

Evaluation of Public R&D Programs: Evolution and Recent Developments in Korea

The 30th EERS Annual Conference

*Looking Forward:
Promising Advances, Persistent Challenges*

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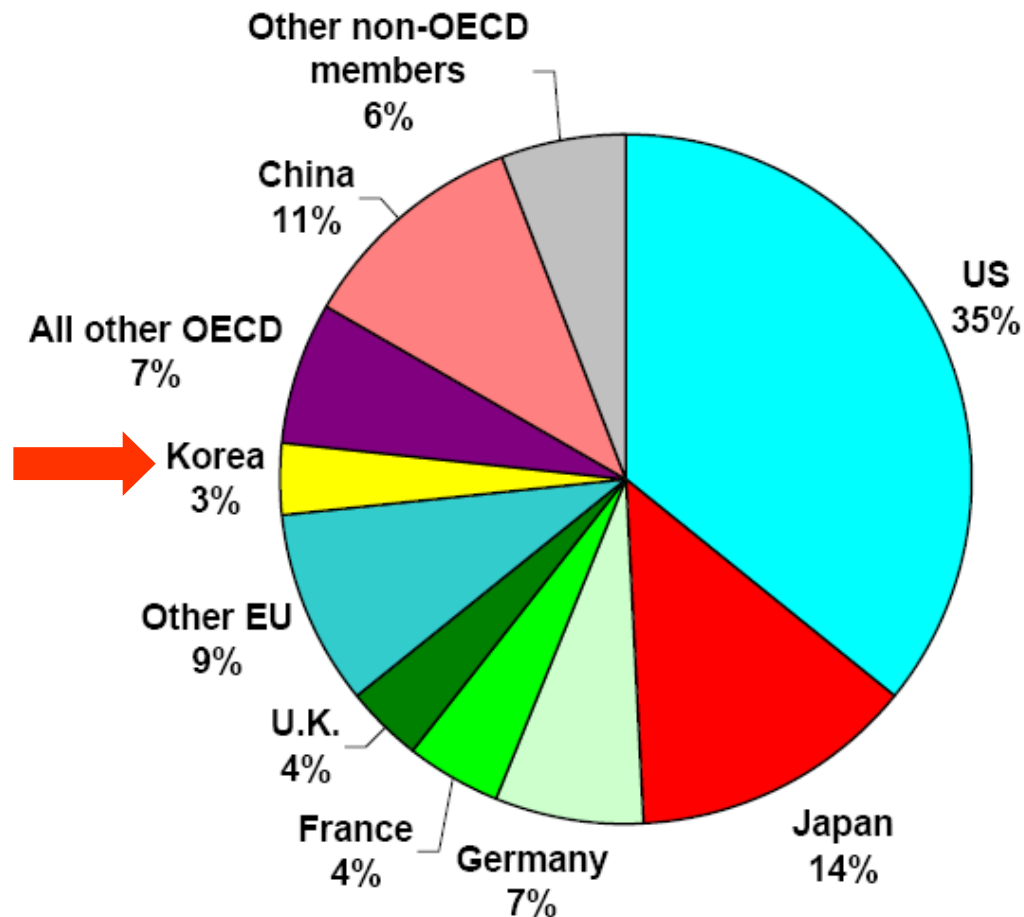
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Background

- **Evaluation of Research and Development**
 - Increasing Interests on Evaluation of Public R&D Programs
 - Greater Demands on Accountability
 - Critical to National Competitiveness
 - Should not be left only on Peer Review any longer
- **Systems Matter!**
 - Evaluation means:
 - Not only the Methodologies or Indicators
 - But also Design (or Structure) of Evaluation Systems
 - Arguably, the most influential factor on effective evaluation
- **International Benchmarking**
 - Most of Advanced Countries encounter Same Problems/Issues
 - Provides Social Experiments at National level
 - Co-evolve by benchmarking

World R&D Exp. by Country (2004)



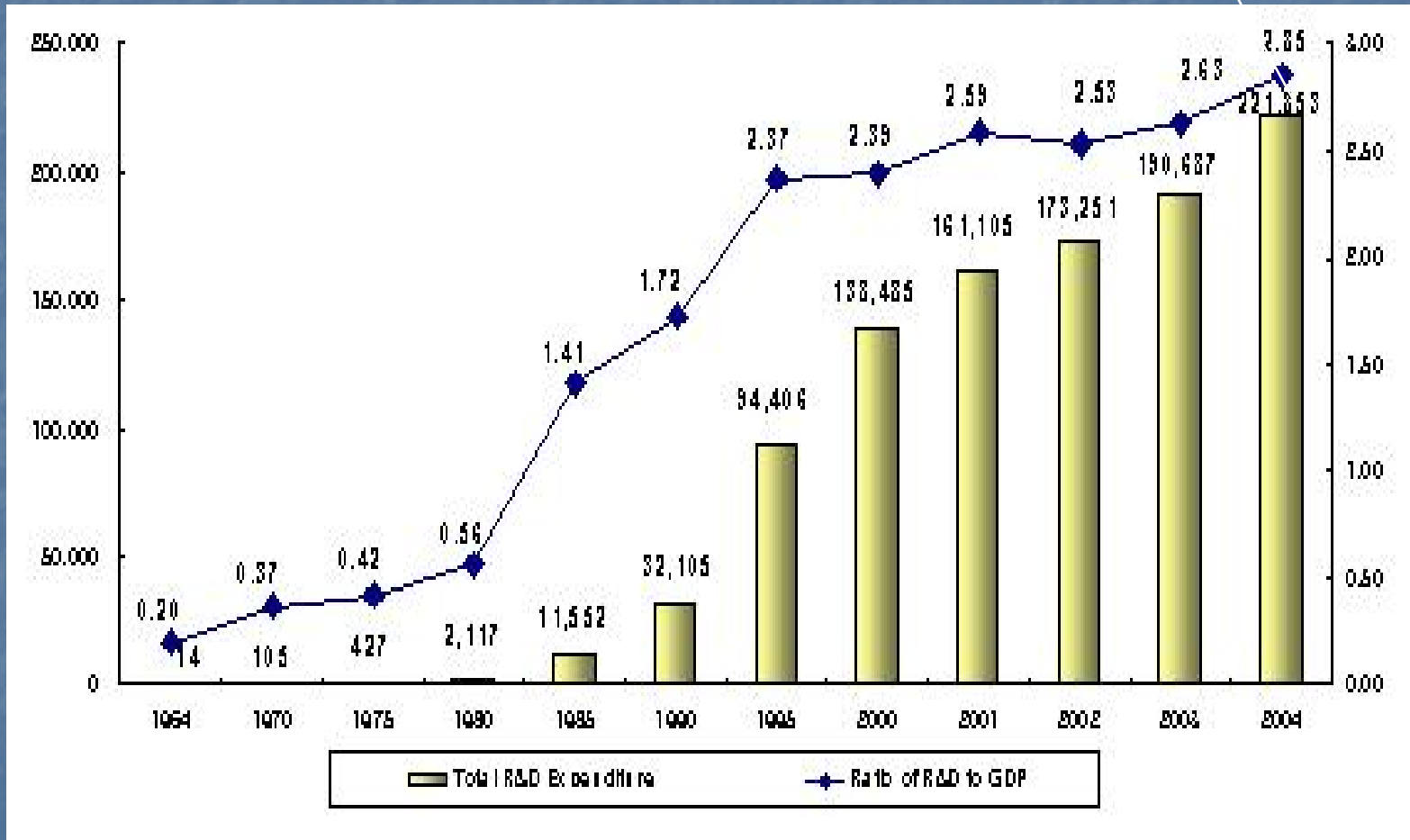
**Total World* R&D =
U.S. \$874 billion****

* World = OECD members plus Argentina, China, Romania, Israel, Russia, Singapore, Slovenia, South Africa, Taiwan

Source: AAAS (2006)

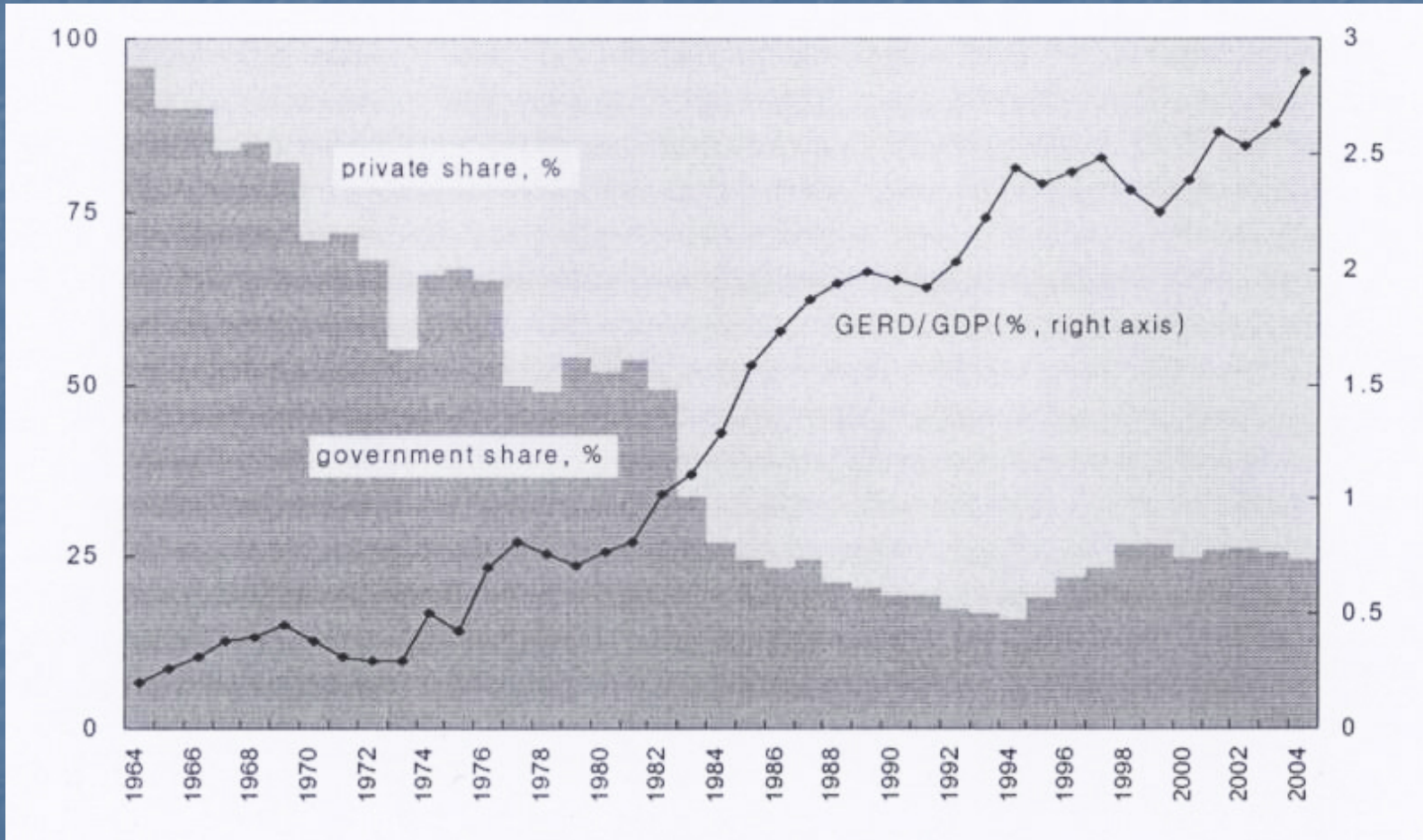
Trend of Total R&D Exp. and GERD/GDP

= \$22 billion



Source: www.most.go.kr

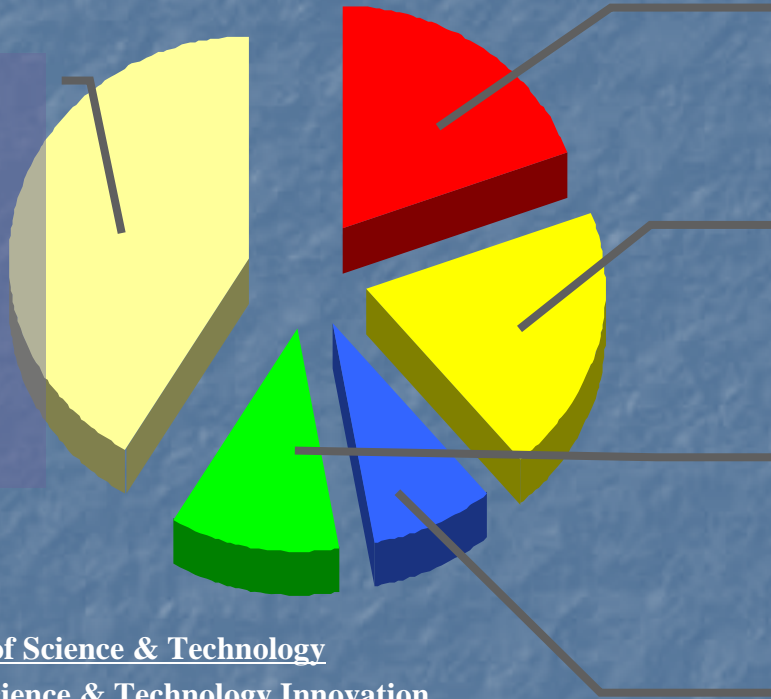
Trend of Public vs. Private R&D Funding



Source: www.most.go.kr

Public R&D Exp. : \$8.9 Billion (2006)

Other Agencies
(Defense, Agriculture, Transportation, etc.)



MOCIE : 19% for Industrial Technology Development

MOST : 19% for Scientific R&D

MOST (OSTI) : 11% for GRI

MIC : 9% for Information & Communication Technology

MOST : Ministry of Science & Technology

OSTI : Office of Science & Technology Innovation

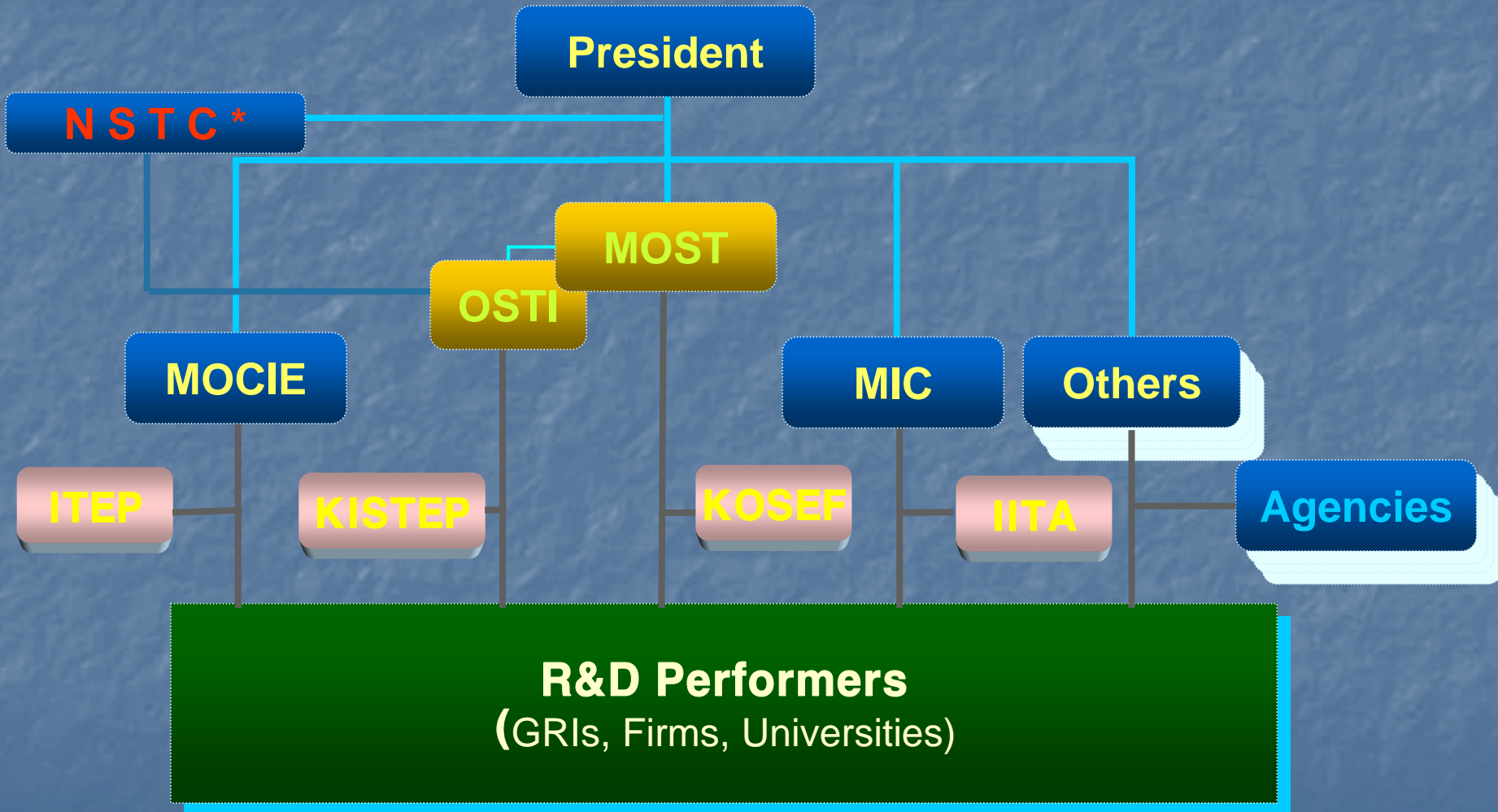
MOCIE : Ministry of Commerce, Industry & Energy

MIC : Ministry of Information & Communication

GRI : Government supported Research Institutes

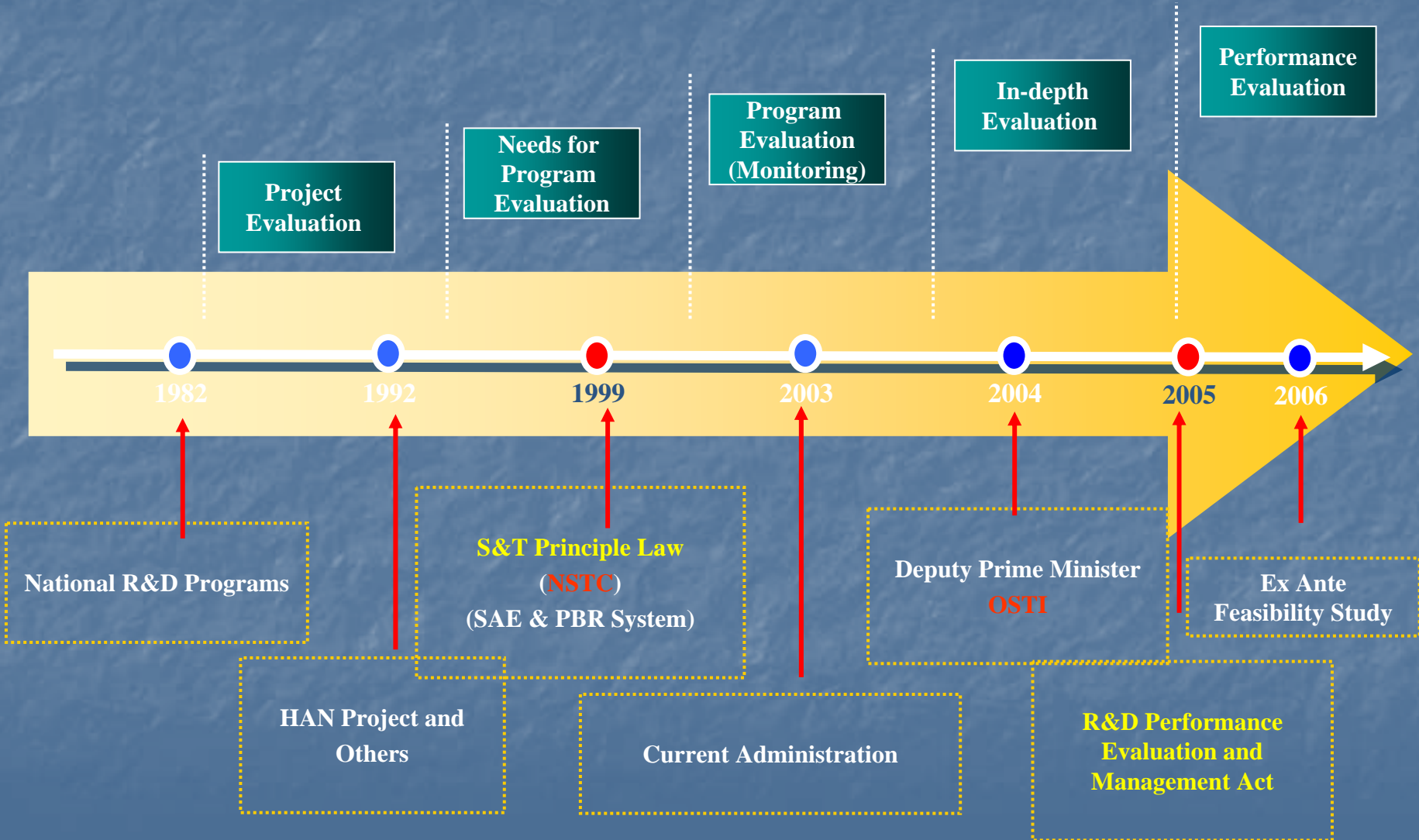
Source: Nam (2005)

Organizational Structure for Public R&D in Korea



Source: Nam (2005)

Evolution of Evaluation Systems for Public R&D Program



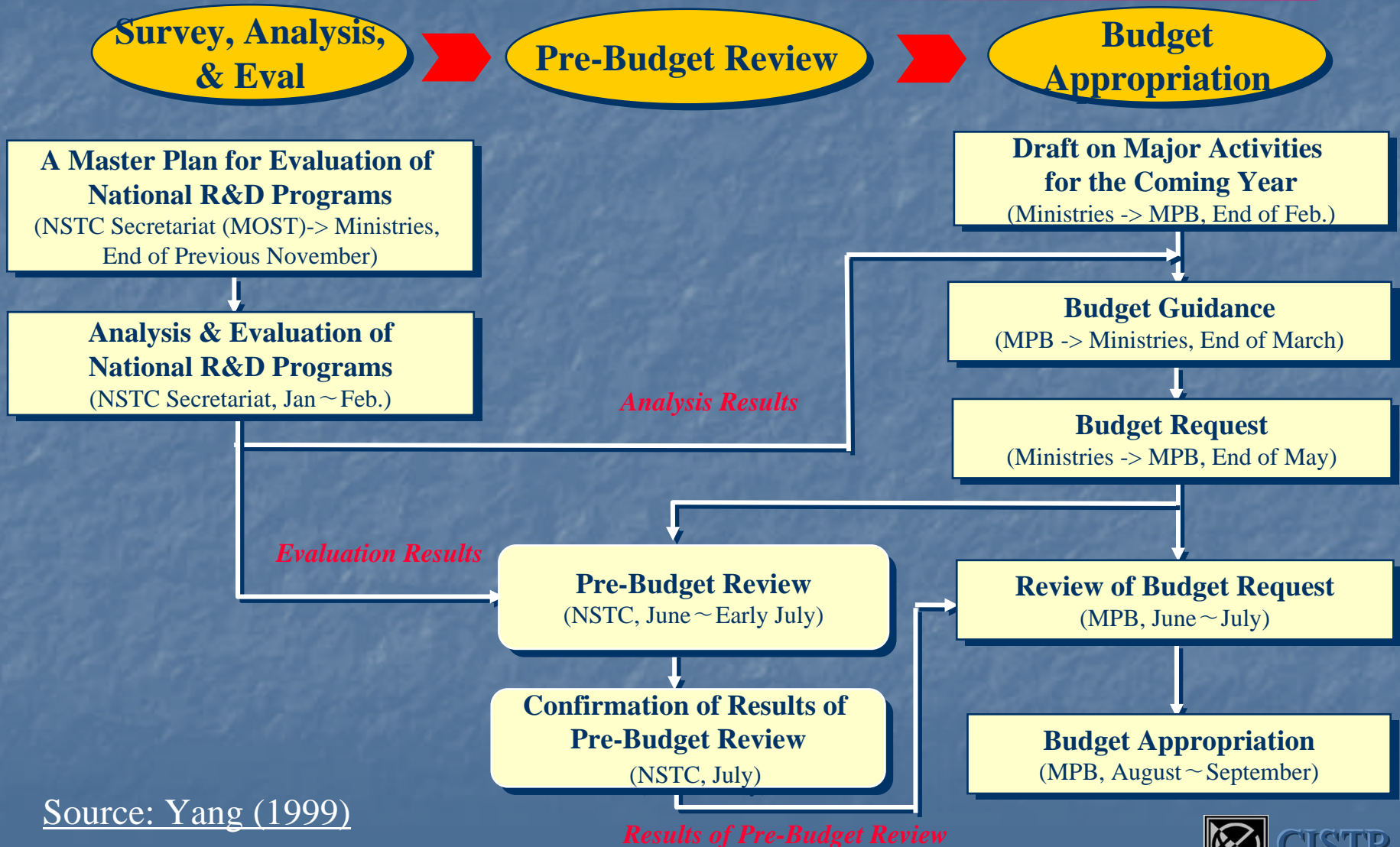
Source: Revised from Nam (2005)



Science & Technology Principle Law of 1999

- **Driving Forces**
 - Rapid Growth of Public R&D Investments
 - Fragmented Public R&D Efforts
 - Budget Constraints
- **Greater Demands on**
 - Accountability to Tax Payers
 - Coordination among R&D Programs
 - Effectiveness & Efficiency
- **Actions Installed**
 - Establish 'National S&T Council (NSTC)'
 - Mandate Annual Evaluation of All R&D Programs
 - Launch 'Survey, Analysis, and Evaluation (SAE) & Pre-Budget Review (PBR) for Public R&D Programs' System
 - Designate MOST as NSTC Secretariat
 - Designate KISTEP as the Supporting Institute

SAE and PBR System (1999 – 2006)



Source: Yang (1999)

Framework for Pre-Budget Review

Expert Review

- 1 Steering Committee
- 3 Sub-Committees by Program groups
- 12 Working-Committees by specific areas
- 255 experts from Industry (20), Univ. (95), GRIs (140)

Evaluation Criteria

- Evaluation Results of Public R&D Programs
- Relevance to the Program Goals and Scopes
- Appropriateness of Government Agencies for the Programs

Forced Distribution in Weighted Scoring

- A (Upper 10%)
- B (10 – 30%)
- C (30 – 70%)
- D (70 – 90%)
- E (Lower 10%)

Descriptive Recommendations

- Re-Planning
- Redirecting its focus on Special Area
- Linking or Merging with Other Program
- Increasing or Reducing Budget

Limitations of 1999 System

- **Output-oriented Evaluation**
 - Annual Evaluation of All Public R&D Programs across Agencies
 - Just Short-term Assessment
 - Basically not Evaluation but Monitoring
 - Demands on Performance (Outcome)-based Evaluation
- **Lack of Coordinating Body (Power)**
 - MOST is just one of Research Agencies
 - Other Research Agencies distrust MOST as a Coordinating Body
 - Difficulties in Collaborating with MPB for R&D Budgeting
 - Paper Tiger without Budget Authority
- **Too much Centralized System**
 - Major focus was on Ranking for Next Year's Budget
 - Too much Evaluation Burden
 - Fail to widen Evaluation mind and circumstance across agencies

Recent Reforms (2004 - 2005)

- **Organizational Reform (2004)**

- Promote MOST to Deputy Prime Minister Level Agencies to Provide Sufficient Coordination Power in Science and Technology
- Establish Office of Science and Technology Innovation (OSTI) under MOST to Support NSTC and Coordinate S&T Policies and R&D Programs across all agencies
- Bring Budget Authority only for R&D Programs from MPB to NSTC
- Release all R&D Programs under KISTEP to KOSEF and designate KISTEP as the Secretariat Body to OSTI and NSTC

- **Paradigm Shift (2005)**

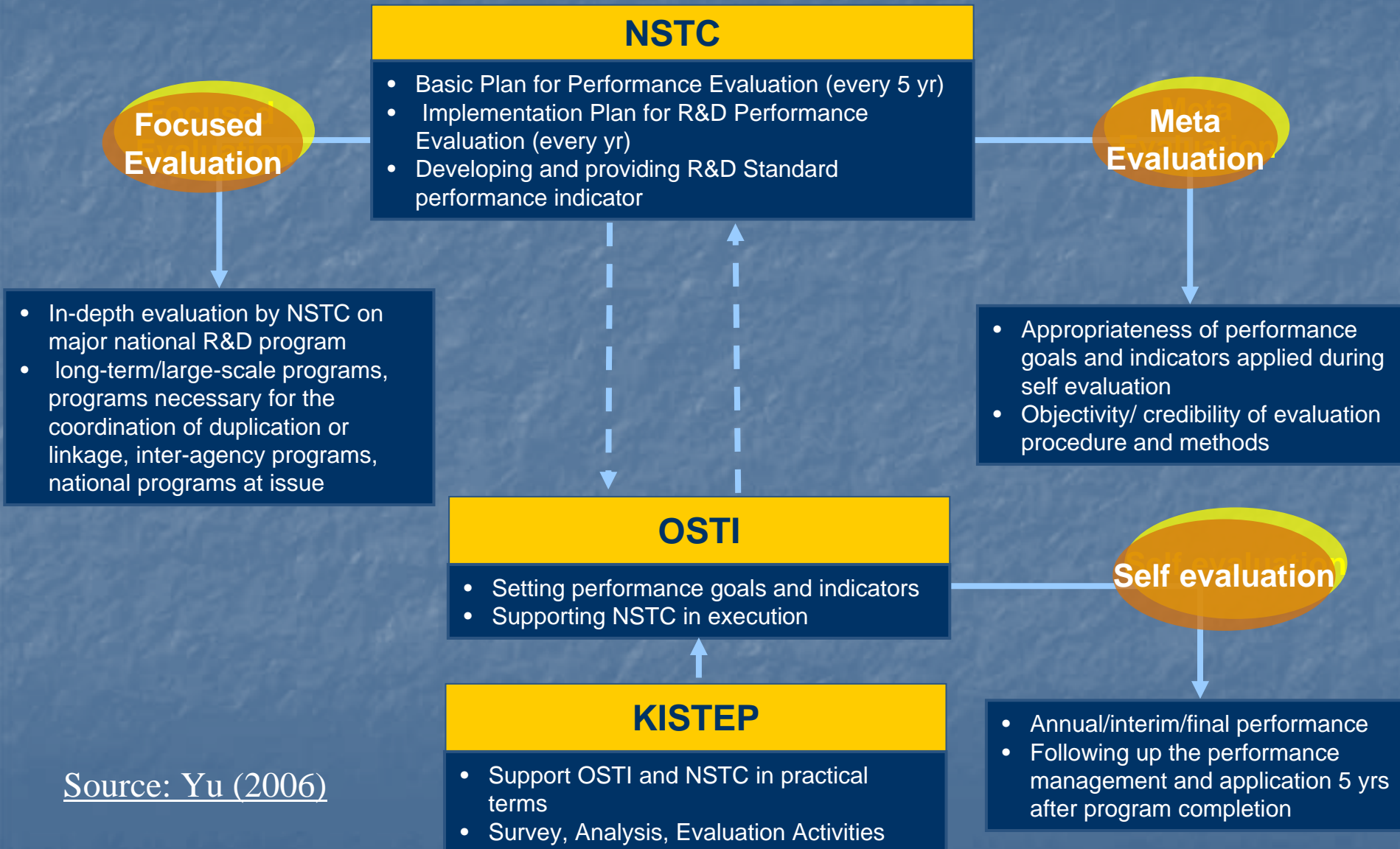
- Enact 'R&D Performance Evaluation and Management Act'
- Establish 'Performance-based Evaluation System'
- Move Evaluation Focus from Short-term, Output-oriented to Long-term, Outcome-oriented
- Install Three Types of Evaluation (Focused, Meta, Self-Evaluations)



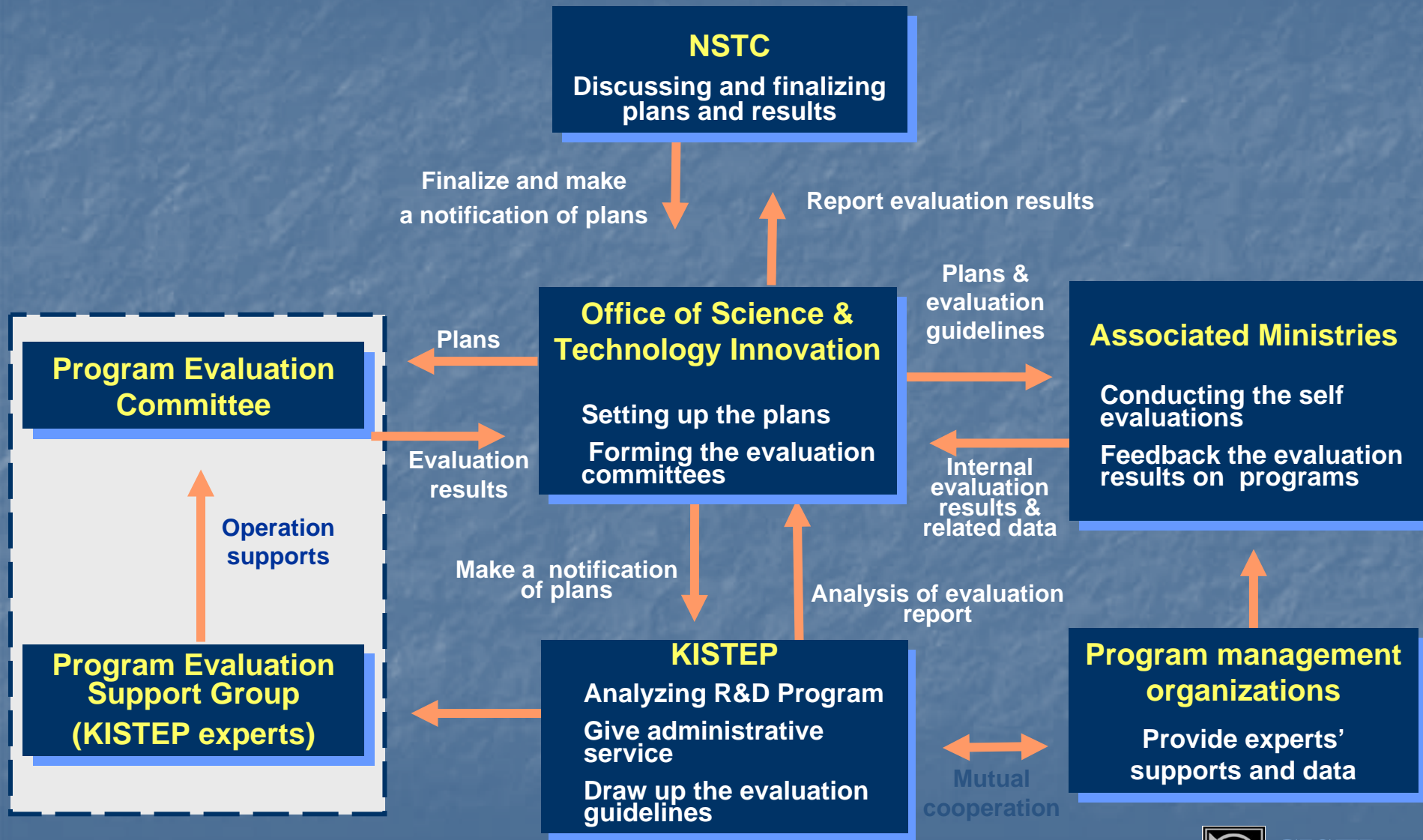
Three Types of Evaluation

- **Focused Evaluation (NSTC)**
 - In-depth performance evaluation on:
 - major long-term / large-scale R&D programs
 - programs need to check their duplication or linkage
 - inter-agency programs
 - national programs at issue
 - For the purposes of program improvement and coordination
- **Meta Evaluation (NSTC)**
 - Evaluation on Self-Evaluation
 - Check appropriateness of Self-Evaluation in terms of performance goals, indicators, procedures, and methodologies
- **Self Evaluation (Each Agency)**
 - Each Agency should conduct Performance Evaluation by itself in terms of achievement of strategic and/or performance goals set by itself
 - Following up for 5 years after program completion

Current Framework for Public R&D Program Evaluation

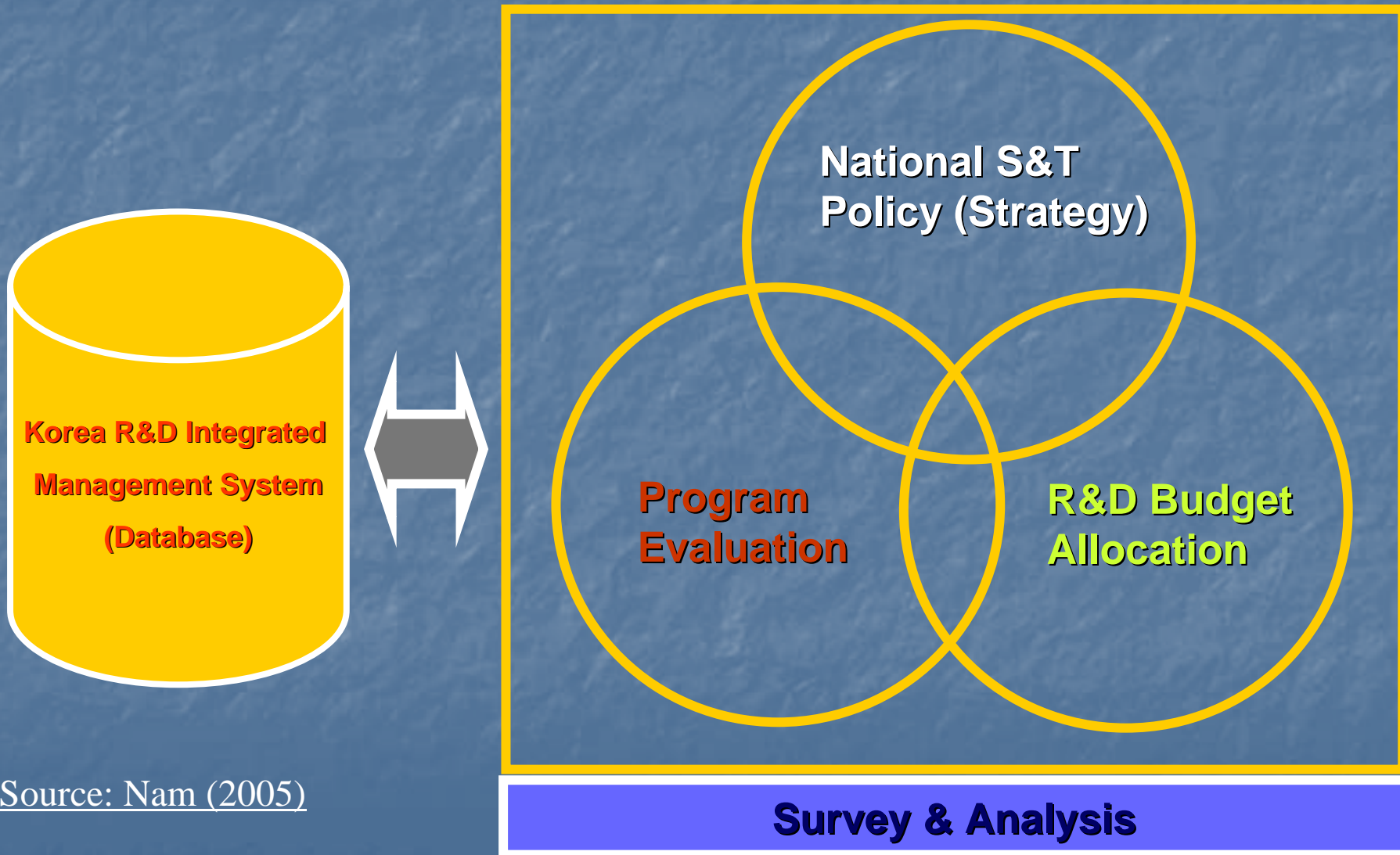


Implementing Evaluation for Public R&D Programs



Source: Yu (2006)

Policy, Evaluation, and Budget



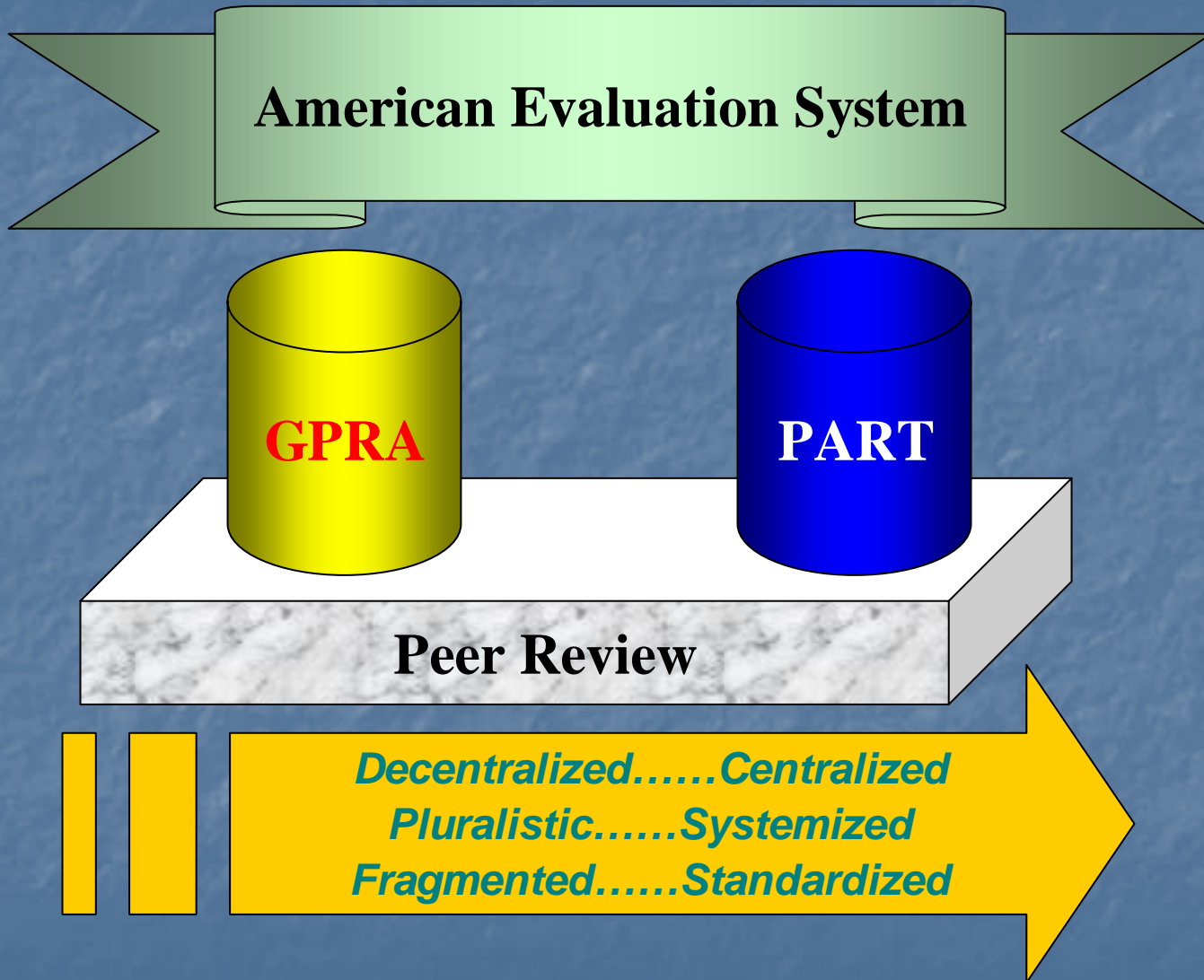
Source: Nam (2005)

Summary

- **Project Evaluation (1980s – 1990s)**
 - Increasing Interests on Evaluation of Public R&D Programs
 - Major R&D Programs were initiated and implemented
 - Focuses mainly on Outputs and Management at Project level
- **SAE & PBR System (1999 – 2004)**
 - Establish the First System to Evaluate of all Public R&D Programs across agencies
 - Shift Evaluation focus from Project to Program level
 - Very Centralized System
- **Performance-based Evaluation (2005 – Current)**
 - Paradigm Shift from Output-focused Monitoring to Outcome-focused Performance Evaluation
 - Try to make Decentralized system by allowing Self Evaluation
 - Diversify and Custom-Tailor Evaluation Methodologies



American Evaluation System



Source: Jang (2006)

Evaluation of EU Framework Programmes

◆ Continuous Monitoring

- Annual Reporting
- Conducted by Commission Services with the help of Experts

◆ Five-Year Assessment

- Ex post Evaluation of Previous Programme
- Mid-term Appraisal of the On-going one
- Recommendation of Future one
- Conducted by Expert Panels

Questions and Challenges

- **Does Evaluation System matter, if so, to What extent?**
 - Changing Evaluation Atmosphere across all agencies in Korea
 - as like, PART of the US is making big changes in Federal agencies
 - as like, the EU Evaluation System for FPs determines next round of FP
 - Can we Evaluate How Influential an Evaluation System is?
- **Transferable Evaluation System?**
 - International Benchmarking is very much common.
 - Is an Evaluation System transferable across national borders?
- **Effectiveness/Efficiency of Evaluation**
 - We invest a lot in Evaluating Public R&D Programs.
 - Does this investment on Evaluation deserve?
 - Can we Measure how much we save or benefit from such evaluation efforts and/or investment?

