

Muskhelishvili Institute of Computational  
Mathematics

Georgian Technical University



# MICM

1956 – Computer Center of Acad. Sci. Georgia

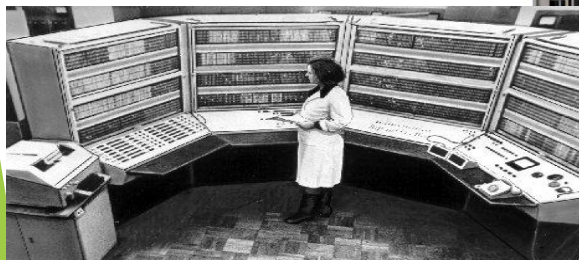
1975 – Muskhelishvili Inst. Comp. Math.

Since 2011 – in GTU



## Old (Until 90-ies) Computers at MICM:

URAL - 2, BESM-6, M220, Minsk-2, EC 10-40, EC 10-20





# MICM New Building



# Research Departments

- Probabilistic and Statistical Methods
- Computational Methods
- Mathematical Modeling
- Computing Center

7 – 8 departments in old days

# STAFF

- ▶ **Total Staff – 50**
- ▶ **Admin - 6**
- ▶ **Researchers – 30**
- ▶ **Programmers / CS – 5**
- ▶ **Young – 6**
- ▶ **Worldwide Renowned Researchers –  
Probability, Analysis, Computational  
Methods, Modelling etc.**

# Government Projects at MICM (1956 – 1990)

- Optimization of Electrical Networks, Gas and Water Pipelines, Agriculture, Energy Systems;
- Object location detection problems (marine forces);
- Software for the Civil Engineering;
- Etc.

# Grant Projects

- ▶ NATO Grants, Launching, modification and technological upgrade of the computer network of Academy of Sciences, Internet, 1994, 1996, 1999, 2003
- ▶ Shota Rustaveli National Science Foundation - 7 Grant Projects (since 2006)
- ▶ Other smaller grants



# International Grant Projects

*(since 2010)*

- ▶ 2010-12. FP7, INCO.2010-6.1. GEO-RECAP - **The 1<sup>st</sup> EC Project** (MICM - Coordinator)  
*Aim - Building ICT Capacities in MICM and IC*  
Collaboration in GEO-RECAP resulted in 2 projects
- ▶ 2013- 2016. TEMPUS IV-6. MATH-GEAR  
*Math Curricula*
- ▶ 2013 -2016. FP7-INCO-2013-9. NoGAP  
*Renewable Energy*
- ▶ 2013 -2015. Marie Curie FP7-PEOPLE-IRSES.  
*Differential Equations and Lie Groups*

# International Research Collaboration

- ▶ Michigan State University (USA). More than 20 joint publications
- ▶ Universities of Madrid and Vigo (Spain). About 40 joint publications
- ▶ FP7 and TEMPUS Projects: DFKI, Saarland Univ., Steinbeis-Europa-Zentrum (Germany), ERCIM, Lyon CB Univ. (France), Kiev Tech. Univ. (Ukraine) etc.
- ▶ **New Partners:** INRIA, EXOLAUNCH

# Recent Local Research Collaboration

- ▶ National Center for Disease Control and Public Health (NCDC). The problems related with Covid 19 pandemic (Memorandum of Cooperation)
- ▶ Educational and Research Scientific Center, Joint Projects (2 joint research papers)
- ▶ MICM is the member of the “Georgian open science cloud initiative” ([The European Open Science Cloud \(EOSC\)](#)), *signed memorandum*
- ▶ Other Universities and Institutes

# Nearest Goals of MICM

Aside from the traditional research

## Strengthen the Research and Computational Capacities Aiming at:

- ▶ investigation of the problems faced by the country in the fields of economy, security, ecology, natural or technical disasters, transport, climate, construction, education, medical services, agriculture, energy etc.
- ▶ inclusion in the international collaborations (CERN, KEK, Jülich, etc.)

# Nearest Goals of MICM

## Strengthen the Research and Computational Capacities Aiming at:

- ▶ development of modern scientific fields such as: AI (machine learning, deep learning), modeling and simulations, Big Data processing and analysis, etc.

### GAIN - new impetus

- ▶ MICM AI Lab - about 15 researchers (mostly young) from MICM, GTU, IBSU
- ▶ the seminars in ML - from June, 2022
- ▶ Expected Interest from BSU, IUNI, TSU, KIU

# Computational Capacities

## Already in MICM

- ▶ (SRNSF Grant, 2021): Model: HPE Proliant DL385 Gen10 Plus V2 CPU: AMD EPYC 7713 (64 cores) RAM: 128 GB DDR4, HD: 7.2 TB, GPU: Nvidia A100 40GB (6912 Cuda)
- ▶ Small computer cluster for parallel programming

## GAIN

- ▶ Deep Learning Appliance 1U computer; Platforms - Tensorflow, Caffe, Torch etc.
- ▶ Construction of the special space - Server Room with the cooling system, UPS, ... (SRNSF Grant, 2022)



# Perspective – Computer Center



**Thank You**

The background features abstract, overlapping geometric shapes in various shades of green, ranging from light lime to dark forest green. These shapes are primarily located on the right side of the frame, creating a modern, layered effect against the white background.