



# **SME in the Russian Academy of Sciences: success of basic innovations**

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## The Institute of Applied Physics of the Russian Academy of Sciences (IAP RAS)

was created in accordance with the Decree of the Council of Ministers of  
July 28, 1976

Scientific researches entrusted with the IAP RAS  
are concentrated in three scientific divisions:

-Plasma Physics and High-Power Electronics

Division

-Hydrophysics and Hydroacoustics Division

-Nonlinear Dynamics and Optics Division



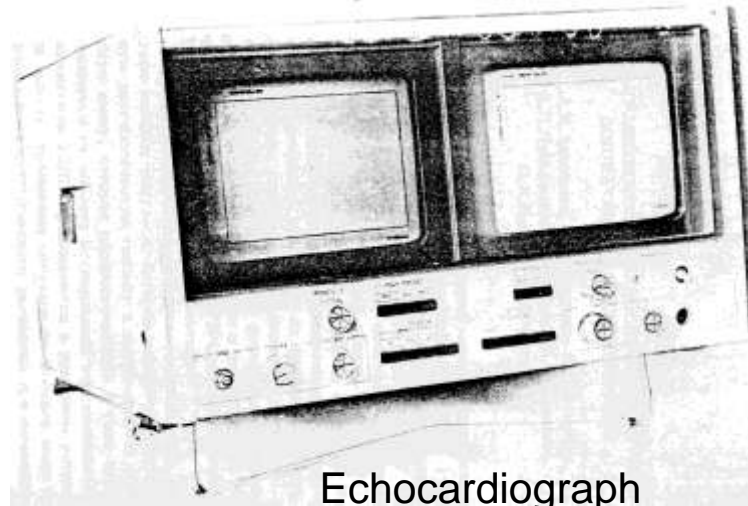


## Pre-history

**Laboratory of ultrasonic diagnostics (IAP RAS) 1977-1991**



Doppler  
Echocardiograph  
UZKAR-D



Echocardiograph  
UZKAR

*Transferred to  
RAZDANMASH  
(Armenia) for full-  
scale production.  
Produced till 1991*



VETER equipment for gas bubble detection  
and decompression sickness evaluation  
during extra-vehicle activity or diving



**An experience of small-scale enterprise  
nearby the academic institution:  
MEDUSA LLC (1992-2010)**



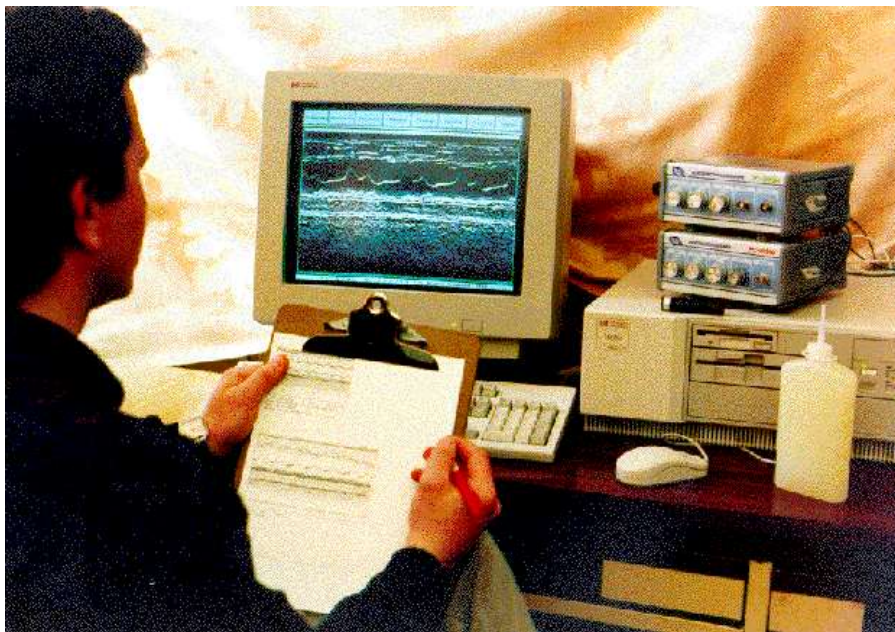
# REASONS TO FOUND A SMALL-SCALE ENTERPRISE

- *Long time between R&D stage and full-scale production*
- *Long distance between fundamental science and industrial applications*
- *An attempt to apply skills and knowledge in various fields of technologies*
- *An attempt to keep the team of high-skilled R&D specialists under difficult economic conditions*



**MEDUSA LLC was established in 1992 by a group of researchers and engineers of IAP RAS**

## First products of MEDUSA LLC (1992-1997):



A series of PC add-in devices for medical ultrasonic diagnostics: echocardiograph, echoencephalograph, Doppler CW peripheral blood flow meter, Doppler fetal monitor (more than 1000 kits delivered to mid-range hospitals)



# NDT product of MEDUSA LLC (1998-2009): ADS-02 Automated Rail Flaw Finder



1998 – prototype

2000 – technical trials

2001 - certification

2002 - 2009 – full-scale  
production at Frunze plant  
(Nizhny Novgorod)

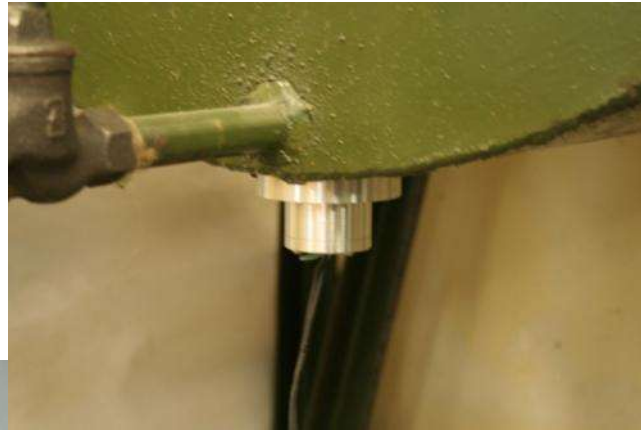


2008 - 2010 – modernization (ADS-02M)

~ **350** devices delivered to Russian Railways



# Products of MEDUSA LLC (2006-2010): AUZUR Automated Liquid Level Meters and Indicators



2006 – prototype

2008 – technical trials

2010 – certification and start of full-scale production

2010 – continuation of R&D, design of new devices in product line



# Consumer products of MEDUSA LLC (2006-2010):



Universal A/M-mode ultrasonic locator and BX2000 Body Fat Meter  
*(jointly with Intelametrix Inc., USA)*  
Ultrasonic acne remover and wrinkle remover for individual use

## International Awards

2005 San Francisco, USA  
3rd Annual Design Contest of PC/104  
Embedded Consortium  
Best commercial product in industrial /  
medical / transportation applications



2008 Brussels, Belgium  
Silver medal of 57<sup>th</sup> World Trade  
Fair for technical Innovations



2009  
Gold medal of American-Rusian Business Union (ARBU)  
“Innovations for investments to the future”





## RESUME

### Current status



### Policy

- Form of ownership – private
- Owners – physical persons (no corporate persons)
- Persons employed – 9
- Byworkers from IAP RAS – 5
- Office and working area – rent from IAP RAS

- Design of “turnkey” hi-tech products  
(development, prototyping, trials, certification, documentation package)
- Outsourcing: complicated technology processes (transducers, PCB etc) are ordered outside
- Full-scale manufacturing at large enterprises on the base of license agreements

### Interaction with parental institute (IAP RAS)

- Company ‘picks up’ side technologies being unprofitable or non-core for Institute
- Institute works as one of outsourcing companies – company invests into development of digital technologies in the Institute
- Company uses novel technologies that can ‘diffuse’ into scientific research and engineering activities of the Institute
- Company is used as a proof area for the ideas of young scientists
- Employees of Institute working in Company get additional fees and experience of management and design



## INNOVATIVE “BELT” OF IAP RAS

**11 independent companies**

**2 with IAP RAS foundation (217 Φ3)**

### **Fields of interests:**

- high power gyrotrons;**
- medical diagnostic equipment;**
- technique for railway industry;**
- technique for gas & oil industry;**
- industrial & communication lasers;**
- vibro diagnostic equipment;**
- optical components and micromechanics;**
- power supply and high power sources of energy;**



**Thank you for attention!**

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