

International Workshop

# KOREA's "SMART" Road to SMR in CANADA

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Jeju ICC, Korea

Korean Nuclear Society

Division of Reactor System Technology

## Export Controls Experience on the SMART PPE

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**Korean  
Nuclear  
Society**

**2024 Spring Conference**



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- 2 SMART PPE & EC Items**
- 3 Contract and Export Controls**
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# 1 Overview of ROK Export Controls



# Overview of ROK Export Controls

01

## International Treaties/ Bilateral NCA

- **Nuclear Non-proliferation Treaty**
- Biological Weapons Convention
- Chemical Weapons Convention
- Arms Trade Treaty
- **UN Security Counsel Resolution 1540**
- IAEA Safeguards Agreement (CSA, AP)
- Bilateral Nuclear Cooperation Agreements

02

## Multilateral Export Control Regimes

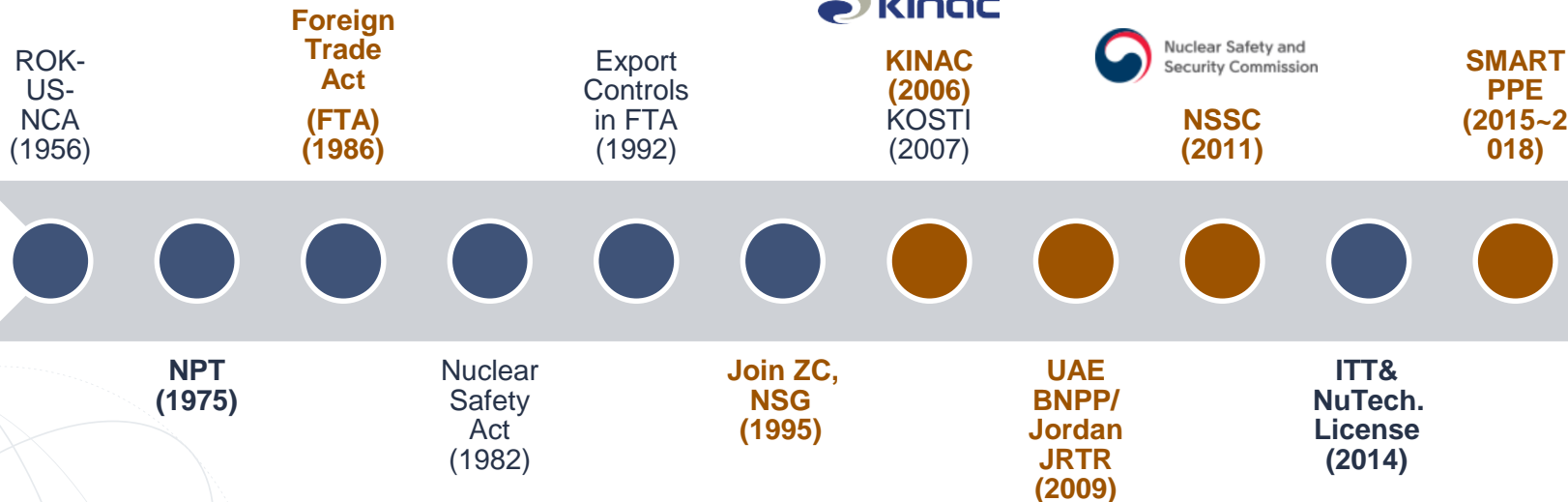
- **Nuclear Suppliers Group (NSG)**
- Missile Technology Control Regime (MTCR)
- Australian Group (AG)
- Wassenaar Arrangement (WA)

## Domestic Laws and Regulations

01

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# Overview of ROK Export Controls



- ✓ NSSC : **N**uclear **S**afety and **S**ecurity **C**ommission
- ✓ KOSTI : **K**Orea **S**ecurity **A**gency of **T**rade and **I**ndustry



**NSSC**  
(2011)

**SMART PPE**  
(2015~2018)

- ✓ NCA : **N**uclear **C**ooperation **A**greement
- ✓ ZC : **Z**angger **C**ommittee
- ✓ NSG : **N**uclear **S**uppliers **G**roup

- ✓ BNPP : **B**arakah **N**uclear **P**ower **P**lant
- ✓ JRTR : **J**ordan **R**esearch & **T**raining **R**eactor
- ✓ PPE : **P**re-**P**roject **E**ngineering
- ✓ ITT : **I**ntangible **T**ransfer of **T**ech./Intangible **T**ech. **T**ransfer

01

Enter sub contents title

# Overview of ROK Export Controls

## 42 Member States

Established in 1996  
ROK joined 1996



WA

## 48 Member States

Established in 1978  
ROK joined 1995



NSG

## 35 Member States

Established in 1987  
ROK joined 2001



MTCR

## 43 Member States

Established in 1985  
ROK joined 1996



AG

**Multilateral  
Export Control  
Regime**

# Overview of ROK Export Controls

## ■ Multilateral Export Control Regime(MECR)

- Groups of supplier countries which seek to contribute to the non-proliferation of WMD and delivery systems through the implementation of Guidelines and control lists for exports.
- The Guidelines, which are implemented by each Participating Government in accordance with its own laws and practices, establish a set of global norms that limit the ability of proliferators to “shop” for suppliers with inferior export controls.

01

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# Overview of ROK Export Controls

1

## Munitions



Defense Acquisition  
Program Administration

Foreign Trade Act  
Defense Acquisition Program Act

2

## Dual-Use Items



Ministry of Trade,  
Industry and Energy

TSO



Foreign Trade Act

3

## Trigger List Items



Nuclear Safety and  
Security Commission

TSO



Foreign Trade Act  
Nuclear Safety Act



# Overview of ROK Export Controls

MOFA : Ministry of Foreign Affairs

NIS : National Intelligence Service

MOTIE : Ministry of Trade, Industry and Energy

**Nuclear Traders**

Trigger List Items  
Manufacture

Research Inst.  
Universities

Utilities  
Maintaining

**1. Application**

**5. Licensing**

**NSSC**

**On-line Administration System  
(NEPS)**

**4. Consultation  
(If Necessary)**

**MOFA/NIS  
MOTIE**

**5. Licensing  
Information**

**2. Review Request**

**Korea  
Customs  
Service  
(Clearance)**

**6. Clearance  
Information**

**3. Report Review  
Results**

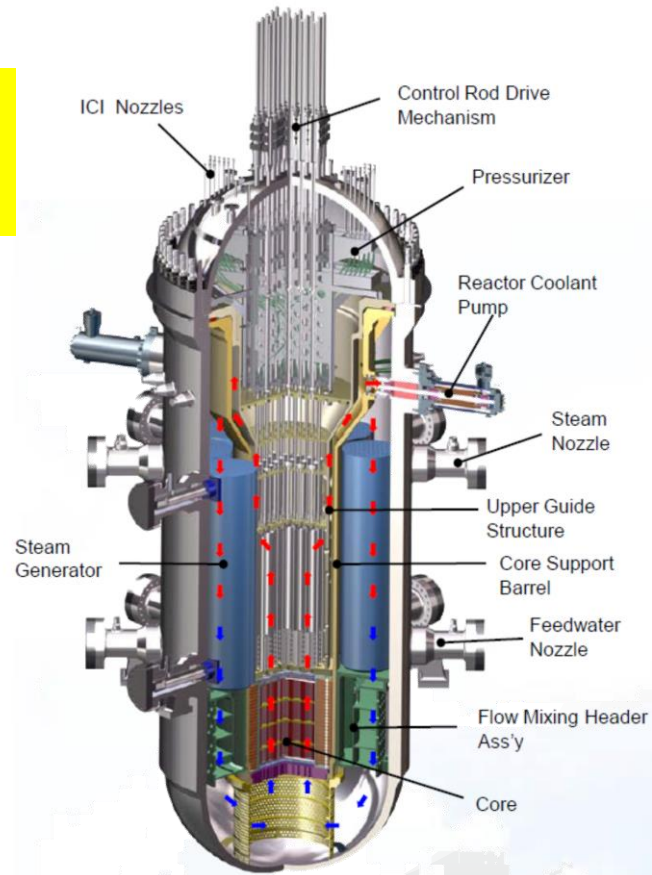
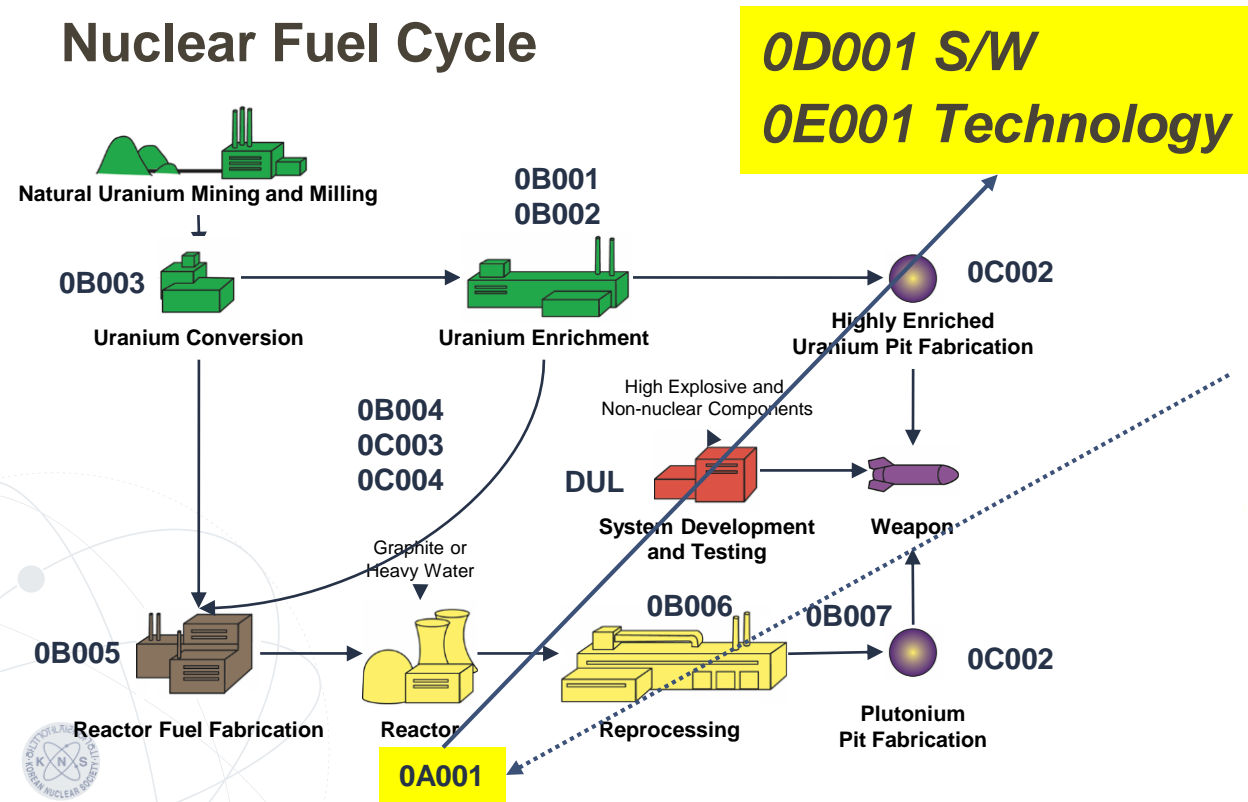
**KINAC  
(Technical  
Review)**

# 2 SMART PPE and Export Control Items

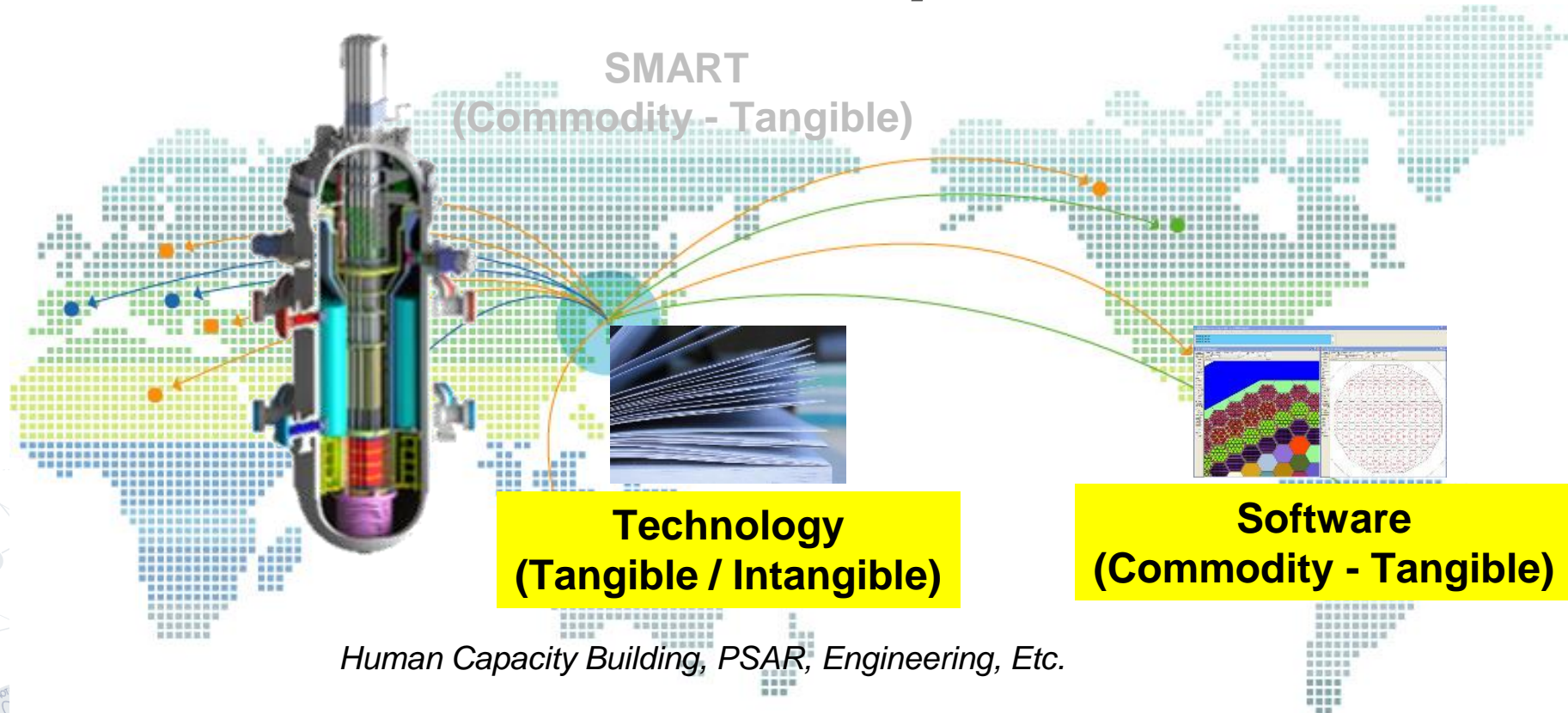


## 02

# Nuclear Fuel Cycle



# 02 Export Control SMART PPE and Export Control Items



# 02 Technology Control SMART PPE and Export Control Items

## ■ Technology Control (INFCIRC/254/Part1/Rev.14)

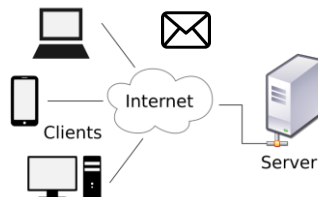
- "Technology" for the "development", "production" or "use" of Trigger List Item
- Technical Data, Technical Assistance
- Controls on Tangible and Intangible Transfer of Tech. (ITT)

### Tangible Technology



Technical  
Data

### Intangible Method



### Intangible Technology



Technical  
Assistance

### Intangible Method





# 3 SMART PPE Contract and Export Controls



# 03 SMART PPE Contract & Export Control

## ■ Nuclear Cooperation Agreement between ROK-KSA



26<sup>th</sup>

Dec.2011  
Kim<sub>(ROK MOFA)</sub>  
Yamani<sub>(K.A.CARE)</sub>

※ NCA is not a requirement for TL export in ROK

# 03 SMART PPE Contract & Export Control

INFCIRC/254/Part1/Rev.14

## ■ Export Licensing Fundamental Principles (NSG&ROK)

1. Prohibition on nuclear explosives (Peaceful Use)
2. Physical Protection
3. Safeguards
4. Special Controls on Sensitive Exports (if necessary)
5. Special arrangements for export of enrichment facilities, equipment and technology (if necessary)
6. Controls on supplied or derived material usable for nuclear weapons or other nuclear explosive devices
7. Controls on Retransfer

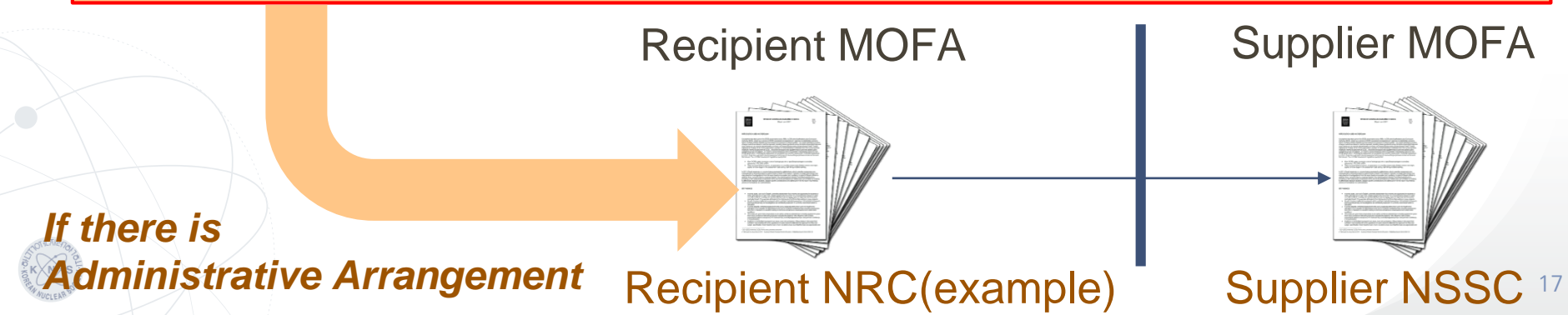


# 03 SMART PPE Contract & Export Control

GTGA : Government To Government Assurance

## ■ GTGA or NCA implementation

1. Prohibition on nuclear explosives (Peaceful Use)
2. Physical Protection
3. Safeguards (IAEA Comprehensive Safeguard Agreement)
4. Controls on Retransfer (Prior Consent)



# 03 SMART PPE Contract & Export Control

April/Dec.2015

EC Outreach for KAERI's High Level Managers/All Researchers

- Training : Exporter's Obligation and ROK's Law & Regulations, NSG Guideline, etc.

Sep. 2015

Officially Signed SMART Pre-Project Engineering(SMART PPE)

Nov. 2015

Application for Classification and Export license on Project

June.2016

Received **GTGA** from Kingdom of Saudi Arabia (K.A.CARE)

Aug. 2016

Established & Published the **SMART EC Guideline**

Sept. 2016

**NSSC Issued the NPP Tech. Export License(Bulk)**

Nov. 2016

Signed NSSC-K.A.CARE MOU

# 4 SMART PPE Export Controls Issues



# 04 SMART PPE Export Control Issues

- ① Efficient & Effective Export Control Measures
- ② TL items Classification
- ③ Retransfer Control & IP

# 04 - ① Efficient & Effective EC Measures

## ■ Comprehensive GTGA and Bulk Tech. License

*Over 4,000 Tech.& S/W  
& HCB*



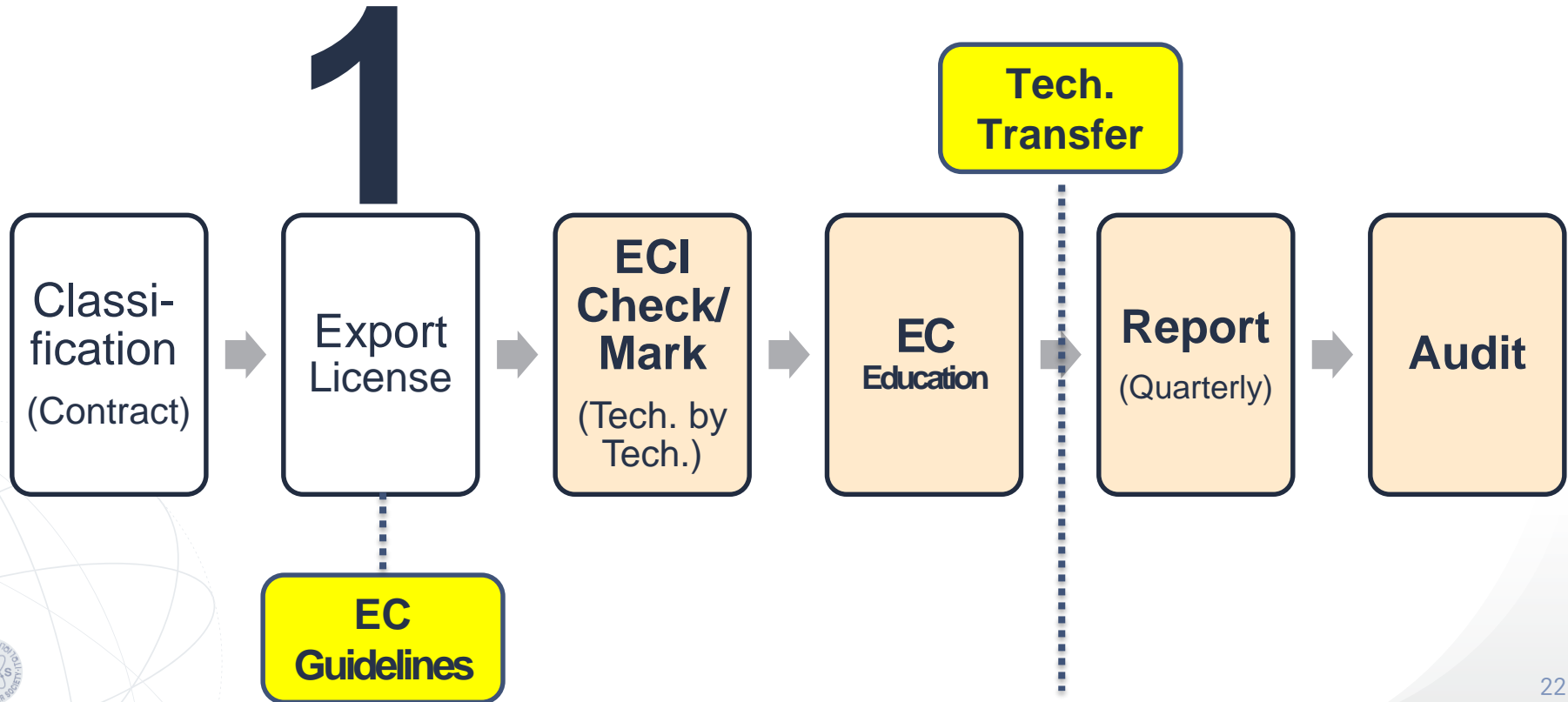
# 1

**GTGA**

# 1

**Export License(Bulk)**

# 04 - ① Efficient & Effective EC Measures



# 04 - ① Efficient & Effective EC Measures

## EC Guidelines For SMART



### Chapter 1 General Rules

- Article 1 : Guideline Purpose
- Article 2 : Scope of Application
- Article 3 : Definition

### Chapter 2 Principle

- Article 4 : Export Licensing
- Article 5 : Governmental Assurance

### Chapter 3 Procedure

- Article 6 : Classification
- Article 7 : Application of Export License
- Article 8 : Issue the License
- Article 9 : Revocation of License

### Chapter 4 Conditions

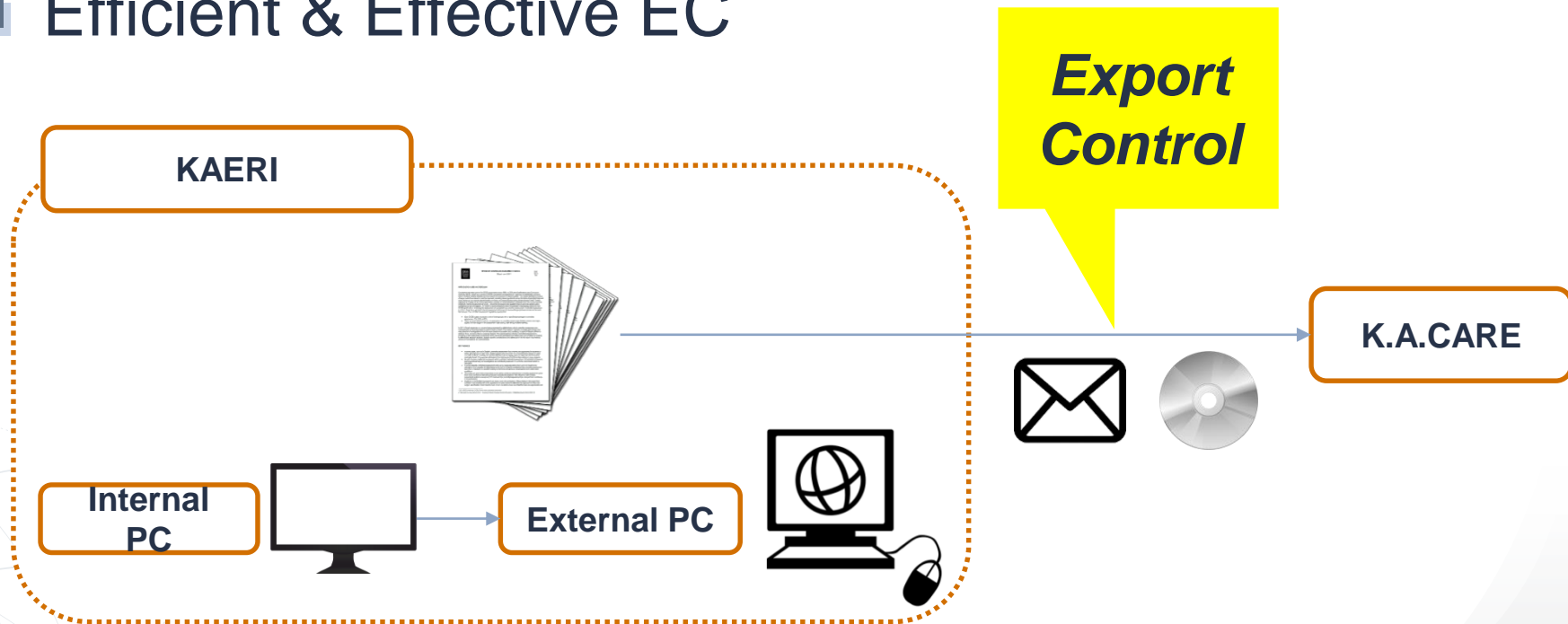
- Article 10 : Confirmation of Strategic Tech.(document)
- Article 11 : Marking the Strategic Tech.(document)
- Article 12 : Control of Trainee
- Article 13 : Control of Trainer
- Article 14 : Post Management

### Chapter 5 Auditing

- Article 15 : Record Keeping & Auditing

# 04 - ① Efficient & Effective EC Measures

## ■ Efficient & Effective EC





## 04 - ② TL Item Classification

- Prepare PSAR → No Specific System or Items

- ✓ Hard to Classify which items or technology are TL

- ## ■ Establish Regulatory Guidelines for **SMART Classification**

[illegible]

회신 전체 회신 전달

이찬서 <chans@kinac.re.kr> | 'chunjh@kaeri.re.kr'; 'saerom88@kaeri.re.kr'; 외 1명  
SMART 관련 자료 협조요청 및 협의 사항 안내

안녕하세요!

저희실에서 중소형연구로 관련 기술기준지침을 작성중입니다.

상용로와는 다른 부분이 많기 때문에 심사시 다른부분이 있을것으로 보입니다.

좀 더 빠르고 일관성 있는 심사를 위함이니 아래 자료에 대한 제공을 요청드립니다.

자료는 저희실 내부에서만 심사시 활용할 예정입니다. (타부서 및 배포 X)


1. SMART 계통 설명서
2. SMART에 사용되는 코드 설명서(1~2문단 정도면 되며, 원산지 및 상용인지 여부 표시)
3. SMART 관련 문서관리체계도
4. 연구로 관련 용어 정리집

다음 사항은 SMART팀과 원자력통제팀 그리고 KINAC이 함께 협의해야 할 사항입니다.

<사전판정 신청건 중복 검토 및 Revision 관리 방안>

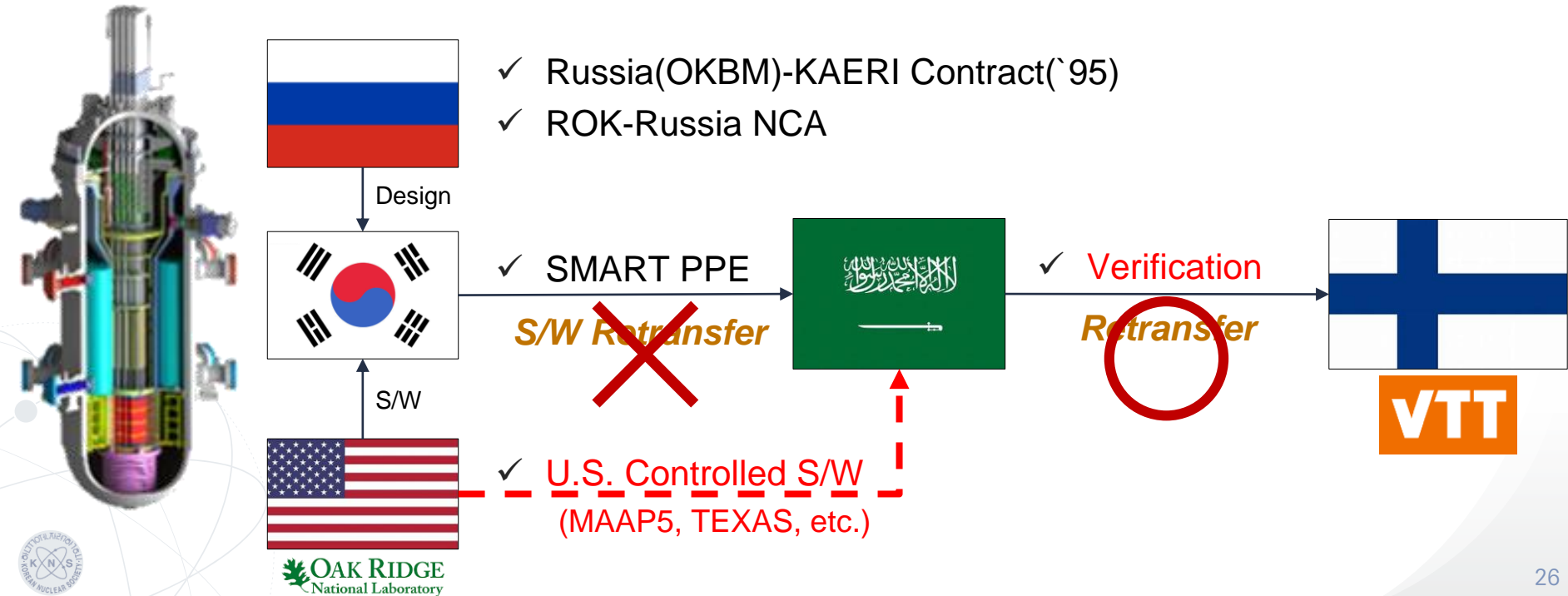
해외 출장에서 돌아오시고 여유가 될 때, 3자 회의 내지 실무협의체 회의를 가지고자 합니다.

이찬서 드림.

 한국원자력통계기술원	<b>중소형원자로 사전판정 기술검토 지침서</b>		절차서번호	GR-320
			개정번호	00
			개정일자	2017.10.31.
			쪽번호	1/52

# 04-③ Retransfer Control & IP

## ■ Review on Retransfer Control & IP Issues



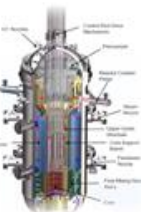
# 5 Summary & Conclusions



# 05 Summary & Conclusion

## ■ UAE BNPP, JRTR & SMART PPE Experiences

UAE BNPP, JRTR, SMART PPE, APR-1400 NRC & EUR Design Certificate,...



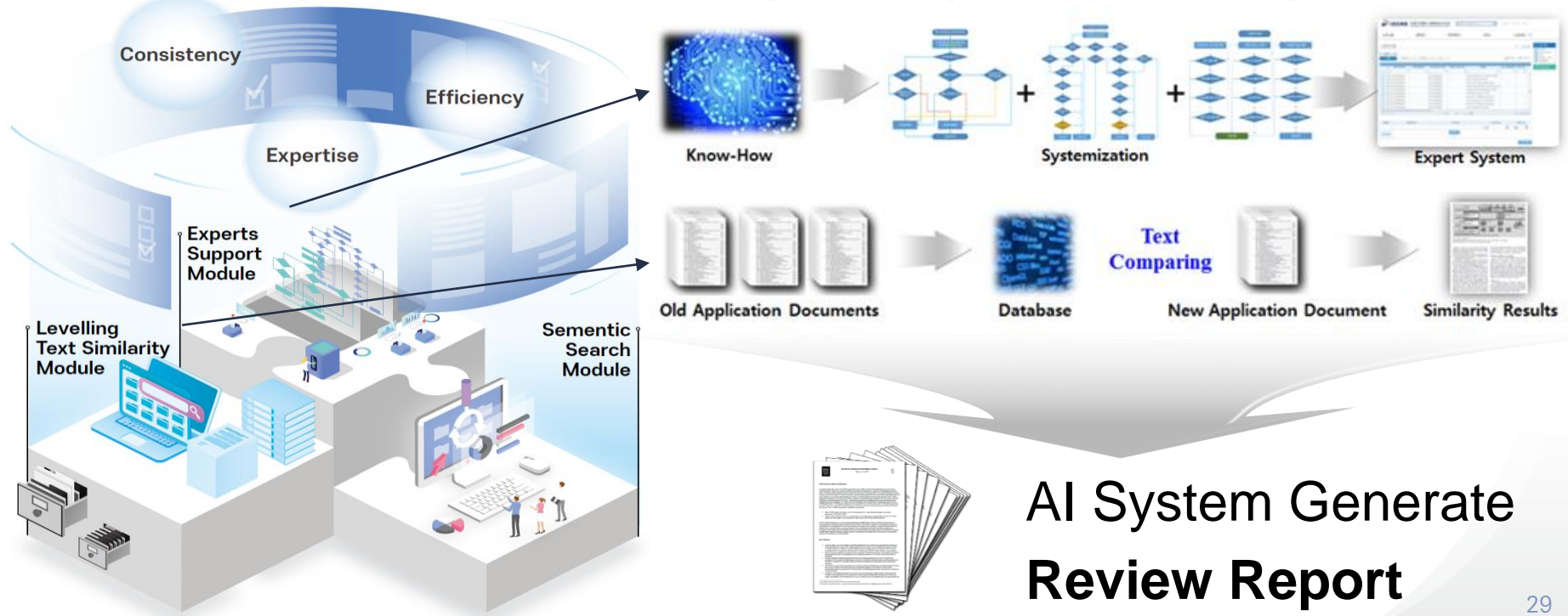
Nuclear Trade ↑  
As a Nuclear Supplier

## Standardized ROK EC System

(Bilateral/Interagency Channel, Regulation, Guidance, Outreach, etc.)

# 05 Summary & Conclusion

## ■ NEPS(1Stop Online-System) & AI aid System



# 05 Summary & Conclusion

- ROK Rigorously **adheres to international EC**, leading the way in developing and supporting the implementation of regulatory frameworks in recipient countries. → **Preparedness for Advanced Reactors and SMRs**
- Diverse Regulatory Experiences → **NSSC & KINAC promote Nuclear Transparency and Nonproliferation**



# KOREA's "SMART" Road to SMR in CANADA

**THANK YOU**



**Korean  
Nuclear  
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