UNN AND WIRELESS LAB: MISSION AND COLLABORATION

Diana Il'ina
UNN, Wireless lab

UNIVERSITY OF NIZHNY NOVGOROD (UNN)

founded in 1916, rated among 5 best Russian universities
one of recognized universities of Russia

- 250 D. Sc. Advanced
- 800 PhD
- 1000 Post graduates
- 19000 Students

- 20 Departments
- 116 Divisions
- 5 Research institutes
- Innovation Technology Center
- Regional Center for New Information Technologies

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RADIOPHYSICS DEPARTMENT

GENERAL CHARACTERISTICS

The Department was founded immediately after World War II in 1945 for the development of radars and wireless communications.

Goals:

- Training specialists for industry and research;
- Research activities.

Radio industry of Nizhny Novgorod region made up 50% of the former USSR radio industry.

Nobel Prize Winner V.Ginzburg has headed the Division of Radio Wave Propagation and Radio Astronomy at the Department for a long time.

6 members and 4 corresponding members of the Russian Academy of Sciences, 100 D.Sc, and 800 PhD are the Department alumni.

STAFF & STUDENTS

- ✓ Staff– 114

  With Scientific degrees and titles – 97 (87%)

  Doctors of Science, Professors – 28 (25%)

- ✓ Students ~ 1000

  MS students ~ 80 persons

  PhD students ~ 60 persons

AREAS OF MAIN SCIENTIFIC INTERESTS

- Electrodynamics and Plasma Physics
- Semiconductors and Solid State Physics
- Electronics, Superconductivity
- Microwave Spectroscopy, Radio Astronomy
- Physics of the Ionosphere and Radio Wave Propagation
- Nonlinear Oscillations and Wave Theory, Dynamical Systems
- Optics, Radiooptics and Holography
- Acoustics and Hydrophysics, Bionics
- Radioengineering and Radiophysical Measurements
- Radioelectronics in Medicine and Biology
- Computer Science
- Chip-design
- Network Technologies…

POSITION OF WL LAB IN UNN

UNN

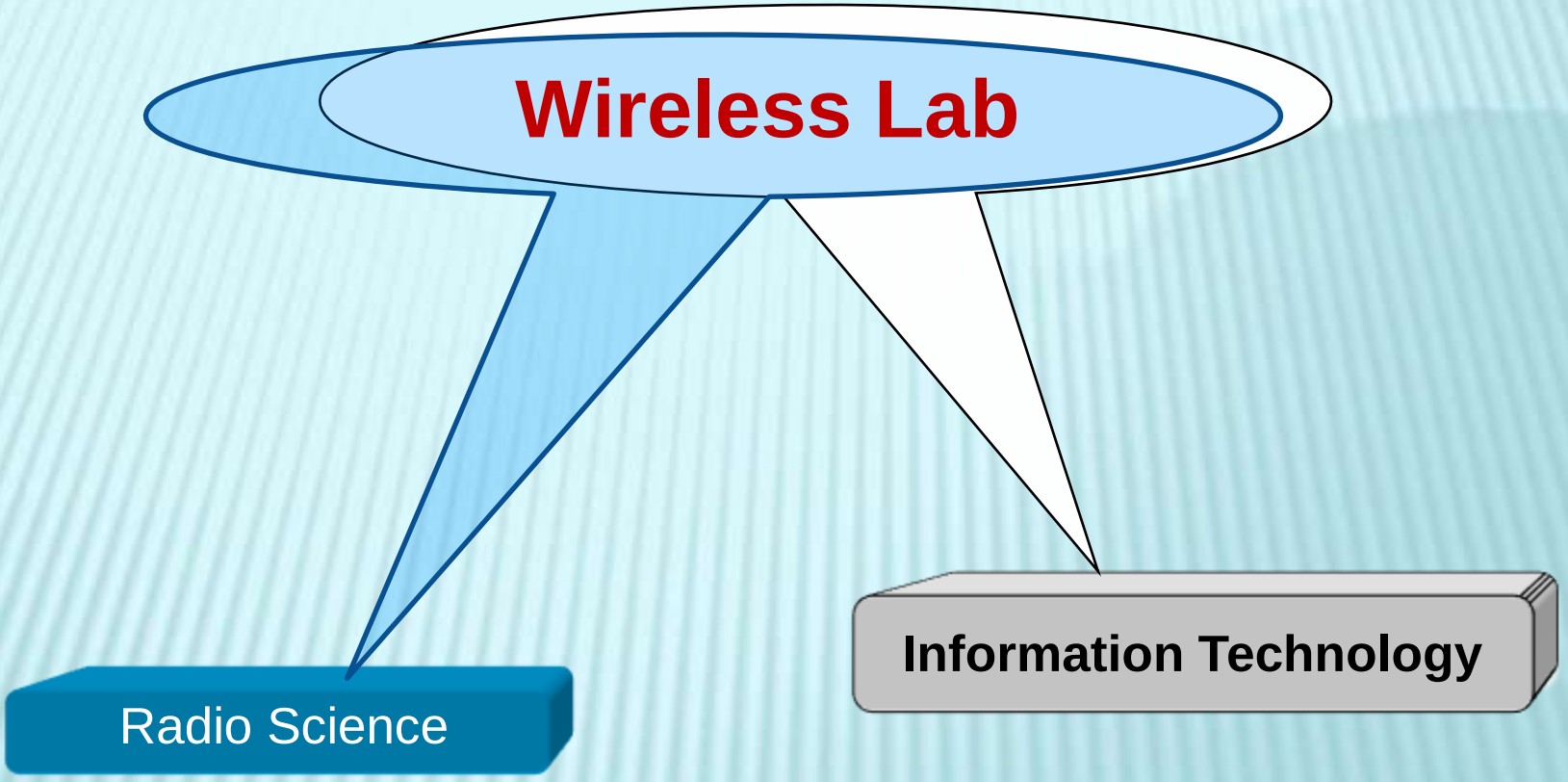
Departments

- ….
- Mechanics and Mathematics
- Physics
- Computational Mathematics & Cybernetics
- General and Applied Physics
- Radio Physics
- …..

Divisions

- Electrodynamics
- Quantum Radiophysics
- Electronics
- Radio Wave Propagation & Radio Astronomy
- Oscillation Theory & Automatic Control
- Radioengineering
- General Physics
- Bionics & Statistical Radiophysics
- Acoustics
- Mathematics
- Laboratory “Physical fundamentals and technologies of wireless communications”
- Center "Information systems and telecommunications safety“

CONVERGENCE



At Moscow INTEL Developers Forum (IDF) in October 2, 2002, Craig Barrett, Intel's Chief Executive Officer, announced the plan to open a new Laboratory of Wireless Communications at N.I.Lobachevsky State University of Nizhny Novgorod (UNN)

LABORATORY MISSION

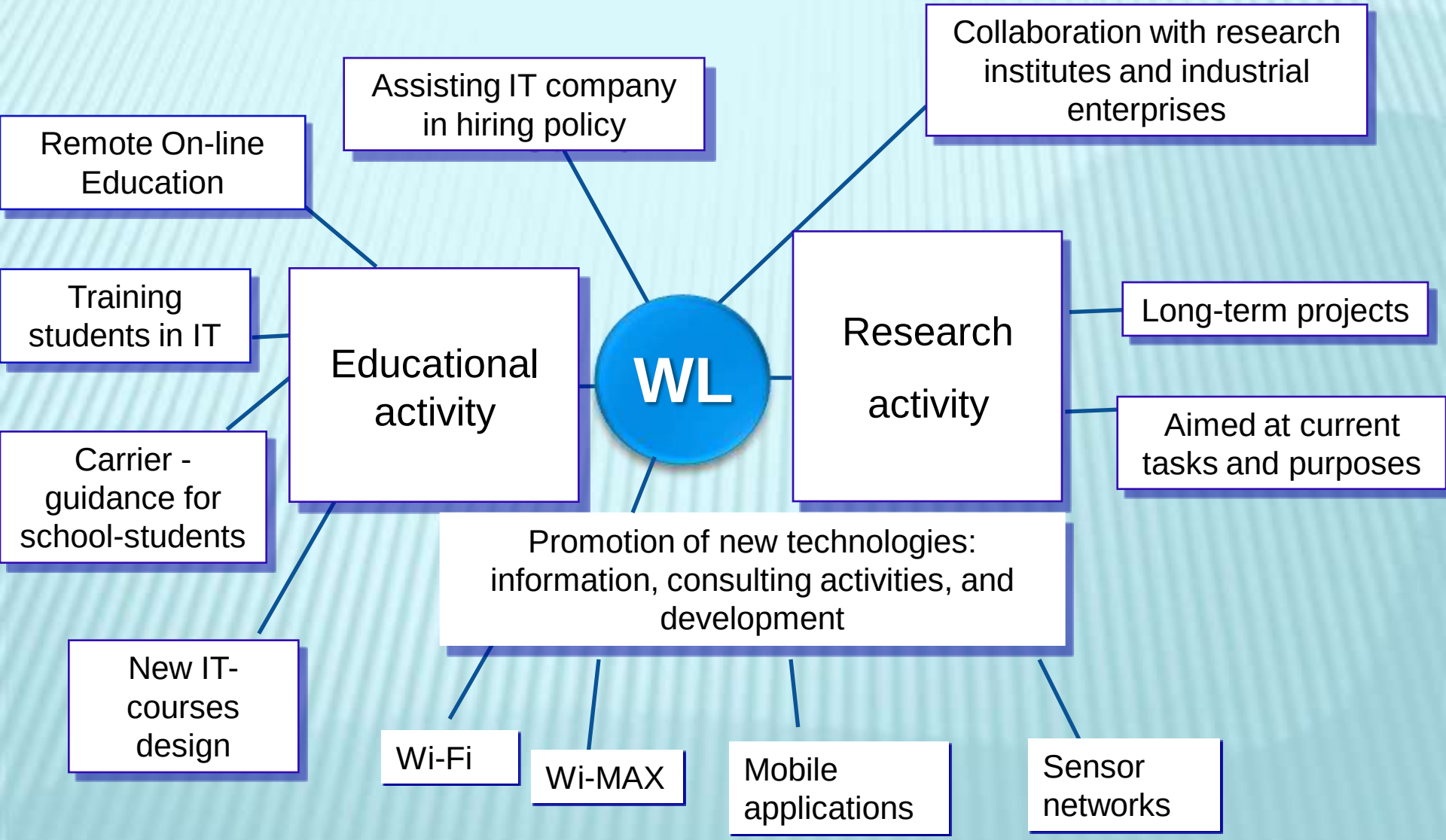
RESEARCH:

Meeting modern telecommunication market demands developing new generation of communication systems on the basis of radio and digital technology convergence

EDUCATIONAL:

Training highly qualified experts capable of developing innovative wireless communication technologies

THE AREAS OF THE LABORATORY'S ACTIVITY



FOCUS AREAS

- Antennas and propagation
- Sensor networks
- Mobile applications
- Cryptography and antinoise coding
- DSP algorithms
- RF design
- Electromagnetic compatibility

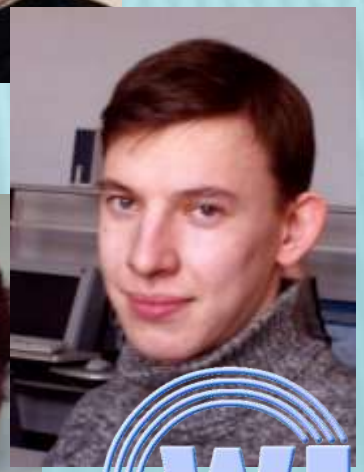
OUR STAFF

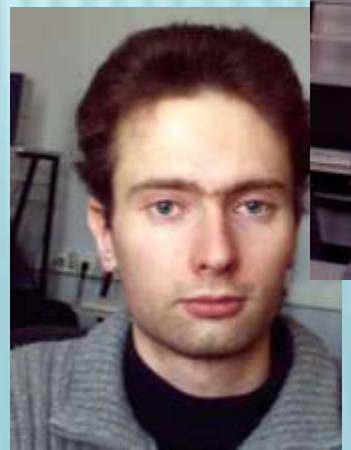
More than 20 university professors and researchers supervise the work of research teams, design new courses, and deliver lectures and conduct seminars

STUDENTS' ENROLMENT







40 students

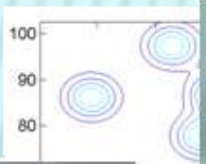
and 8 postgraduate students

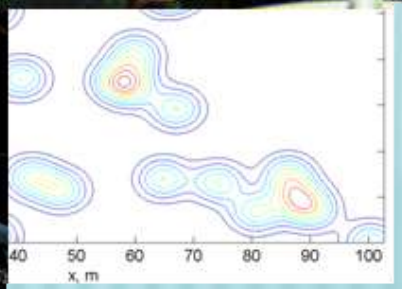
Entry requirements:

- High academic records
- Strong motivation
- Ability to work in a team
- Open mind
- Orientation to result

Candidates are admitted according to the results of the Interview after Winter/Summer Wireless School

SEMINARS





COLLABORATION

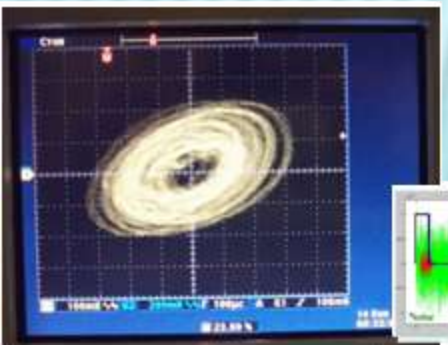
with Industry and Academy

- IT companies: Intel, Microsoft, Nokia, Teleca
- Academy: Institute of Applied Physics of the Russian Academy of Sciences, Institute for Physics of Microstructures of the Russian Academy of Sciences
- Universities: Saint Petersburg State University of Aerospace Instrumentation, Riga Technical University, Kovrov Technical Academy
- Industry: Research and Production Company POLYOT, Research Institute of Measurement Systems , Research Institute SALUT

TRAINEES' EDUCATIONAL BACKGROUND:

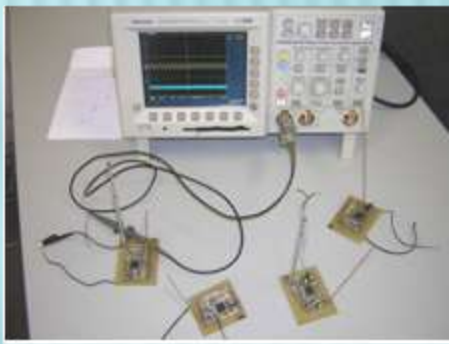
- General physics and mathematics courses
- Digital signal processing
- Digital communication systems
- Theory of error-correcting codes
- Measurements in digital communication channels
- Network technologies
- Radio wave propagation in mobile communication systems
- Applied programming
- Operational Systems
- MATLAB, VisSim, LabView, …
- Microprocessor architecture and programming
- Chip-design

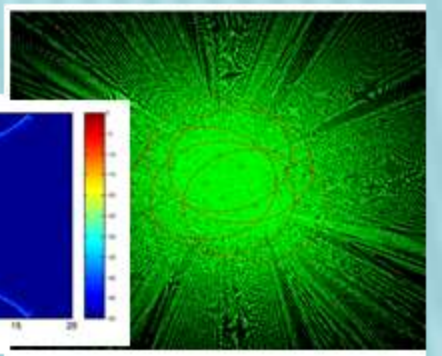
CURRENT RESEARCH PROJECTS

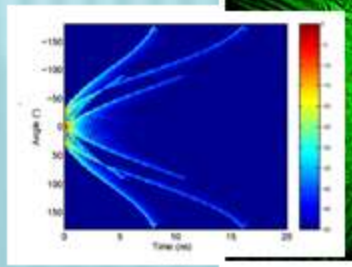


- A new tool for sensor network simulation (SNS)
- Low-cost adaptive antenna for Wi-Fi solutions
- Noise-immune digital receiver
- Cryptography and anti noise coding
- WidSets mobile platform
- Organization of Wi-Fi networks using

  adaptive antennas
- Detection of radio beacon position on sensor network operation area
- Simulation of wireless communication channel
- Visual computing







LABORATORY WEB-SITE AND REMOTE ON-LINE EDUCATION

http://www.wl.unn.ru

THANK YOU!