Supercomputing Activities in Korea

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2015. 1. 29.

Supercomputing Act

National Supercomputing Promotion Act - Summary

- ■ **Title**
  - ❖ "Utilization and Promotion of National Supercomputing"
  - ❖ **Enacted**: 2011. 6. 7, **Implemented**: 2011. 12. 8

- ■ **Goal**
  - ❖ Contributing to the enhancement of people's quality of life and the national economic development… through the efficient implementation and systematic management of national supercomputing infrastructure

- ■ **Key Actions**
  - ❖ Establishment and execution of plan for the promotion of national supercomputing ecosystem
    - • Master Plan (5 years), Implementation Plan (1 year)

  - ❖ National Supercomputing Committee
    - • Chair: Secretary of Ministry of Science, ICT and Future Planning
    - • Ministry Involved (9): **Ministry** of Science, ICT and Future Planning, **Ministry** of Strategy and Finance, **Ministry** National Defense, **Ministry** of Trade, Industry and Energy, **Ministry** of Health and Welfare, **Ministry** of Environment, **Ministry** of Oceans and Fisheries, Small and Medium Business **Administration**, Korea Meteorological **Administration**

  - ❖ National Supercomputing Center
    - • Support the planning and execution of national plan

National Supercomputing Plan

❖ **3 Strategies** (or Areas)

- Expand adoption
- Efficient infrastructure (including human resource)
- R&D on core technology (including industry)

제1차 국가초고성능컴퓨팅 육성
기본계획('13 ~ '17)

제출자	교육과학기술부	기획재경부
	국방부	지식경제부
	보건복지부	환경부
	국토해양부	국가과학기술위원회
	중소기업청	기상청
제출년월일	2012. 12. 4.	

Vision

Top 7 Nation for Supercomputing

Expand the use of supercomputing through the creation of new demand

Establish Top 10 supercomputing service infrastructure

Secure independent supercomputing development capacity

■ Expand the use of supercomputing through the creation of new demand

- ❖ Promote national research and development using national supercomputing
- ❖ Strengthen industry innovation by using national supercomputing
- ❖ Expand public and private service based on supercomputing
- ❖ Expand public participatory activities to promote the understanding of supercomputing

■ Establish global top 10 supercomputing service infrastructure

- ❖ Secure supercomputing resource in response to future demand
- ❖ Establish efficient national supercomputing service system
- ❖ Train demand-based experts for supercomputing ecosystem

■ Secure independent supercomputing development capacity and foster the basis for industrialization

- ❖ Secure independent development capacity for supercomputing system
- ❖ Expand R&D of original technology for the next generation supercomputing development
- ❖ Foster industry basis related to supercomputing

■ **Expand the use of supercomputing through the creation of new demand**

❖ Promote national research and development using national supercomputing

• Use of supercomputer in rare isotope science project, ocean modeling, proton therapy, weather prediction model, …

❖ Strengthen industry innovation by using national supercomputing

• Support SMB product development, develop innovation model, …

❖ Expand public and private service based on supercomputing

• Provide more accurate and diverse weather forecast, …

❖ Expand public participatory activities to promote the understanding of supercomputing

• Hold supercomputer idea competition, …

■ **Establish global top 10 supercomputing service infrastructure**

- ❖ Secure supercomputing resource in response to future demand
  - • Procure KMA's next computing system (~ $50 million), establish plan for leadership computing system (KISTI-5), …
- ❖ Establish efficient national supercomputing service system
  - • Establish plan for national shared supercomputing infrastructure, …
- ❖ Train demand-based experts for supercomputing ecosystem
  - • Establish plan for national education & training framework, …

National Supercomputing Implementation Plan – 2013 (3/4)

- **■ Secure independent supercomputing development capacity and foster the basis for industrialization**
  - ❖ Secure independent development capacity for supercomputing system
    - • Establish plan for Korean supercomputer development, …
  - ❖ Expand R&D of original technology for the next generation supercomputing development
    - • Initiate program for grass root research on supercomputing, …
  - ❖ Foster industry basis related to supercomputing
    - • Improve procurement procedure, …

■ **Summary of implementation plan**

   ❖ 48 projects from 7 ministries
   ❖ Increase of annual budget: from $40 million to $60 million

■ **Big scale projects are underway**

   ❖ "Super Korea 2020" - $200 million
   ❖ DURE - national shared supercomputing infrastructure project
   ❖ National supercomputing education and training framework

Supercomputing Infrastructure

National Supercomputing Infrastructure – Master Plan

❖ Establish efficient national supercomputing service
  - Three types of designated centers: national – specialized – regional
    ✓ National center (NISN): world-class resource, support large scale national strategic projects, national service infrastructure leader
    ✓ Specialized center: support specific domain demands (or ministry), application domain service leader
    ✓ Regional center: support regional demands, institute service leader
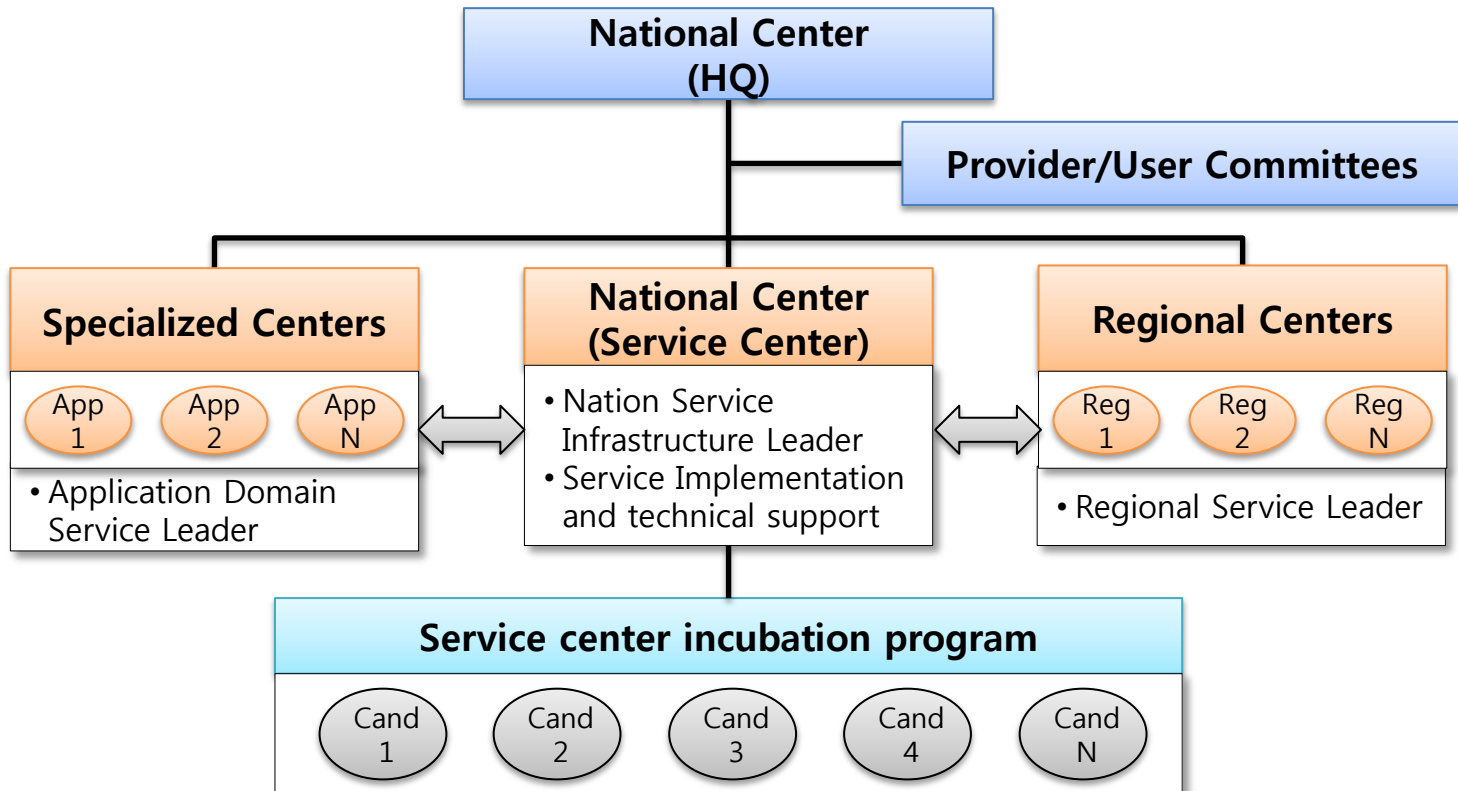
SuperKorea 2020

■ **Large-scale HPC system project**

❖ Budget: $200 million

❖ Duration: 2015~2019 (5 years)

❖ Goals:

• Procurement and operation of leadership system (KISTI-5)

• Build supercomputer with Korean technology

Super Korea!

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National Supercomputing Infrastructure - Present

❖ Shared Infrastructure

- 10 Participants: KISTI, PKNU, PNU, UNIST, GIST, KIAS, …
- Resource: 21 Systems, 8338 CPU, 394 TF (380 TF from NISN)
- Service: Integrated System(File system, Batch Queuing System), User Portal, Support, Training

✓ Serving as Pilot National Supercomputing Infrastructure