Ben-Gurion University of the Negev

South-Ukrainian National Pedagogical University

OBSTACLES IN DEVELOPMENT OF NANOTECHNOLOGIES AND ECONOMIC PROBLEMS

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Agenda

1. Cybernetics, Informatics, Economics

2. Information approaches in economics

3. Nanotechnologies and economics

Multi-agent systems

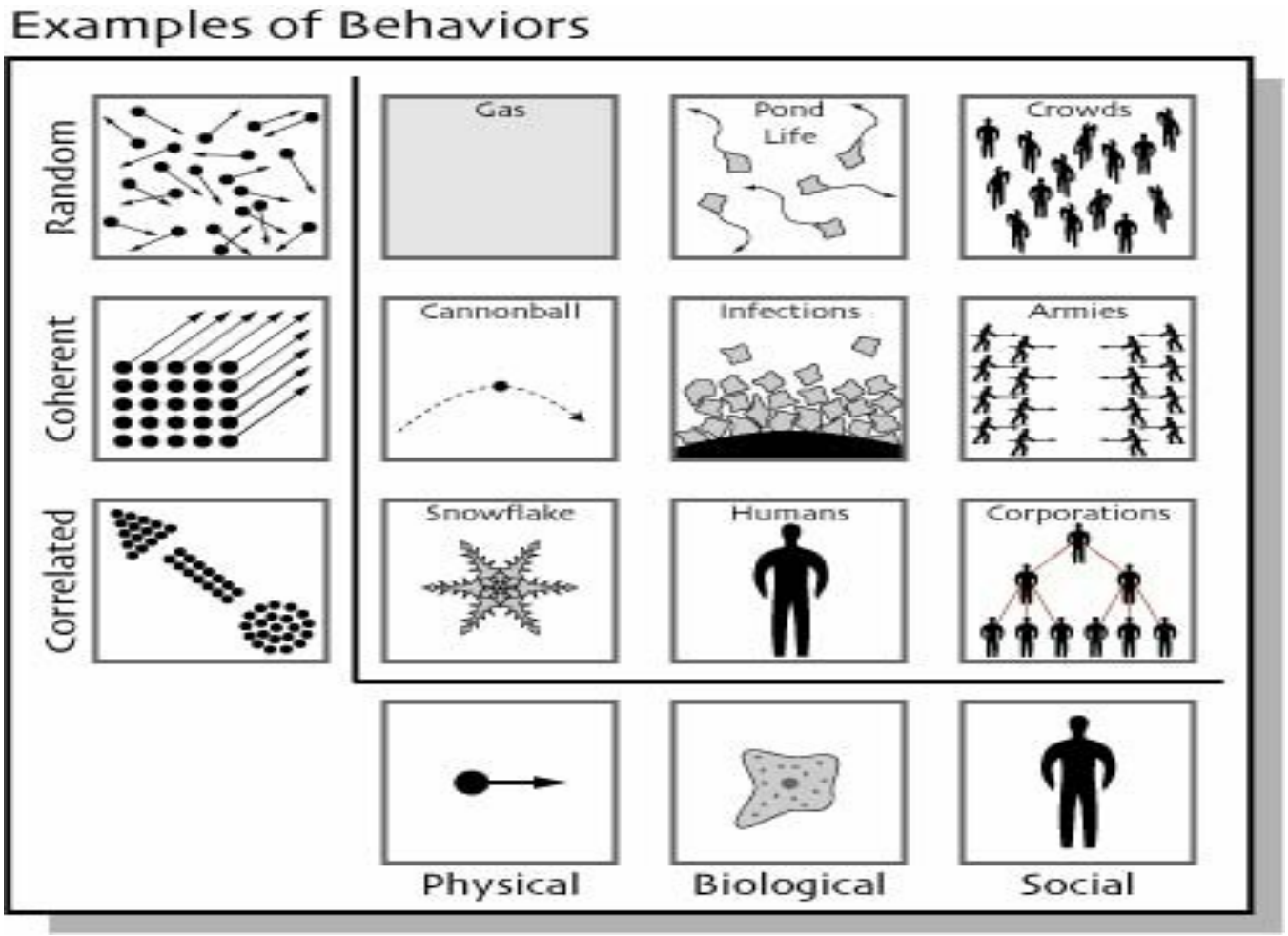
Social-economic problems demand an application of the models of complex systems and methods of computer modeling of multi-scale complex objects such as social-economic clusters, financial clusters, industrial and financial companies and so on.

Nowadays for concrete social groups and people communities a special approach is developed to model and to predict the behavior of human collectives: **MULTI - AGENT SYSTEMS (MAS)** model.

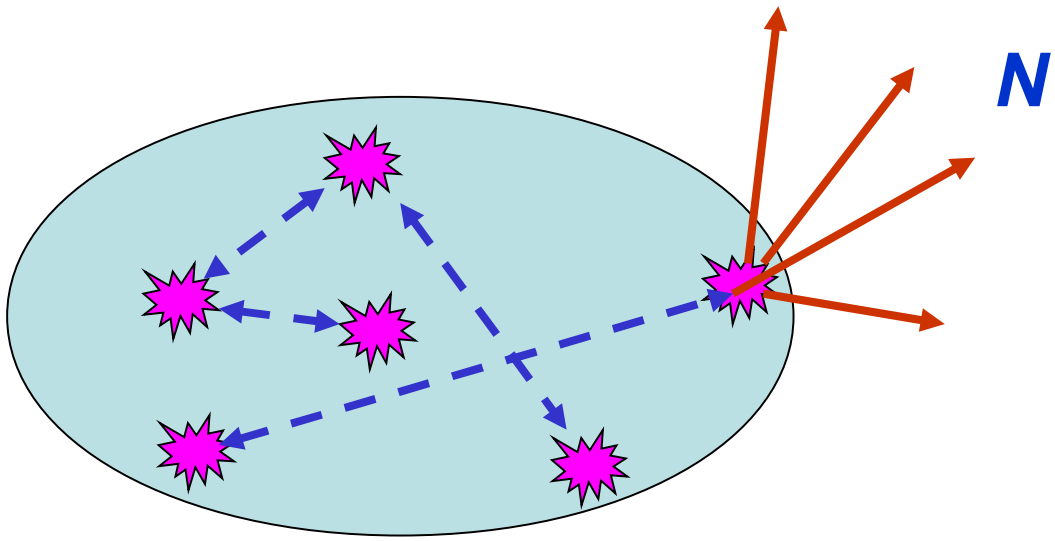
This approach consists of the following steps:

- ❖ Formation of the virtual collective with corresponding members (so called “Intelligent agents” (IA)) with necessary characteristics.
- ❖ Introducing the rules of IA interactions according to specific tasks of MAS.
- ❖ Computer modeling of dynamics of MAS.

From physical models of complex systems to social models

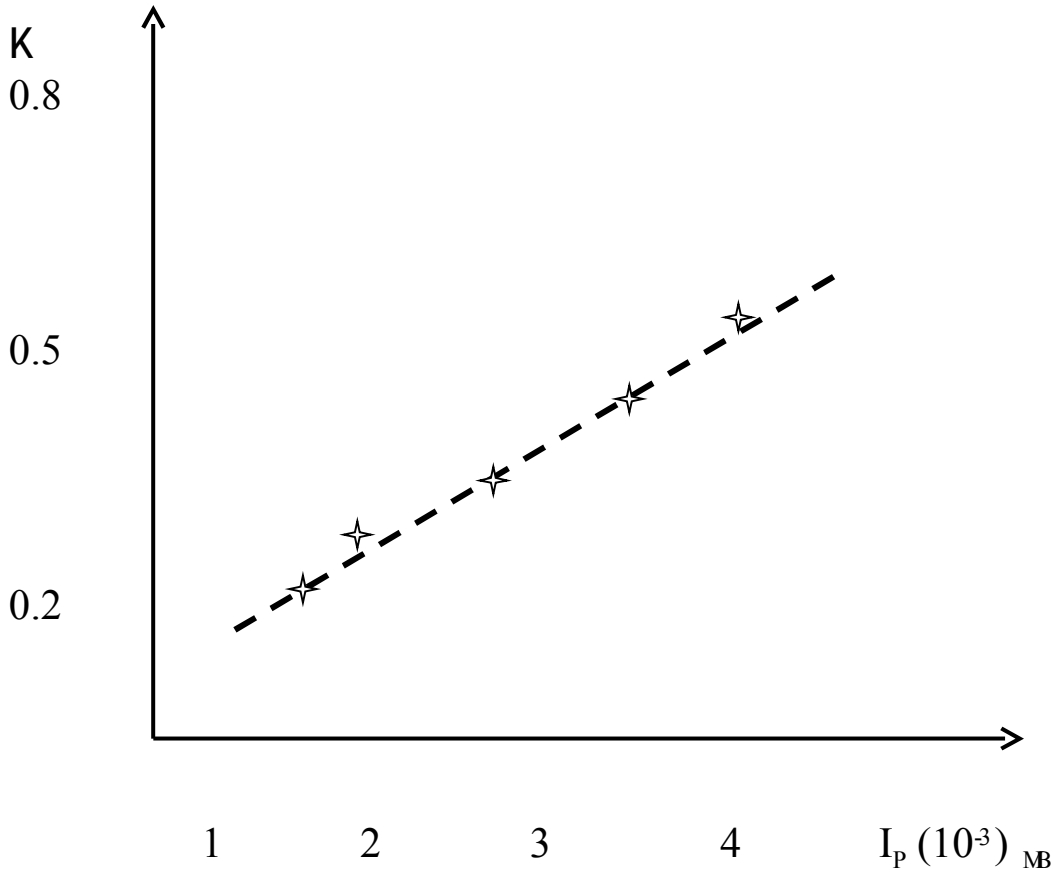


Information potential of cluster



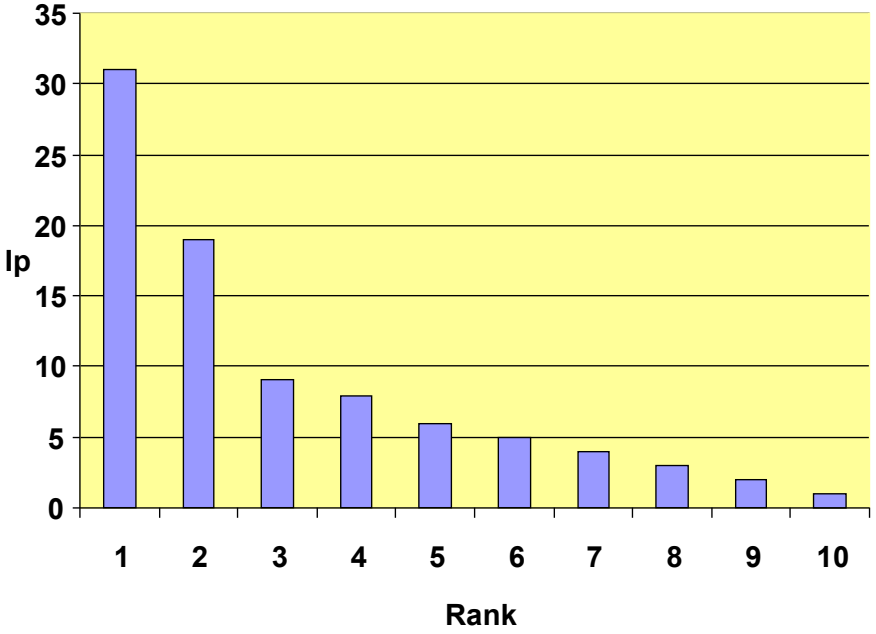
$$I_p = \log_2 N$$

Correlation between I_p and clusterization coefficient

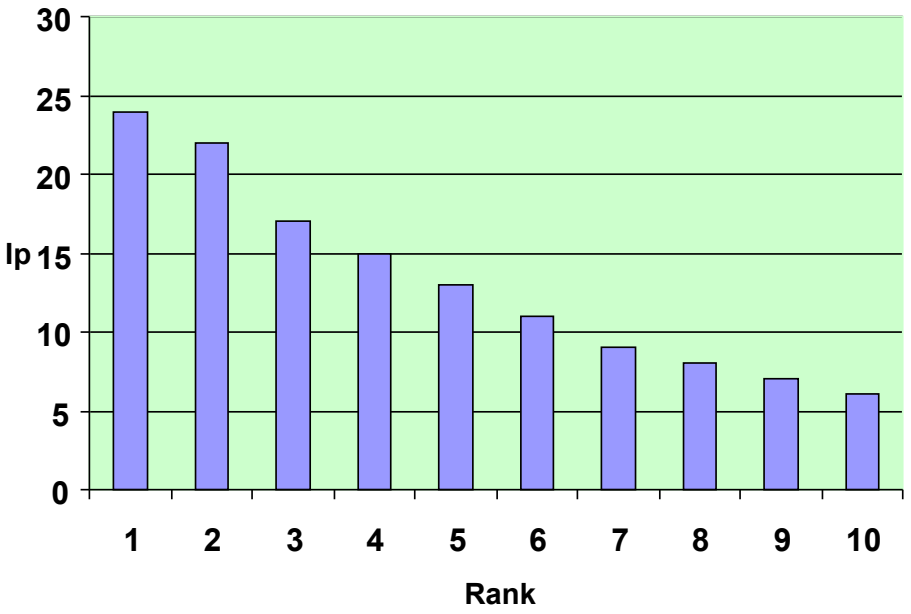


Distribution of enterprises according to I_p

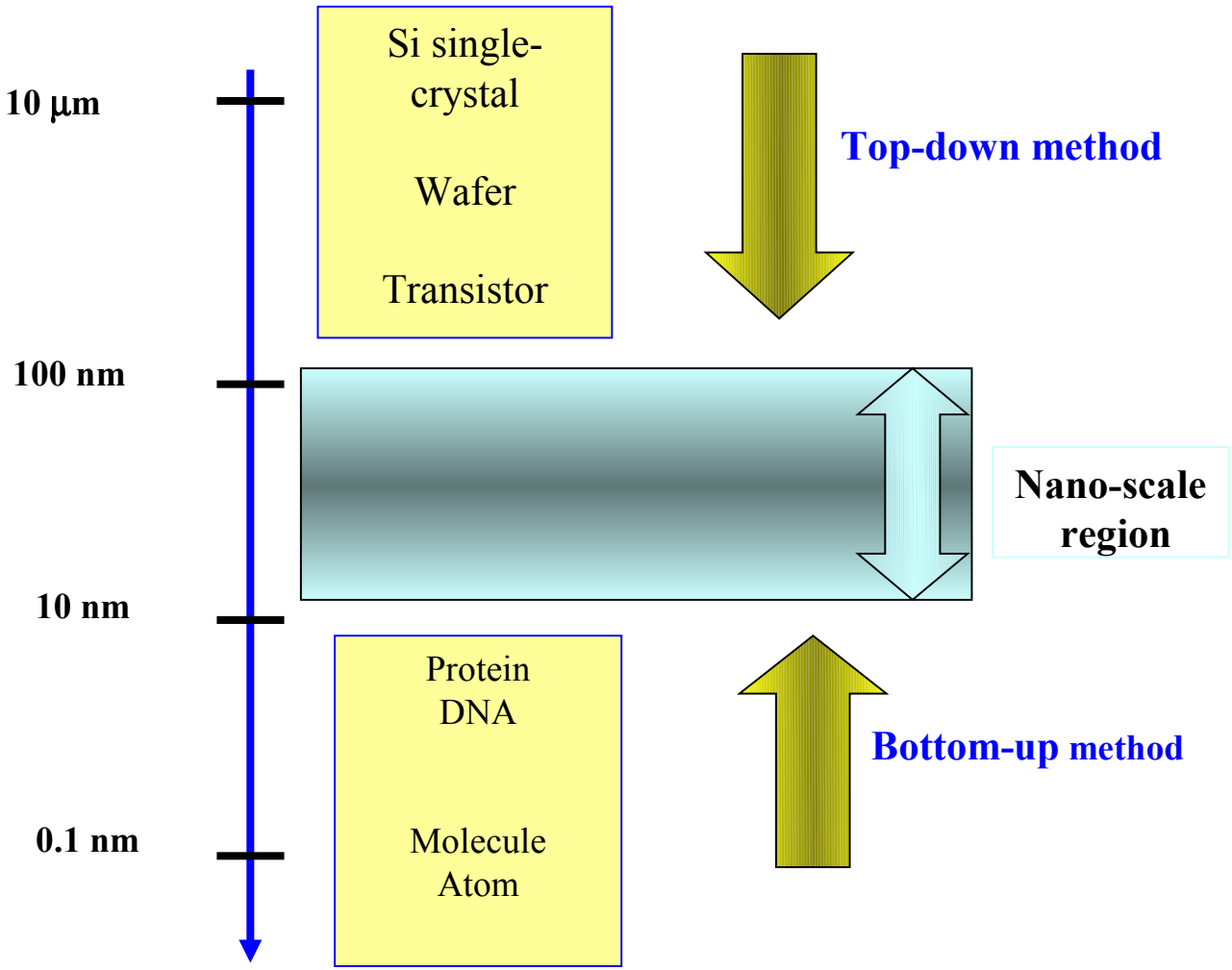
Metallurgy



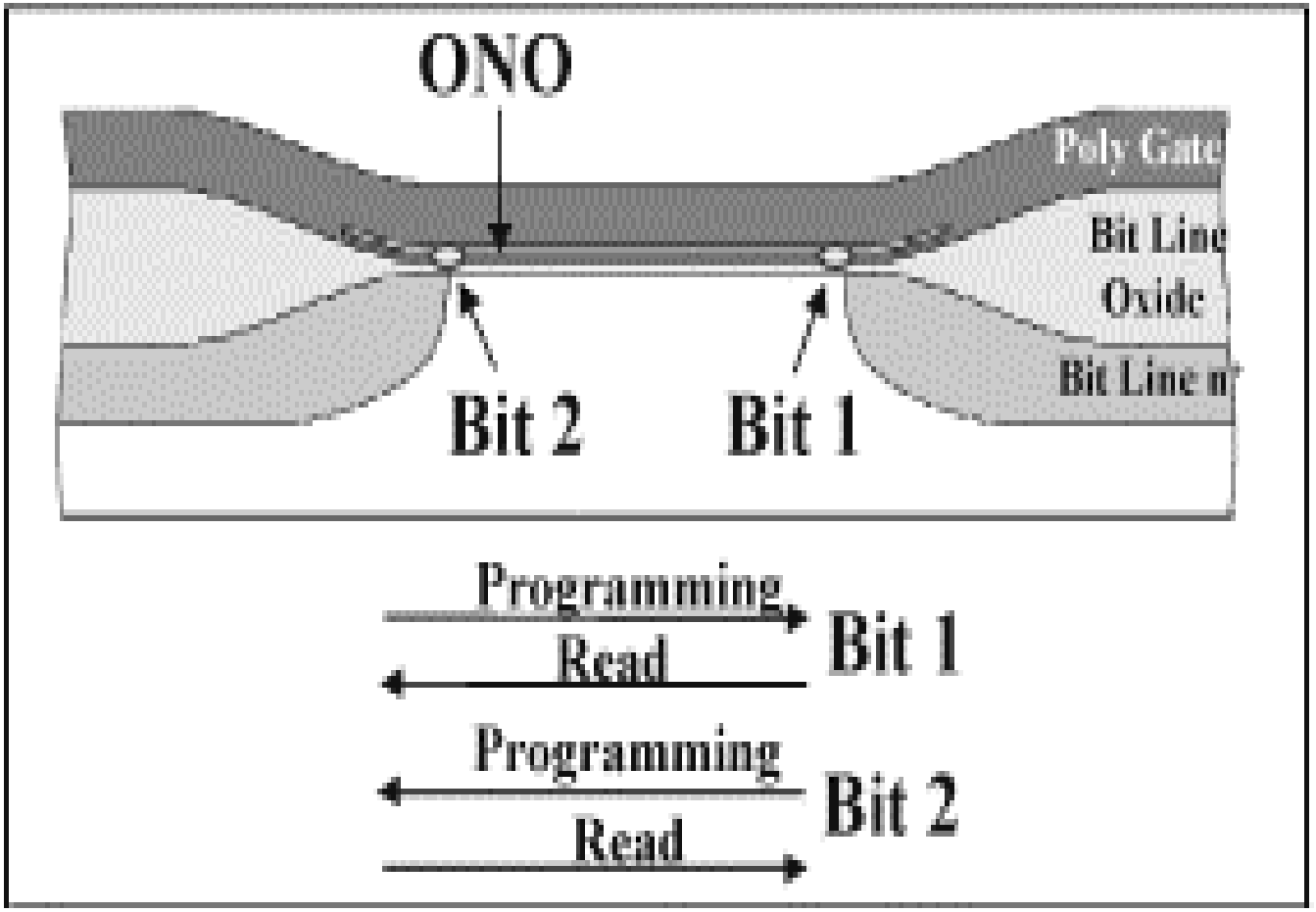
Chemical Industry



Two strategies in nanotechnology



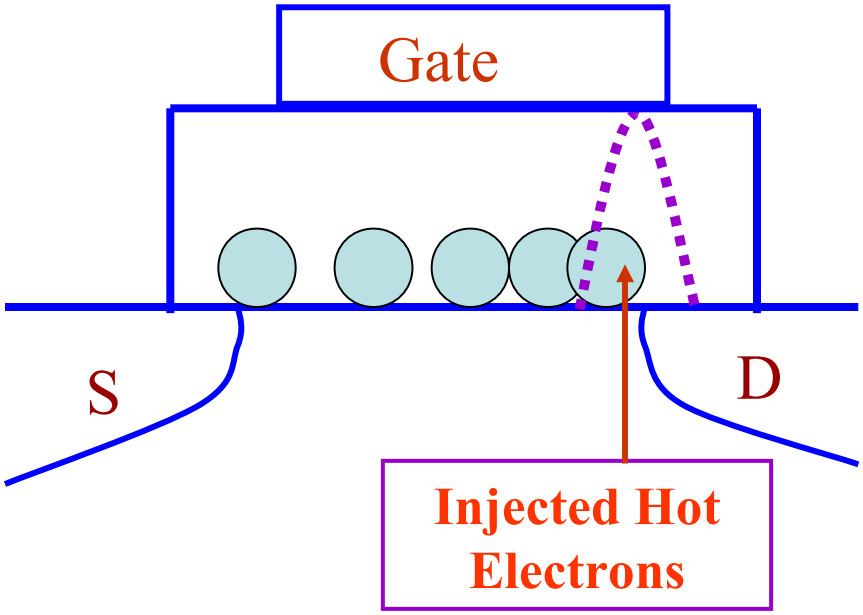
INCREASE OF MEMORY VOLUME



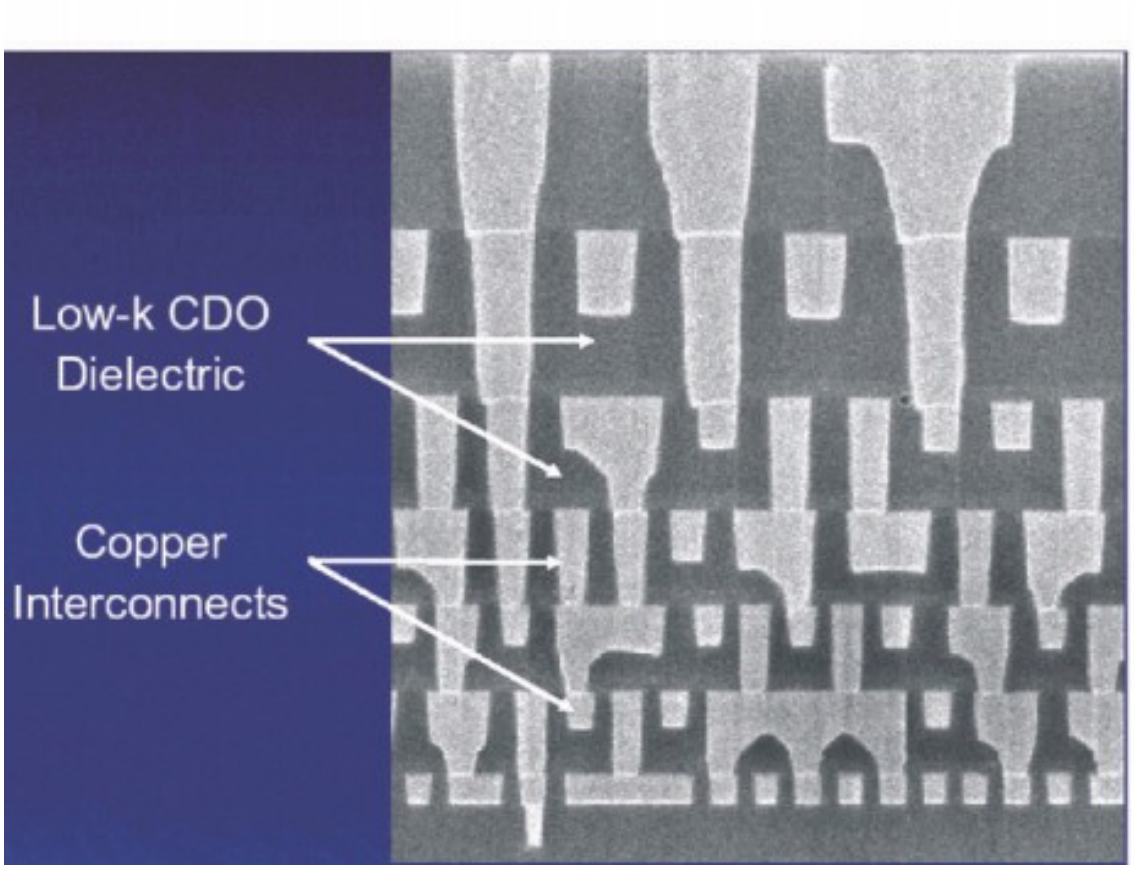
Gate dielectric with nanoclusters

Nanocrystal memory transistor

Gate dielectric with nanoparticles as memory reservoirs



Real picture of interconnects



Tendencies in electronics progress

The movement to nano-electronics is accompanied by:

Increasing the transistor speed;
Reducing transistor size;
Packing more transistors onto a single chip.

Here we meet the new significant emerging factor: slowing speed of signal propagation within the chip.

Дякую за увагу!

Thank you for your attention !

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