

NANO-CONVERGENCE 2020 PROGRAM



Message from the Director

Nanotechnology has thrown a strong light on providing a new engine for sustainable growth as well as solutions for numerous global issues such as climate, energy, natural resources, and crucial agendas closely related to demography. Many countries, whether developed or developing ones, have intensively invested in nanotechnology at the government level over the last two decades to establish competitive edge with the new technology. Consequently, much knowledge in nanotechnology has been accumulated and reached a stage where commercialization of the technology is necessary and imminent.

Many corporations have already adopted nanotechnology for their technological innovation. In accordance with the accelerated commercialization of nanotechnology, early commercialization has become a crucial issue in the government policy. The role of private sector, including all profit-seeking businesses, in commercialization of the nanotechnology has become increasingly important.



The Nano-Convergence Foundation(NCF) was founded in September 2012 to boost the commercialization of the research outcomes under the joint support of the Ministry of Science, ICT & Future Planning(MSIP) and the Ministry of Trade, Industry & Energy(MOTIE).

General mission of NCF is to foster fast commercialization of nanotechnology developed in the public sector such as universities and institutes in order to create new markets as well as new industries in the sphere of nanotechnology as early as possible.

NCF aims to play a significant role in building a bridge, a shortcut and a pipeline between the private sector and the public sector. All the activities of NCF are administered through the 'Nano-Convergence 2020 program', specifically designed to link promising research outcomes in the public sector with the new market demand in the private sector. NCF will contribute to make research activities effective and deepen the relationship between the two key players: public and private sectors, necessary for fast commercialization.

NCF hopes to make nanotechnology a key driver for the technology-convergence leading to new markets and industries as well as a new engine for sustainable growth of Korean economy.

Background

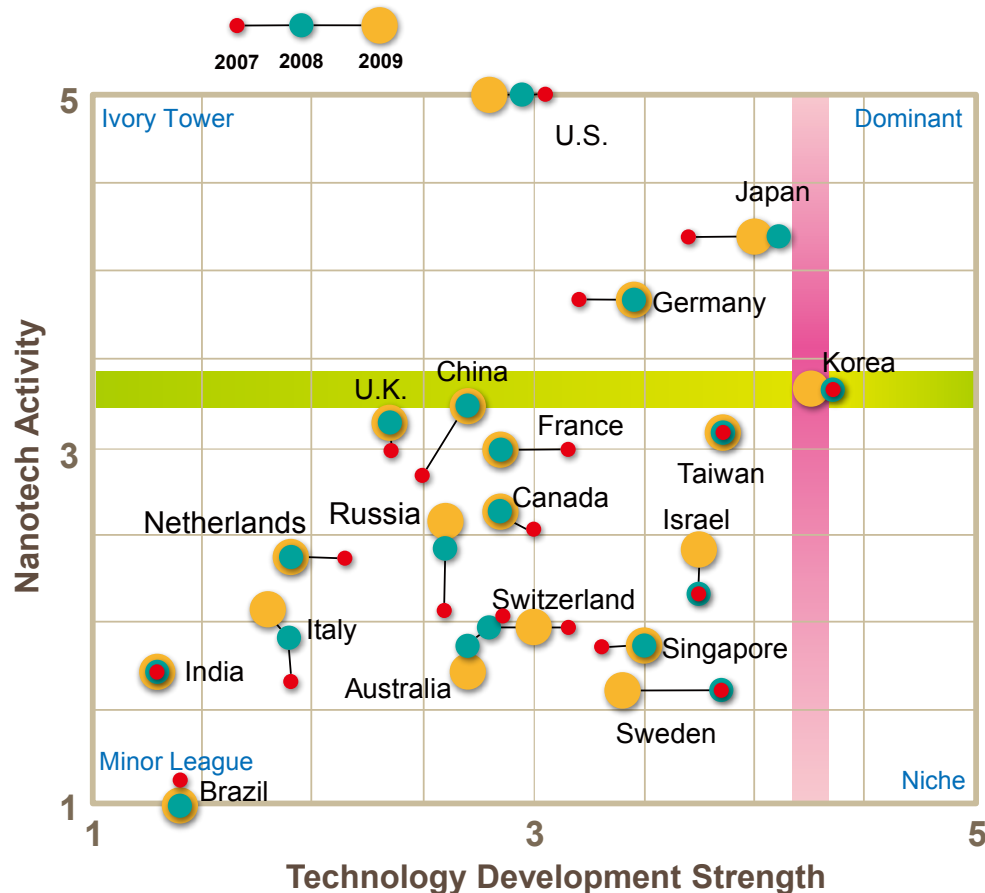
Global nanotechnology market has been expanding at a very rapid rate, approximately by 25% annually. It has already surpassed 250 billion dollars in 2010 and is expected to be worth 1 trillion dollars in 2015 and 3 trillion dollars in 2020. Many countries in the world are eager to commercialize research outcomes in order to create and attain the dominant position in the new markets earlier than other competitors.

Korea is also eager to commercialize the research outcomes accumulated in the public sector during last ten years. Korea is estimated to rank the 4th position in the nanotechnology activities and the 1st position in the developing technology strength. Even though Korea takes high position in global nanotechnology competitiveness, the level of commercialization of nanotechnology is relatively low, compared with other developed countries.

Now is the high time for Korea to put more resources and effort into commercialization of research outcomes in nanotechnology in order to create new markets and industries. In addition, it is also very important for Korea to make an effort to expand the current and potential markets by merging nanotechnology and other nano-products with conventional technologies and products for the purpose of developing new products based on technology convergence.

There are several hurdles to overcome in order to make rapid progress in commercialization of the nanotechnology: 1) lack of information exchange among government agencies, research programs and research phases, 2) asymmetric flow of information between public sector and private sector, and 3) absence of systematic commercialization systems. An efficient system with seamless linkage among R&D activities, commercialization and deployment should be firmly established to develop nanotechnology with high maturity, fast commercialization and subsequent rapid deployment.

The 'Nano-Convergence 2020 Program' intends to be a multi-agency collaboration with overall management of R&D with wide openness.



[Lux research, 2010]

Outlines of Nano-Convergence 2020 Program

Period

September 2012 ~ 2020 (9 years)

Mission

Promotion of commercialization of research outcomes obtained from R&D activities in the public sector

Operation

This program is run by the 'Nano-Convergence Foundation(NCF)', a juridical foundation with high responsibility, which is an independent organization totally in charge of commercialization of research outcomes in nanotechnology area.

Funds

This program is cooperatively supported by the Ministry of Science, ICT & Future Planning(MSIP) and the Ministry of Trade, Industry & Energy(MOTIE)

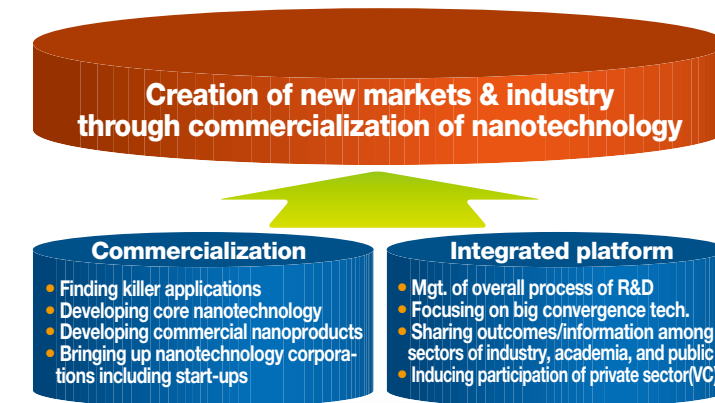
- Budget size: 500M US\$ in total for 9 years

Priority areas

Five top priority areas were defined as follows:

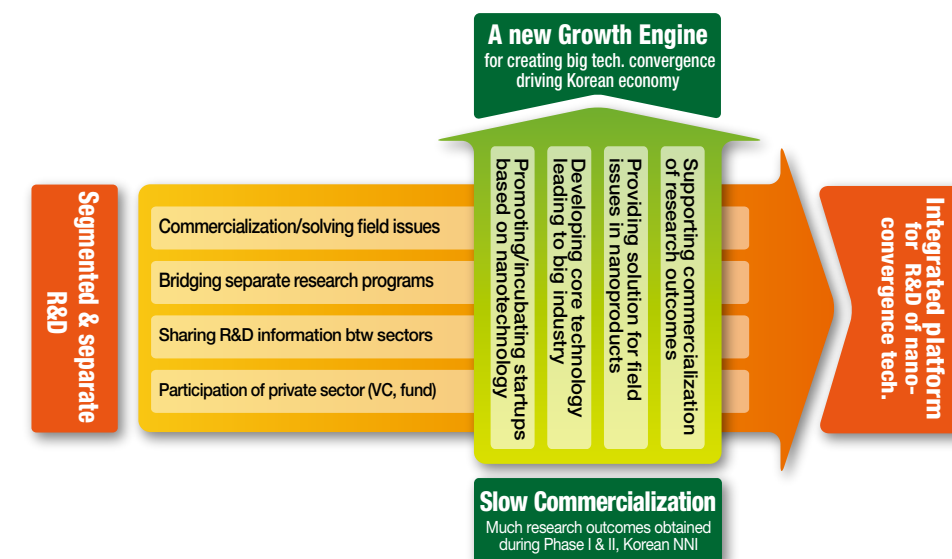
- 1) Post CMOS(complementary metal-oxide semiconductor) type next-generation semiconductors
- 2) Nanotechnology-based flexible devices
- 3) High-efficiency energy conversion technology
- 4) High-performance treatment of water & waste resources
- 5) Common cross-cutting nanotechnologies.

Vision



NCF hopes to make nanotechnology an engine for sustainable growth of Korean economy by means of:

- Establishing an integrated nanotechnology platform to support commercialization activities effectively,
- Supporting commercialization of research outcomes in the public sector, and
- Creating new markets and new industries as early as possible.



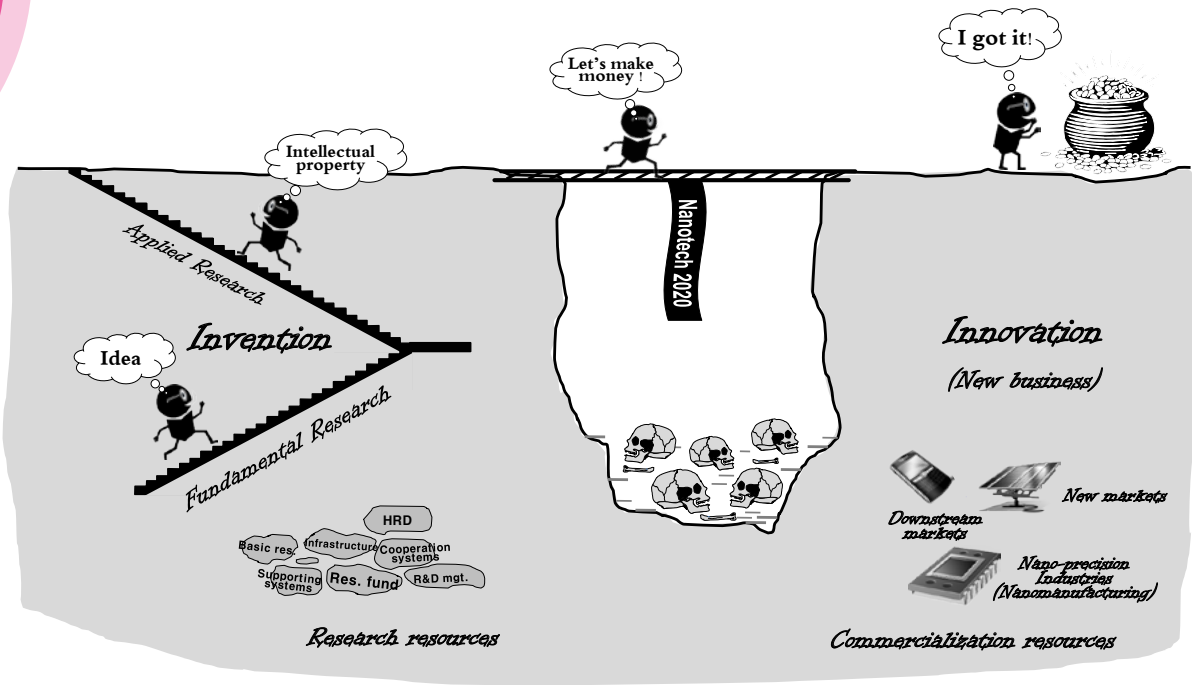
Mission

NCF provides:

- Exit & entry in/between independent R&D tracks in the respective public and private sectors,
- Coordination of information flow between public sector and private sector, and
- Intensive support for early commercialization of nanotechnology, leading to creation of new markets and new industries,

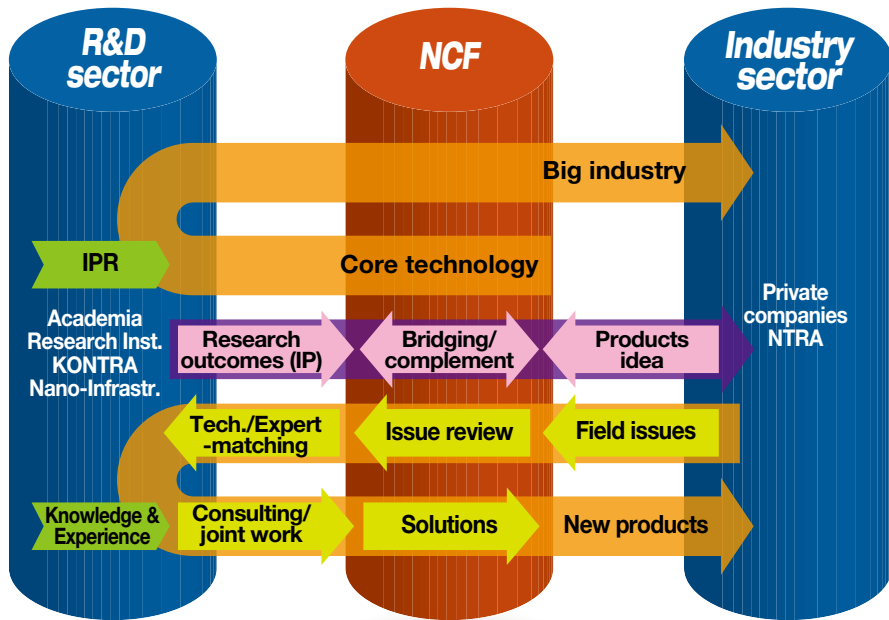
through the activities of:

- linking promising research outcomes to market demand in the industry,
- utilizing the R&D infrastructures as a platform aiding commercialization, and
- promoting technology convergence together with nanotechnology.

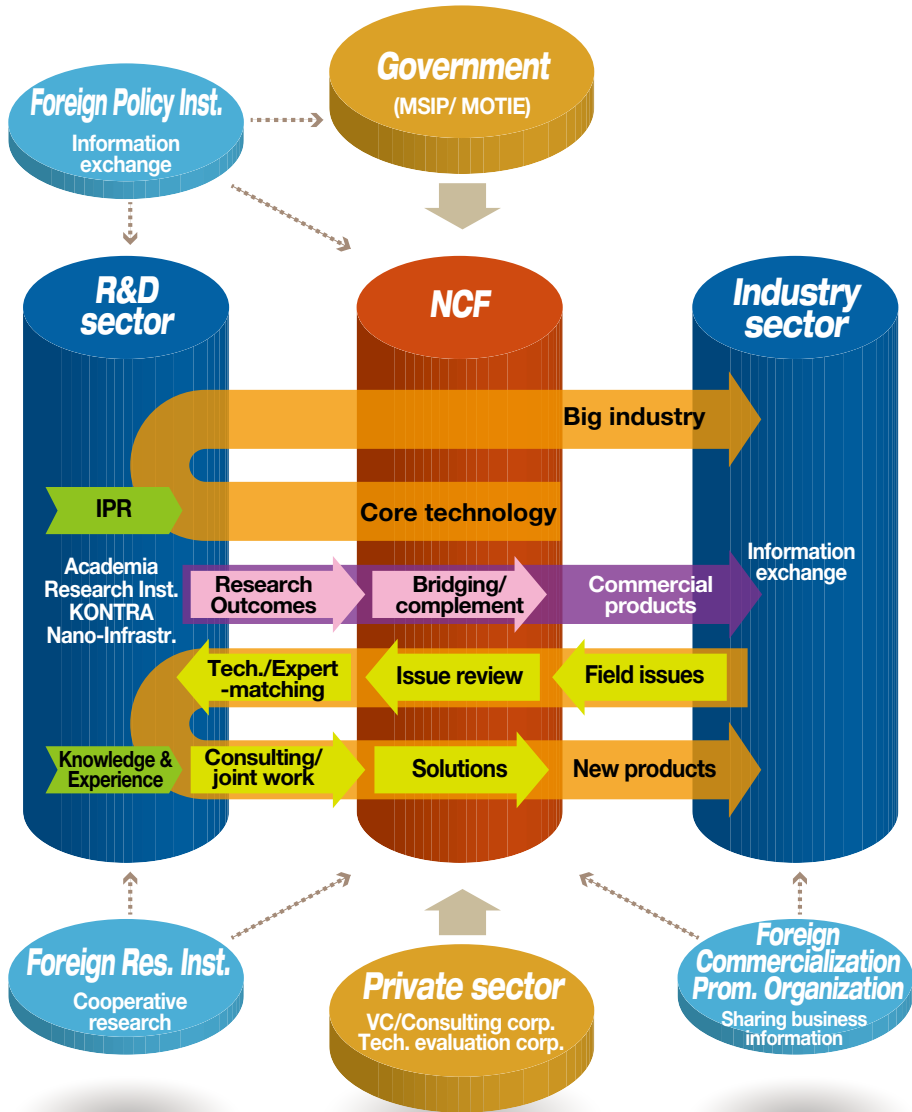


Commercialization Frame

- Searching promising nanotechnology with high economic potential leading to big industry such as CMOS (ex. post-CMOS) under the leadership of NCF
- Matching research outcomes with market demand in the industry (linkage)
- Providing solutions to company's urgent technological field issues confronted in the development of nano-products (technology-matching, consulting)



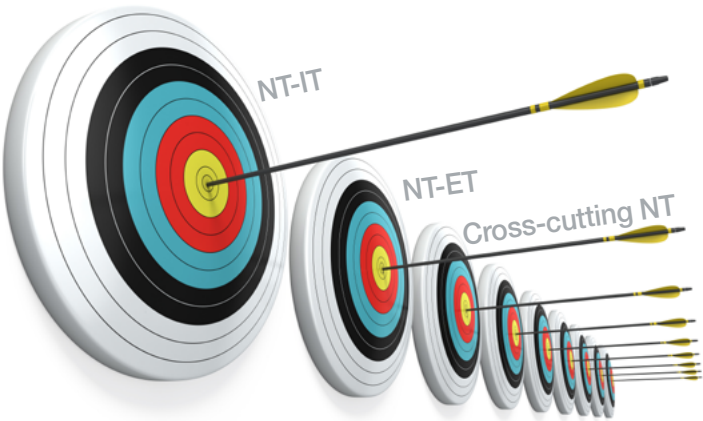
Collaboration Network



Target Areas

Commercialization topics belonging to two major convergence technology areas together with common cross-cutting nanotechnology area, close to markets or having urgent industrial needs, will be primarily promoted, but are not limited to these areas in principle.

Tech. area	Technology area to be substantially promoted
NT-IT	Next generation devices (Post-CMOS)
	Nanotechnology-based flexible devices
NT-ET	High-efficiency energy conversion technology
	High-performance treatment of water/waste
Cross-cutting NT	Nanomaterials, Nanoprocessing/Nanomanufacturing, etc.



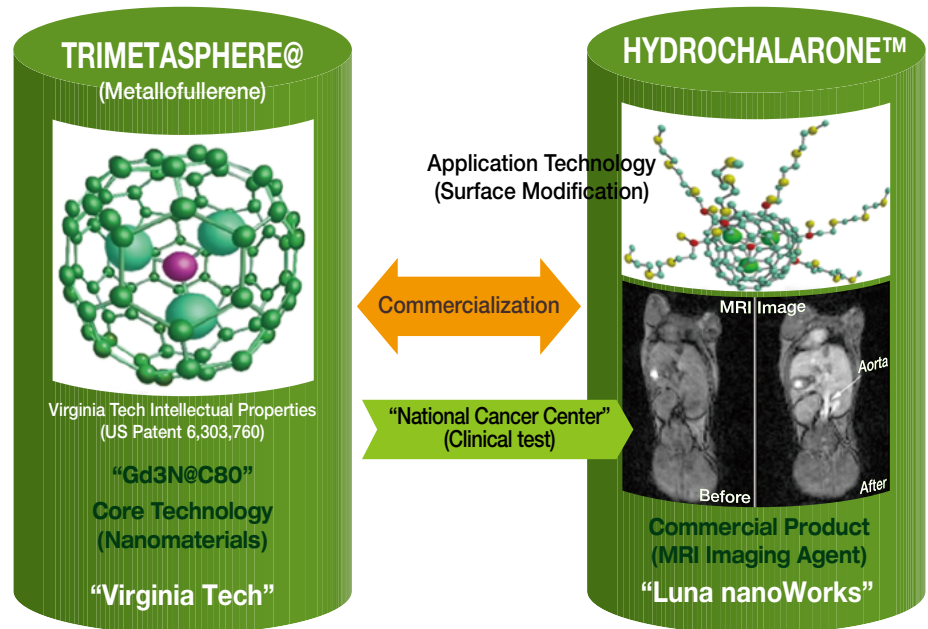
Models of Nano-Convergence 2020 Project

Direct matching (a backbone of all the models)

An essential condition is a combination of an institution holding promising nanotechnology, especially intellectual property(IP), and a corporation with practical business idea for commercial products. The IP should be a key element in the target commercial products. Of course, the corporation should have an distinct business model and make a contract for technology transfer with the IP holder(institution) in advance.

- **Example:** a case of 'Luna nanoWorks'

The company 'Luna nanoWorks' has commercialized an MRI imaging agent named 'HYDROCHALARONETM'. Luna nanoWorks adopted Virginia Tech's metallofullerene TRIMETASPHERE@ to combine with its own surface modification technology. National Cancer Center had don clinical test to check suitability of HYDROCHALARONETM as an MRI imaging agent.



Indirect matching

Sometimes a corporation requires a new critical IP(patent) to produce a target product, even though it is not able to make an intermediate nano-product based on a new patent, necessary for the target product. The critical IP in the public institution can be transferred to the end producer via (an) intermediate product company. Two business models may be involved: (1) the end producer holds all the right for IP (a company producing an intermediate product should supply exclusively to the end producer) and (2) the IP can be shared by both an end producer and an intermediate product company according to the contract between them. All the options involved are open to a corporation to commercialize the IP.



Director
Park, Jong-Ku
+82-2-6000-7490
jkipark@nanotech2020.org

General Manager
Kim, Choong-Keun
+82-2-6000-7491
kck@nanotech2020.org

Manager
Chun, Dae-Yong
+82-2-6000-7492
loveyou@nanotech2020.org

Manager
Kim, Joo-Hyung
+82-2-6000-7495
jhkim@nanotech2020.org

Assistant manager
Lee, Hyang-Sook
+82-2-6000-7493
hslee@nanotech2020.org

Assistant manager
Han, Ji-Young
+82-2-6000-7496
hjyhan@nanotech2020.org

Contact Us

Map
&
Address

A schematic map of the Gangnam area in Seoul. It shows the intersection of Subway Line No. 2 and Subway Line No. 3. Gangnam Station is marked with a green box and the number 1. Yeoksam Station is marked with a green box and the number 4. The Nano Convergence Foundation is highlighted in purple, located between Vision Tower and LIG Insurance Co., Ltd. B/D. Other landmarks include The National Library for Children and Young adults, Dunkin Donuts, and Yeoksam 1-dong Post Office. The Shinbundang Subway Line is also indicated on the left.

Room 306, New building, The Korea Science and Technology Center (KSTC), 22, Teheran-ro 7-gil, Gangnam-gu, Seoul, Korea (Post code : 135-703)

