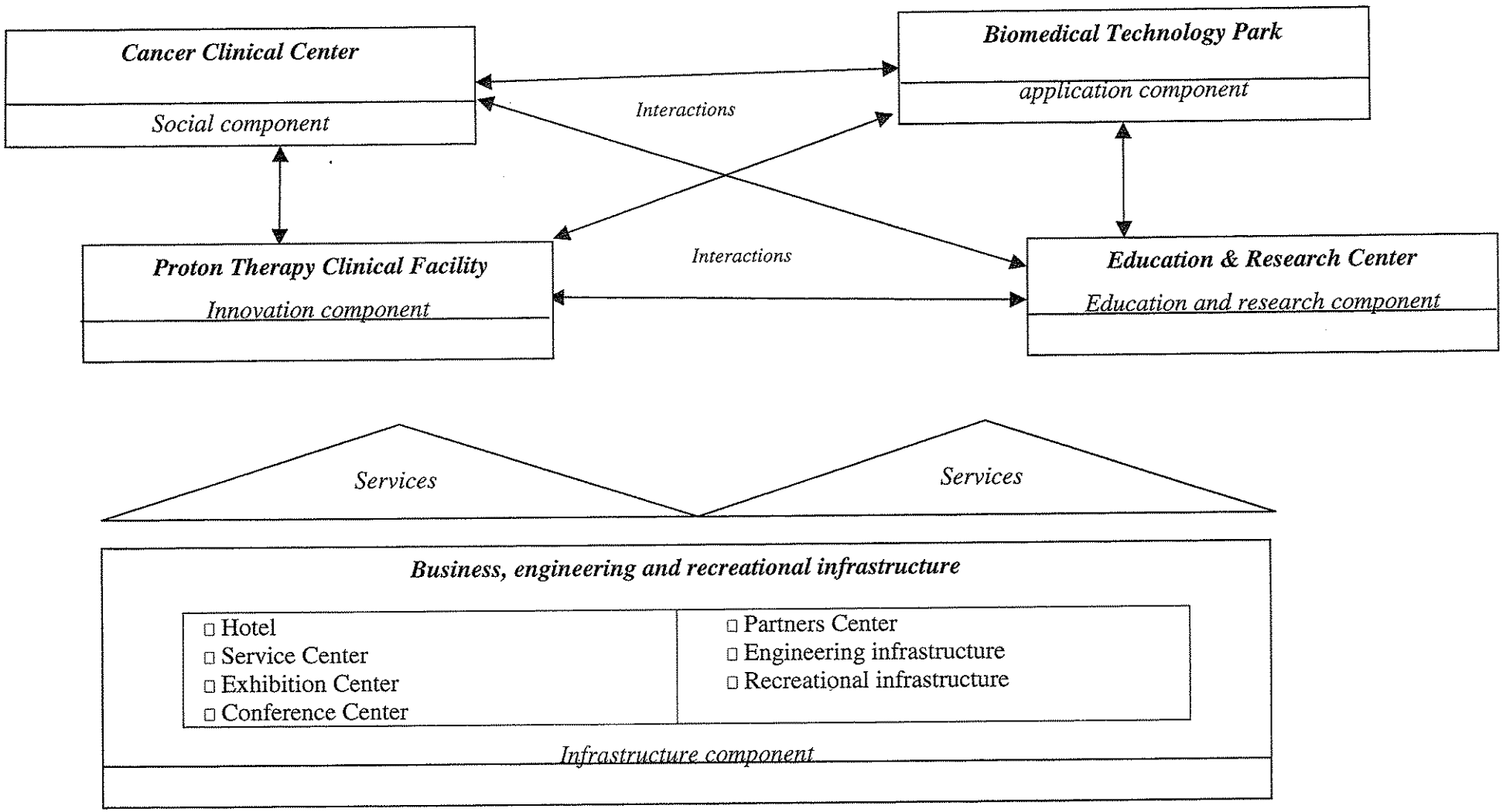



Fig. 2.1

***Main expected results***

- ☐ New technologies for early detection and treatment of cancer are developed and applied;
- ☐ Additionally, over 18 000 cancer patients receive modern combined treatment;
- ☐ An infrastructure is created to generate innovations and to facilitate their application in healthcare;
- ☐ Workplaces for highly skilled scientists, physicians, engineers and technical experts are created;
- ☐ Nizhny Novgorod and Russia strengthen their position among countries with developed biomedical technologies;
- ☐ Economy of Nizhny Novgorod regions diversifies through the development of high tech areas.

***Main financial results***

| | |
|---|---|
| ☐ Taxes paid by May 1 2006 | - 1.27 million rubles |
| ☐ Profit<br>after NNCRC reaches full capacity | - 1 500.0 million rubles/year |

*Note: These figures are integrated and cover both the commercial or social objects.*

***Main social results***

| | |
|---|---|
| ☐ Number of patients that visited clinical center | - 150 000 annually |
| ☐ New specialized beds | - 600 |
| ☐ Specialists trained | - 150 annually |
| ☐ Biotechnology companies engaged | - not less than 40 |
| ☐ New hotel accommodations | - 330 |
| ☐ New workplaces | - 7 000 |

## 4. Main parameters

*Main parameters of NNCRC*

- Total investment capacity: 15,7 billion rubles (if all NNCRC components are situated on one territory), including:
  - Cancer Clinical Center (79 000 $m^2$) – 6.0 billion rubles
  - Proton Therapy Clinical Facility (5 000 $m^2$) – 1.8 billion rubles
  - Education & Research Center (53 000 $m^2$) – 2.0 billion rubles
  - Biomedical Technology Park (62 000 $m^2$) – 1.1 billion rubles
  - Business, engineering & recreational infrastructure (134 000 $m^2$) – 4.8 billion rubles
- Total area of buildings 333 000 $m^2$
- Project duration 78 months (6.5 years)
- Current phase: pre-project preparation for building construction (town planning justification, territory planning and land surveying, architectural solutions, construction cost estimates), approval of preliminary technical and economic feasibility assessment, business planning, technical and medical tasks.
- Land area 65,8 ha, incl. main land – 33.8 ha, reserve land – 32.0 ha.
- Investments made by March 1, 2006 – 64.83 million rubles
- Design and management costs: - 1065.6 billion rubles,
  including:
  - preparation of project documentation - 908.0 billion rubles;
  - project management at design stage - 157.6 billion rubles.
- Design work duration - 36 months (2 years)

*First phase of NNCRC*

- Total investment capacity 6.8 billion rubles
- Total building space 107 500 $m^2$
- Duration 42 months (3.5 years)
- The first phase will include:
  - the Cancer Clinic;
  - first phase of the biomedical technology park;
  - first phase of the business, engineering and recreational infrastructure (first phase of hotel, first phase of parking area, centralized services, first phase of engineering infrastructure, first phase of the recreational infrastructure, etc.).

*Note: The structure, area and commissioning time of the first construction phase will be defined jointly with strategic partners/investors. For example, building of main components of the proton therapy clinical center and the education & research center may also be considered during the first phase.*

***Structure of expected investments***

According to investment sources

- government financial support through the Investment Fund of the Russian Federation - 6 131,7 million rubles
- budget of the Nizhny Novgorod Region - 886,5 million rubles
- investors and partners - 8 707,2 million rubles

*According to main cost items*

Table 1
billion rubles

| | Description | Total cost, incl. VAT | cost items | | | |
|---|---|---|---|---|---|---|
| | | | Construction and assembly | Equipping | Design | Project Management |
| 1 | Clinical Center | **6007,8** | 1533,0 | 4019,3 | 341,6 | 113,9 |
| 2 | Proton Therapy Clinical Facility | **1813,3** | 304,8 | 1374,6 | 100,4 | 33,5 |
| 3 | Education & Research Center | **2009,7** | 863,8 | 988,2 | 118,3 | 39,4 |
| 4 | Biomedical Technology Park | **1109,5** | 691,1 | 328,0 | 67,8 | 22,6 |
| 5 | Business, engineering and recreational infrastructure | **4785,1** | 2005,2 | 2406,7 | 279,9 | 93,3 |
| | **TOTAL** | **15725,4** | **5397,9** | **9116,8** | **908,0** | **302,7** |

*According to time periods*

General investment schedule

Table 2
million rubles

| | Description | Total | year | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | 1 year | 2 year | 3 year | 4 year | 5 year | 6 year | 7 year |
| 1 | Clinical Center | **6007,8** | 79,5 | 286,5 | 1335,3 | 3456,8 | 647,1 | 99,5 | 103,1 |
| 2 | Proton Therapy Clinical Facility | **1813,3** | 23,1 | 10,0 | 31,3 | 52,7 | 0,0 | 316,0 | 1380,2 |
| 3 | Education & Research Center | **2009,7** | 27,5 | 40,7 | 71,0 | 342,0 | 1007,7 | 319,5 | 201,3 |
| 4 | Biomedical Technology Park | **1109,5** | 16,1 | 39,8 | 193,2 | 344,8 | 515,6 | 0,0 | 0,0 |
| 5 | Business, engineering and recreational infrastructure | **4785,1** | 65,8 | 119,8 | 581,9 | 1247,2 | 1070,3 | 1034,2 | 665,9 |
| | **TOTAL** | **15725,4** | **212,0** | **496,8** | **2212,7** | **5443,5** | **3240,7** | **1769,2** | **2350,5** |

Investments from 2006 to 2009 will cover costs for zero-phase and engineering utilities of the 2 ad 3 phases.

*Expected costs of design and project management*

Schedule of investment costs for design and project management

Table 3
million rubles

| | Description | Total | year | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | 1 year | 2 year | 3 year | 4 year | 5 year | 6 year | 7 year |
| 1 | Clinical Center | **455,5** | 79,5 | 286,5 | 64,5 | 18,1 | 4,9 | 1,5 | 0,5 |
| 2 | Proton Therapy Clinical Facility | **133,9** | 23,1 | 10,0 | 31,3 | 52,7 | 0,0 | 11,2 | 5,6 |
| 3 | Education & Research Center | **157,7** | 27,5 | 40,7 | 71,0 | 4,5 | 8,9 | 3,7 | 1,4 |
| 4 | Biomedical Technology Park | **90,4** | 16,1 | 39,8 | 26,0 | 3,4 | 5,1 | 0,0 | 0,0 |
| 5 | Business, engineering and recreational infrastructure | **373,2** | 65,8 | 119,9 | 152,9 | 9,0 | 8,8 | 11,2 | 5,6 |
| | **TOTAL** | **1210,7** | **212,0** | **496,9** | **345,7** | **87,7** | **27,7** | **27,6** | **13,1** |

## Schedule of investment costs for design

Table 4
million rubles

| | Description | Total | year | | | |
|---|---|---|---|---|---|---|
| | | | 1 year | 2 year | 3 year | 4 year |
| 1 | Clinical Center | **341,6** | 68,3 | 244,3 | 29,0 | 0,0 |
| 2 | Proton Therapy Clinical Facility | **100,4** | 20,0 | 8,6 | 26,8 | 45,0 |
| 3 | Education & Research Center | **118,3** | 23,5 | 34,6 | 60,2 | 0,0 |
| 4 | Biomedical Technology Park | **67,8** | 13,5 | 33,7 | 20,6 | 0,0 |
| 5 | Business, engineering and recreational infrastructure | **279,9** | 56,0 | 102,2 | 121,7 | 0,0 |
| | **TOTAL** | **908,0** | **181,3** | **423,4** | **258,3** | **45,0** |

## Schedule of investment costs for project management

Table 5
million rubles

| | Description | Total | year | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 |
| 1 | Clinical Center | **113,9** | 11,2 | 42,2 | 35,5 | 18,1 | 4,9 | 1,5 | 0,5 |
| 2 | Proton Therapy Clinical Facility | **33,5** | 3,1 | 1,4 | 4,5 | 7,7 | 0,0 | 11,2 | 5,6 |
| 3 | Education & Research Center | **39,4** | 4,0 | 6,1 | 10,8 | 4,5 | 8,9 | 3,7 | 1,4 |
| 4 | Biomedical Technology Park | **22,6** | 2,6 | 6,1 | 5,4 | 3,4 | 5,1 | 0,0 | 0,0 |
| 5 | Business, engineering and recreational infrastructure | **93,3** | 9,8 | 17,7 | 31,2 | 9,0 | 8,8 | 11,2 | 5,6 |
| | **TOTAL** | **302,7** | **30,7** | **73,5** | **87,4** | **42,7** | **27,7** | **27,6** | **13,1** |

## 5. Appendices

Appendix 1

### Investments made

**1.** Design and project management costs by May 1, 2006
(business planning, town planning justification, land-use application, preliminary technical and economic feasibility assessment, etc.) **– 6.83 million rubles**
including
taxes paid to all-level budgets
(direct costs of design and project management) **– 1.27 million rubles**

**2.** Costs of NNCRC functioning (studies and developments, purchase of equipment, renovation of rooms in the Regional Oncological Dispensary, business trips, etc.).
These payments were made by initiators and founders of the NNCRC Foundation within the frames of the project **– 58,0 million rubles**
including:

- development of an optical coherence tomography device, production of a pilot series, development, testing and certification of the OCT technology;
- development of multiphoton fluorescent microscopy technology, diffusive tomography and opto-acoustic tomography;
- renovation of rooms and providing modern medical equipment to the Regional Clinical Hospital and Regional Oncological Dispensary to conduct works under the project;
- development, performing clinical trials and application of a new method for breast cancer diagnosis using an optical probe;
- creation and organization of work of the Division for Biophysics and Biomedicine at the Nizhny Novgorod State University.

**3.** Total investments made by March 1, 2006 **– 64.83 million rubles**

Appendix 2

**Chief advisors and top managers of the NNCRC project**

| Name | Appointment and title | Position in NNCRC Foundation | Contact information |
|---|---|---|---|
| **1. Project Directors** | | | |
| Alexander M. Sergeev | Deputy Director, Institute of Applied Physics RAS Corresponding member of Russian Academy of Science | Chairman of the Founders Board, member of the Academic Council | tel.36-57-36, fax 36-37-92 ams@ufp.appl.sci-nnov.ru |
| Alexander A. Bureev | | Member of Board of Directors, Executive Director | tel/fax 30-69-03, 30-31-15, 34-44-50, 30-28-41 info@nonc.ru welcome@nonc.ru |
| **2. Chief Advisors** | | | |
| Natalia M.Shakhova | Leading scientist, Institute of Applied Physics of Russian Academy of Sciences, Doctor of Medicine | Executive Secretary of the Academic Council, Chief Advisor on Medical Research | tel.36-80-10 shakh@ufp.appl.sci-nnov.ru |
| Boris E. Shakhov | Deputy Rector, Nizhny Novgorod State Medical Academy, Honoured Worker of Science, Doctor of Medicine, Professor | Member of the Founders Board and Academic Council, Chief Advisor on Science and Education (medicine) | tel.39-02-95, fax 39-09-43 nnsma@sandy.ru |
| Alexander B. Petrov | Chief Doctor of Municipal Oncological Dispensary, Chief oncologist of Nizhny Novgorod, PhD | Member of Board of Directors, Chief Advisor on Clinical Center | tel./fax 64-37-77 nngod@list.ru |
| Sergey N. Gurbatov | Deputy Rector , Nizhny Novgorod State Medical Academy, Doctor of Science, Professor | Member of Academic Council, Chief Advisor on Natural Science and Education | tel. 65-77-43, fax 65-85-92 |
| Sergey G. Garanin | Director, Institute of Laser Physical Research, RFNC-VNIIEF, Doctor of Science, Professor | Member of Founders Board, Chief Advisor on Physical Methods in Medicine | tel.(83130) 4-46-10, fax 4-56-46 |
| Nikolay V. Zav'jalov | First Deputy Director, Institute of Nuclear and Radiation Physics, RFNC-VNIIEF, Doctor of Science | Chief Advisor on Proton Therapy Clinical Facility | tel.(83130) 4-59-07, fax 4-55-69 |
| Aleksey V. Myakov | Director OPTIMEK Ltd. | Member of Board of Trustees, Chief Advisor on Biomedicine Technology Park | tel/fax 16-49-23 mav@ufp.appl.sci-nnov.ru |

| Name | Appointment and Title | Contact information |
|---|---|---|
| **3. Top managers** | | |
| Regina I. Viner | Deputy Executive Director | tel/fax 30-69-03,<br>30-31-15,<br>34-44-50,<br>30-28-41<br>info@nonc.ru<br>welcome@nonc.ru |
| Yury P. Isakov | Marketing and Investment Advisor | |
| Alexander A. Tumanov | Advisor on Innovation Commercialization | |
| Andrey A. Bureev | Development Advisor | |
| Marina S. Makarova | Chief Accountant | |
| Andrey V. Trudakin | Lawyer | |
| Natalia S. Zharekhina | Assistant to Executive Director | |

НОНЦ
НИЖЕГОРОДСКИЙ ОНКОЛОГИЧЕСКИЙ НАУЧНЫЙ ЦЕНТР

Nonprofit organization

«NIZHNY NOVGOROD CANCER RESEARCH CENTER FOUNDATION»

*Investment project*
*for creation of a high technology medical center*

# NIZHNY NOVGOROD CANCER RESEARCH CENTER (NNCRC)

- *Concept*
- *Investments*
- *Results*
- *Land*

**Nizhny Novgorod**
**June 2006**

НОНЦ
НИЖЕГОРОДСКИЙ ОНКОЛОГИЧЕСКИЙ НАУЧНЫЙ ЦЕНТР

***Think about the future now, otherwise it won't come***

## Background

**High rate of cancer morbidity and cancer mortality**

**Trends in science and world markets**

**High tech developments and scientific potential in Nizhny Novgorod Region**

**Recognized medical and scientific schools**

**Scarcity of natural resources in Nizhny Novgorod Region**

## Expected results

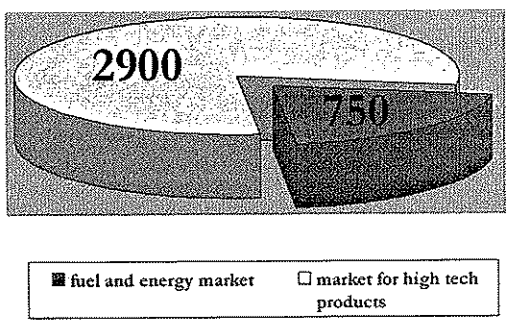
- New technologies for early cancer diagnosis and treatment are developed
- Life quality is improved; life span is prolonged (over 18 000 cancer patients additionally receive cancer treatment annually)
- An infrastructure is created that generates innovations and facilitates their application in healthcare
- Workplaces for highly skilled scientists, physicians, engineers and technical experts are created
- Nizhny Novgorod and Russia strengthen their position among countries with developed biomedical technologies
- Economy of Nizhny Novgorod Region diversifies through the development of high tech areas

НИЖЕГОРОДСКИЙ ОНКОЛОГИЧЕСКИЙ НАУЧНЫЙ ЦЕНТР

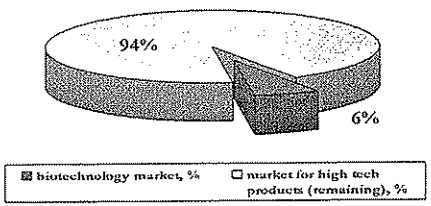
*Think about the future now, otherwise it won't come*

# TRENDS ON WORLD INVESTMENT MARKET

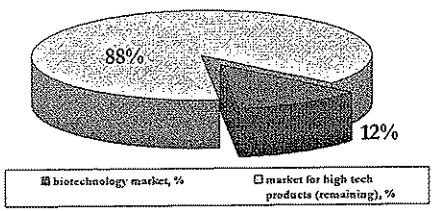
WORLD MARKETS OF HIGH TECH PRODUCTS AND FUEL AND ENERGY RESOURCES IN 2004., billion USD




BIOTECHNOLOGY SHARE ON HIGH TECH MARKET, 2004




BIOTECHNOLOGY SHARE ON HIGH TECH MARKET, 2008

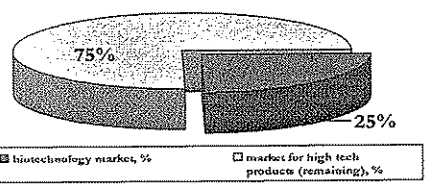



2004 – 6 %

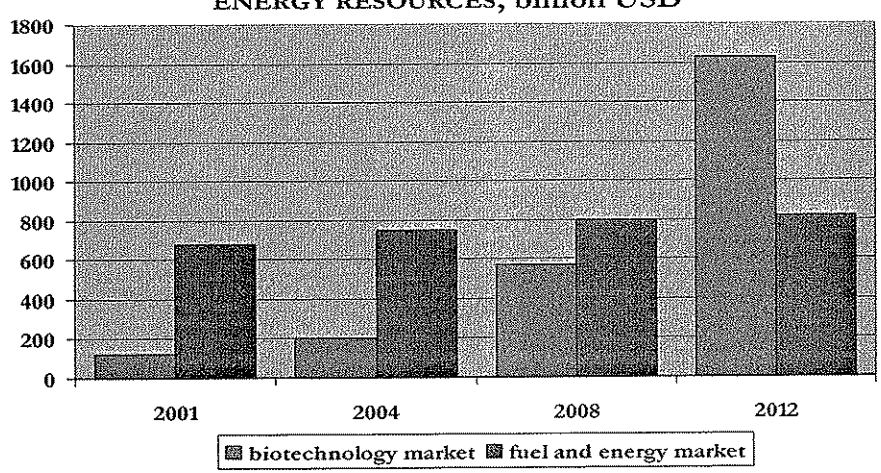
2008 – 12 %

2012 – 25 %

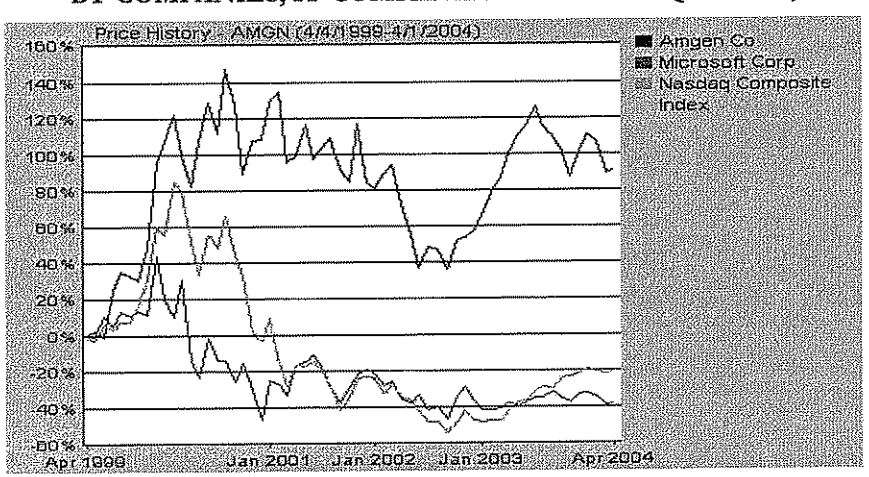
BIOTECHNOLOGY SHARE ON HIGH TECH MARKET , 2012




CURRENT SITUATION AND FORCASTS FOR WORLD MARKETS OF BIOTECHNOLOGY AND FUEL & ENERGY RESOURCES, billion USD



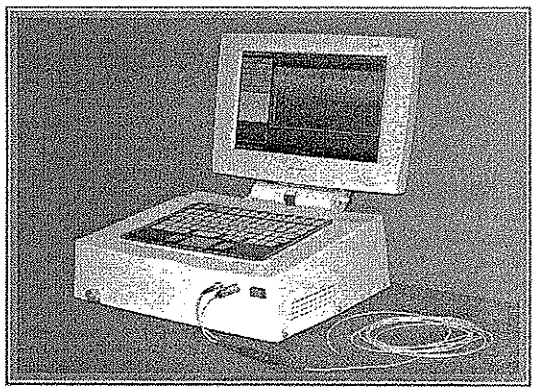

COMPARISON OF CAPITALIZATION GROWTH OF BT-COMPANIES, IT-COMPANIES AND NASDAQ INDEX , %



НОНЦ
НИЖЕГОРОДСКИЙ ОНКОЛОГИЧЕСКИЙ НАУЧНЫЙ ЦЕНТР

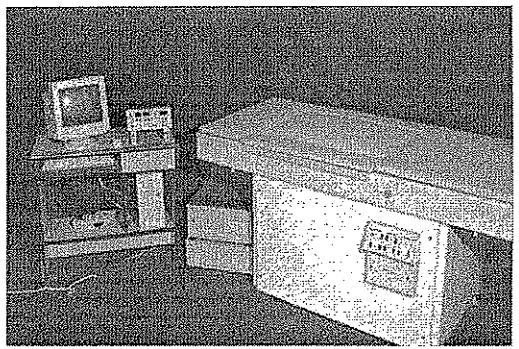
*Think about the future now, otherwise it won't come*

# HIGH TECHNOLOGY DEVELOPMENTS



• Optical Coherence Tomograph

• Optical probe for breast cancer diagnosis



• Computer-controlled hyperthermia system

- Proton radiation therapy
- Recombinant protein production
- Antioxidant therapy and ozone therapy
- Fluorescent diagnosis and photodynamical therapy
- Nanobiotechnologies
- Monoclonal antibody production
- Drying Drop Dynamics Analyzer
- Other developments

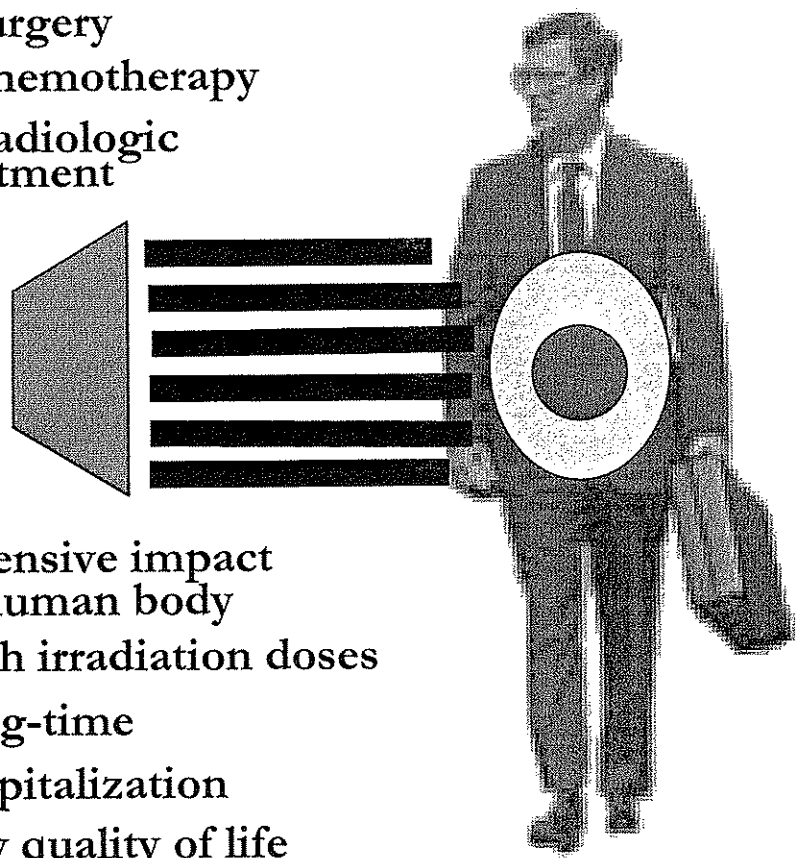
НОНЦ
НИЖЕГОРОДСКИЙ ОНКОЛОГИЧЕСКИЙ НАУЧНЫЙ ЦЕНТР

*Think about the future now, otherwise it won't come*

# CHANGES

## CURRENTLY

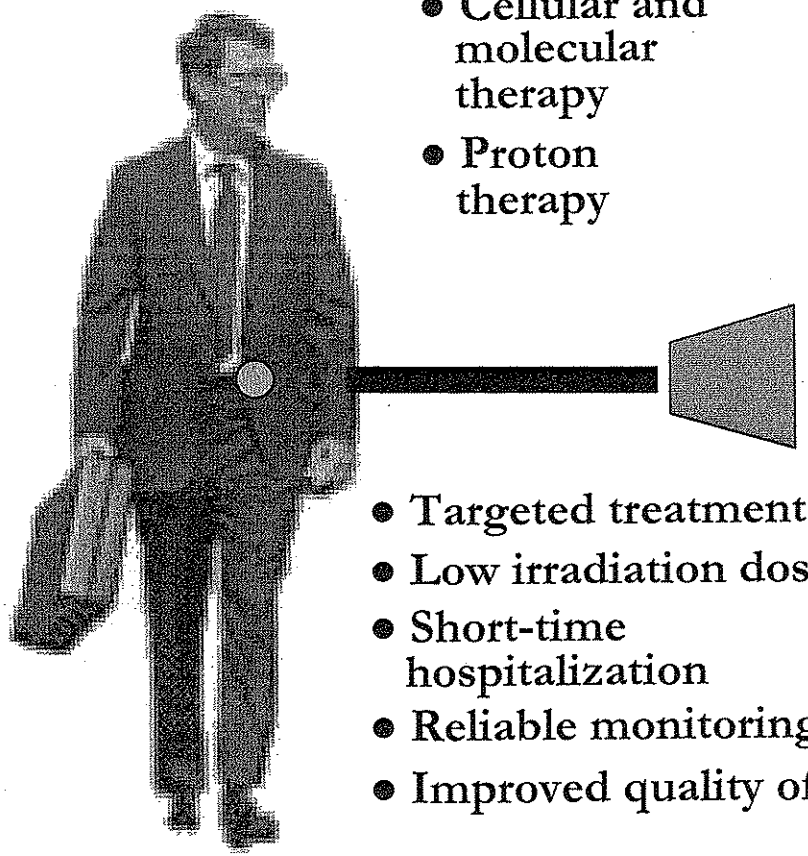
- Diagnosis
- Surgery
- Chemotherapy
- Radiologic treatment



- Extensive impact on human body
- High irradiation doses
- Long-time hospitalization
- Low quality of life

## EXPECTED

- Early diagnosis
- Cellular and molecular therapy
- Proton therapy

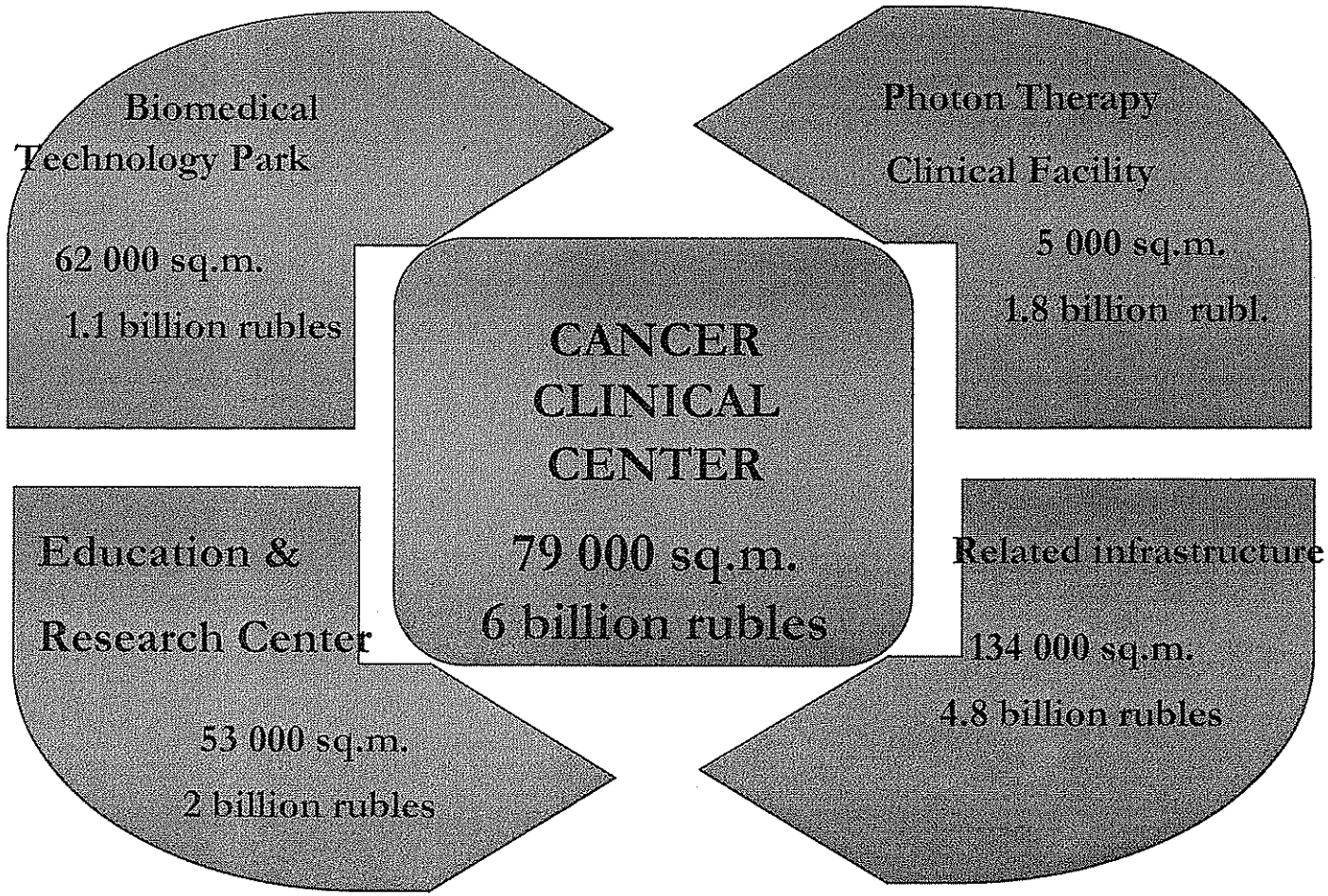


- Targeted treatment
- Low irradiation doses
- Short-time hospitalization
- Reliable monitoring
- Improved quality of life

НОНЦ
НИЖЕГОРОДСКИЙ ОНКОЛОГИЧЕСКИЙ НАУЧНЫЙ ЦЕНТР

*Think about the future now, otherwise it won't come*

# INNOVATIIVE INFRASTRUCTURE OF THE PROJECT



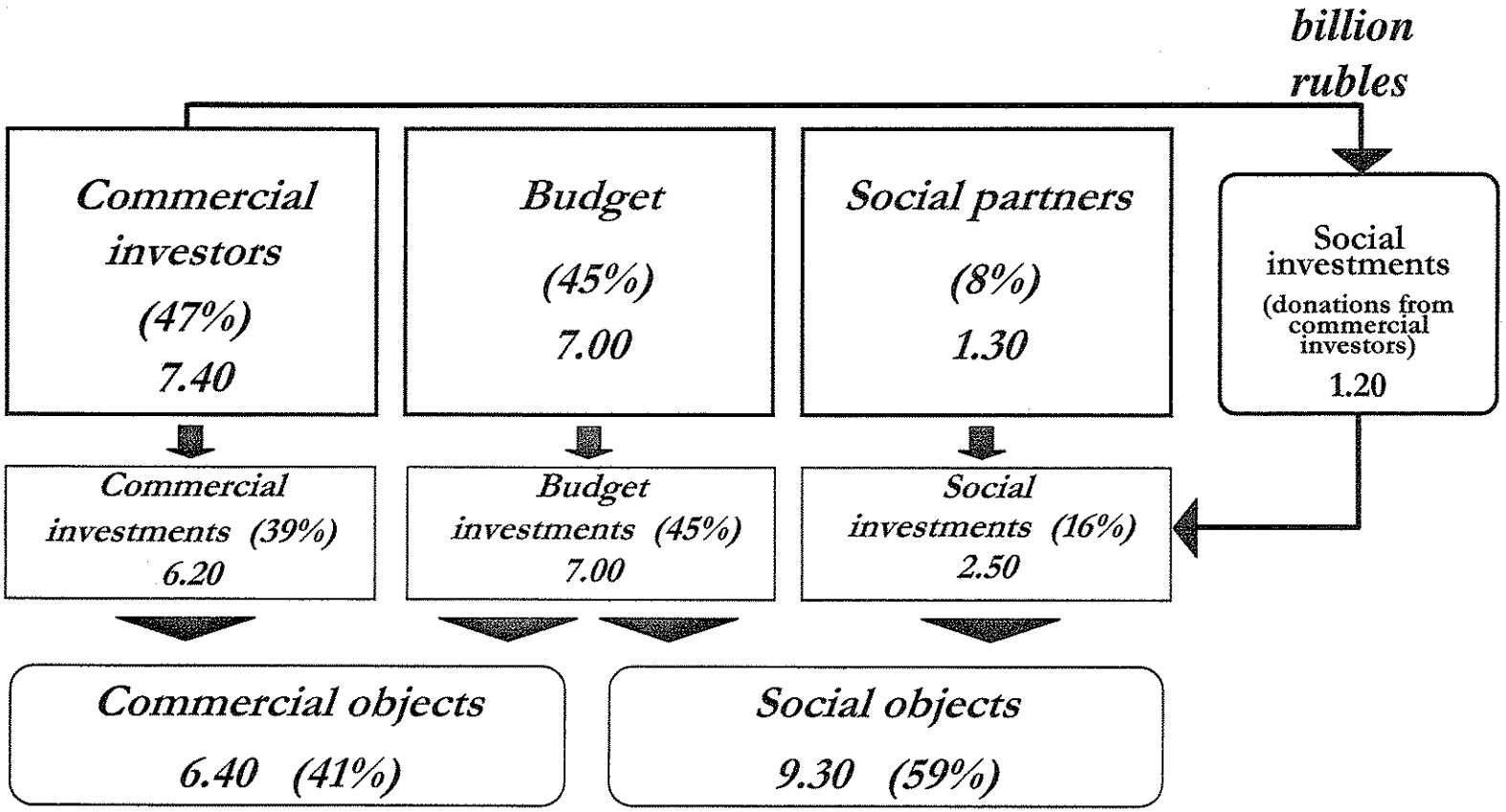

Territory – 66 ha Total area – 333 000 sq.m. Investment capacity 15.7 billion rubles

World analogs: Clinical Center in Cleveland (USA)
Cancer Research Center in Houston (USA)
National Institute of Oncology in Milan (Italy)

НОНЦ
НИЖЕГОРОДСКИЙ ОНКОЛОГИЧЕСКИЙ НАУЧНЫЙ ЦЕНТР

*Think about the future now, otherwise it won't come*

# RISK SHARING



НОНЦ
НИЖЕГОРОДСКИЙ ОНКОЛОГИЧЕСКИЙ НАУЧНЫЙ ЦЕНТР

*Think about the future now, otherwise it won't come*

# ATTRACTIVENESS TO INVESTORS

1. *Innovations* - high-tech developments and recognized scientific schools in Nizhny Novgorod Region
   - bioimaging - cellular & molecular therapy - proton therapy
2. *Medicine* – providing high-quality medical services on a fee-paying basis
3. *Infrastructure* - covering the whole innovation cycle from idea to application and effective investments at any commercialization stage
4. *Trends on world investment markets*
   - high technologies - biotechnologies - medicine

## *NECESSARY REQUIREMENT – STATE PARTICIPATION*

Resolution No. 9-2-12 dated March 22, 2006 of the Investment Council of the Governor of the Nizhny Novgorod Region: "Resolved: ... to consider it reasonable to implement the investment project "Creation of a high-tech medical Nizhny Novgorod Cancer Research Center"

НОНЦ
НИЖЕГОРОДСКИЙ ОНКОЛОГИЧЕСКИЙ НАУЧНЫЙ ЦЕНТР

*Think about the future now, otherwise it won't come*

# INVESTMENT FUND OF THE RUSSIAN FEDERATION

*Established by the RF government resolution No. 694 of November 23, 2005*

- Total fund volume 2006 – 69.7 bln rubles, 2007 – 76.3 bln rubles, 2008 – 73.2 bln rubles
- Project cost requirements – not less than 5.0 bln rubles
- Projects based on principles of state-private partnership
  (State share not more than 75 %)
- Directions of State support through the Fund
  - working out project documentation
  - creation and development of elements of the innovation system
  - institutional reformations
  - creation and development of infrastructure
- Specific requirements
  - Break-even projects
  - possibility for long-term financing of the project
- Forms of State support
  - co-financing on a contractual basis of an investment project
  - investments in statutory capitals of legal bodies
  - providing State guarantees

НИЖЕГОРОДСКИЙ ОНКОЛОГИЧЕСКИЙ НАУЧНЫЙ ЦЕНТР

*Think about the future now, otherwise it won't come*

# Proton Therapy Clinical Facility -

# HIGH-PRIORITY NATIONAL PROJECT

- There are 11 photon therapy clinical centers in USA, Japan, and EU.

  Planned: 2006 – 20 centers, 2008 – 35 centers.
  In Russia, there are 3 experimental non-medical centers, no clinical centers

- Russian institutions are prepared to launch the pilot PT project within NNCRC:
  - RFNC-VNIIEF – creation of accelerators for Proton Therapy Clinical Facility
  - IAP RAS – laser source development for ion therapy
  - NSMA jointly with clinics – development and application of treatment procedures
  - NNSU and NSMA – training specialists

  There is a preliminary agreement with leading Russian institutions in Moscow, Dubna, Obninsk, Novosibirsk, St-Petersburg and foreign companies.

- Main idea: creation and replication of clinical PT centers in Russia and abroad (cost of one PT center varies from 1.7 to 4.0 billion rubles)

НОНЦ
НИЖЕГОРОДСКИЙ ОНКОЛОГИЧЕСКИЙ НАУЧНЫЙ ЦЕНТР

*Think about the future now, otherwise it won't come*

# MAIN PARAMETERS OF THE PROJECT

| | |
|---|---|
| • Total investment capacity | 15.7 billion rubles |
| incl. 1-st phase | 6.8 billion rubles |
| • Duration | 78 months (6.5 years) |
| incl. 1-st phase | 42 months (3.5 years) |
| • Intended investment structure: | |
| - commercial investors and social partners | 8.7 billion rubles |
| - budget allocated | 7.0 billion rubles |
| • Investments made by May 1, 2006 | 64.83 million rubles |
| - incl. development of devices, techniques and clinical trials | 58.0 million rubles |
| - design and project management costs | 6.83 million rubles |

НИЖЕГОРОДСКИЙ ОНКОЛОГИЧЕСКИЙ НАУЧНЫЙ ЦЕНТР

*Think about the future now, otherwise it won't come*

# TIME SCHEDULE

**First Phase**
Clinical center
Biomedical technology park, phase I
Business infrastructure, phase I
Engineering infrastructure

**Second Phase**

**Third Phase**

*million rubles*

| | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 |
|---|---|---|---|---|---|---|---|
| Total investments | 212.0 | 496.8 | 2 212.7 | 5 443.5 | 3 240.7 | 1 769.2 | 2 350.5 |
| Including Budget funds | 93.2 | 249.4 | 1 013.6 | 2 895.4 | 1 279.8 | 423.8 | 1063.0 |

*First Phase costs include all zero-phase costs and engineering services*

НОНЦ
НИЖЕГОРОДСКИЙ ОНКОЛОГИЧЕСКИЙ НАУЧНЫЙ ЦЕНТР

*Think about the future now, otherwise it won't come*

# NNCRC – innovative budget-forming enterprise in Nizhny Novgorod Region

- **Taxes**
  paid by May 1, 2006 — 1.3 million rubles
- **Taxes**
  after reaching full capacity — 1 500.0 million rubles/year
- **Profit**
  after reaching full capacity — 1 500.0 million /year

*These figures are integrated and cover both commercial and social objects.*

НОНЦ
НИЖЕГОРОДСКИЙ ОНКОЛОГИЧЕСКИЙ НАУЧНЫЙ ЦЕНТР

*Think about the future now, otherwise it won't come*

# IMPORTANT SOCIAL RESULTS

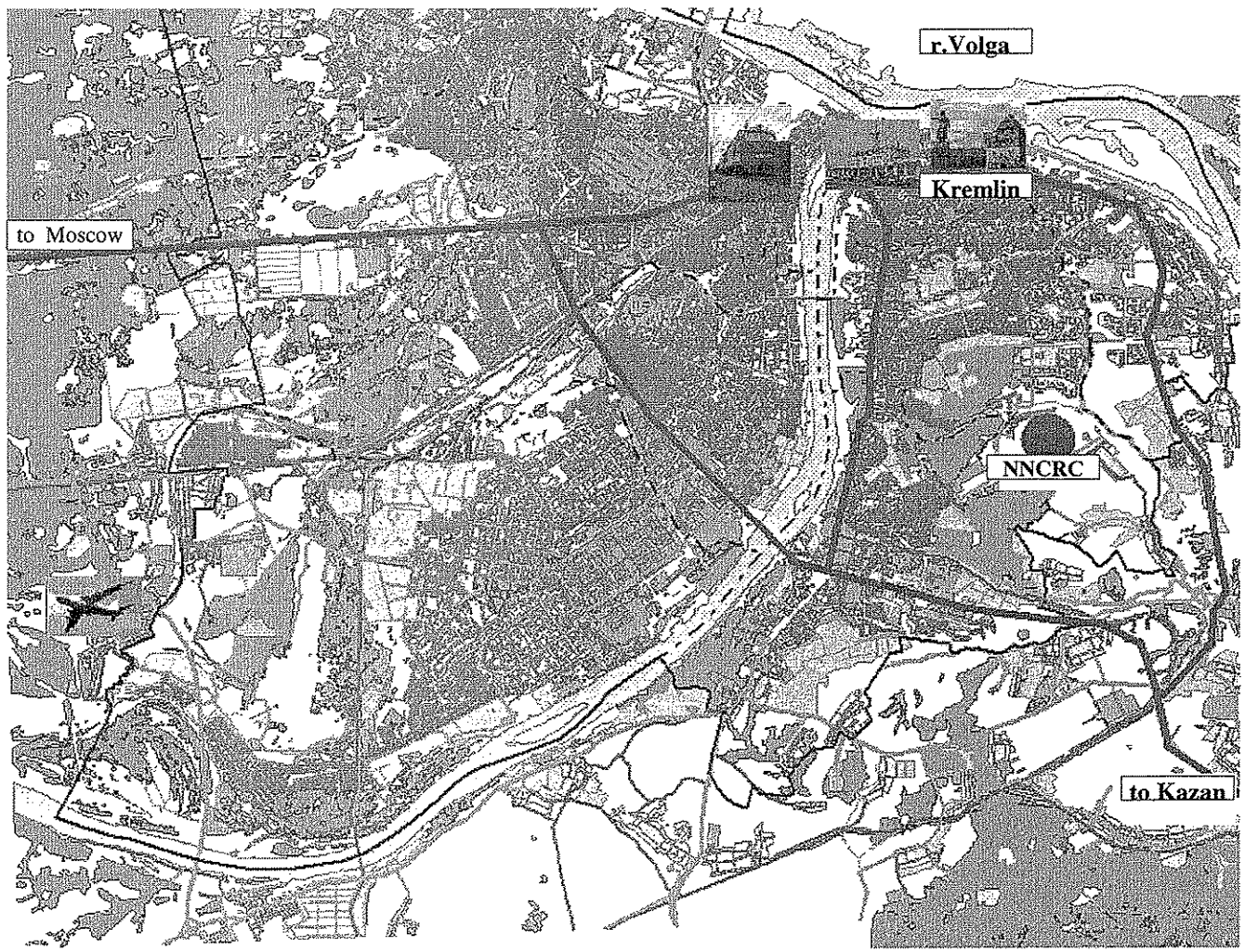
| | |
|---|---|
| • Cancer patients treated | 18 000 annually |
| • Visits to clinical center | 150 000 annually |
| • New beds | 600 |
| • Specialists trained | 150 annually |
| • Biotechnology companies engaged | not less than 40 |
| • New hotel accommodations | 330 |
| • New workplaces | 7 000 |

НИЖЕГОРОДСКИЙ ОНКОЛОГИЧЕСКИЙ НАУЧНЫЙ ЦЕНТР

*Think about the future now, otherwise it won't come*

# TERRITORY

- *Nizhny Novgorod Investment Commission resolution 04.08.2005г.*
- *Decree of Head of Nizhny Novgorod Administration of October 19,.2005 No.4741-p*
- *preliminary agreement with Nizhny Novgorod Administration of October10,.2005 No.22/ПД*



НИЖЕГОРОДСКИЙ ОНКОЛОГИЧЕСКИЙ НАУЧНЫЙ ЦЕНТР

*Think about the future now, otherwise it won't come*

# SITE PLAN

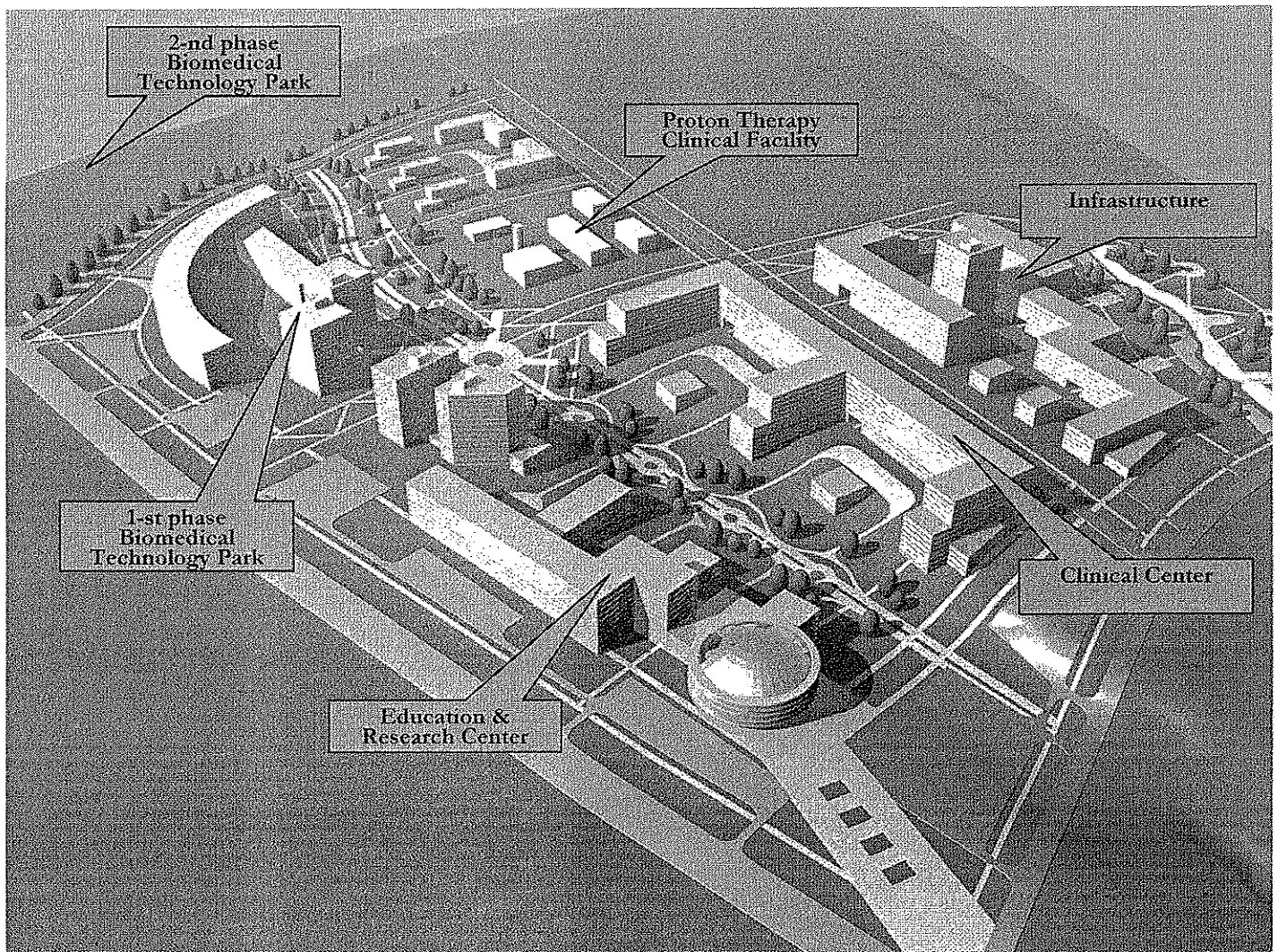
- *drawing of GlavUAG of Nizhny Novgorod Administration No.1973 (December 2005)*
- *contract with NizhegorodgrazhdanNIIproekt of 13.10.2005 №MGP/45 81 (completed in February2006)*
- *resolution No. 9-2-12 dated March 22, 2006 of the Investment Council of the Governor of the Nizhny Novgorod Region*

НОНЦ
НИЖЕГОРОДСКИЙ ОНКОЛОГИЧЕСКИЙ НАУЧНЫЙ ЦЕНТР

*Think about the future now, otherwise it won't come*

# CONCEPT LAYOUT

*Prepared by Municipal Enterprise IRG "NizhegorodgrazhdanNIIproekt" in February 2006*



НОНЦ
НИЖЕГОРОДСКИЙ ОНКОЛОГИЧЕСКИЙ НАУЧНЫЙ ЦЕНТР

*Think about the future now, otherwise it won't come*

# INVESTORS

## 1. POTENTIAL STRATEGIC INVESTORS

Negotiations with:
JSFC Sistema, LUKOIL Oil Company, Intel, ISGS Foundation (USA)

## 2. CURRENT COMMERCIAL INVESTORS

V.A.Krupnov (NOVA-KARD), S.A.Ivanushkin (AVK), A.V.Myakov (OPTIMEK)

## 3. CURRENT SOCIAL INVESTORS

NBD Banking House (A.G.Sharonov)
«Kind Power» Foundation (V.N.Vorobjev)
Borsky Glass Factory (V.V.Tarbeev)
OPTIMEK Ltd. (A.V.Myakov)
V.A.Krupnov
BIOFIL (S.G.Garanin)
LASER-GAS (L.M.Vinogradsky)
Branch «Nizhegorodsky Close JSC
GLOBEX BANK (N.Yu.Rusov)
PAZ JSC (A.V.Vasil'jev)

## PARTNERS

newspaper «Birzha» (V.V.Lapyrin)
State television and radio company
"Nizhny Novgorod" (M.M.Groshev)
AGNAR (G.A.Tzypkin).)
Business-Polygraphy (T.V.Kotova)
Bisness budet! (I.G.Zemskova)
Nikom-media.ru (V.Yu.Kandikov)

НОНЦ
НИЖЕГОРОДСКИЙ ОНКОЛОГИЧЕСКИЙ НАУЧНЫЙ ЦЕНТР

*Think about the future now, otherwise it won't come*

# IMPORTANT STEPS TO TAKE

1. To acquire the land-use right and prepare necessary documentation for design approval

2. To prepare applications to the Russian Investment Fund and to
   - State Program for establishing special open economic zones
   - State Program for the development of technology parks
   - Council for Implementing Priority National Projects, etc

3. To hold talks with strategic investors-partners

4. To develop a Federal Program project for creation of proton therapy clinical centers

5. To conclude an Agreement between Nizhny Novgorod Regional Government and NNCRC Foundation about NNCRC project implementation.

# THANK YOU FOR YOUR TIME AND INTEREST!