

NL-ROK-NATO Defense R&D Seminar 2023

2023 대한민국-네덜란드-NATO 국방 R&D 세미나 (온/오프라인)

- Time & Date: 9:00 AM - 11:00 AM (CET) / 4:00 PM - 6:00 PM (KST), June 28th (Wed), 2023
- Venue: Grand BallRoom (200max.), Daejeon Convention Center, Korea and online
- Purpose: To stimulate Defense R&D cooperation exchanges between Korea and the Netherlands by addressing possible topics and methodologies
- Host&Organizers: Embassy of the Kingdom of the Netherlands in Seoul, The Netherlands Industries for Defense & Security (NIDV)
- Tentative schedule:

NL Time (KR)	Agenda	Speaker
09:00 - 09:01 (16:00-16:01)	Opening remarks	The Netherlands
09:01 - 09:03 (16:01-16:03)	Welcome remarks (VIDEO)	Arie Jan de Waard Director of Command Materiel and IT
09:03 - 09:05 (16:03-16:05)	Congratulatory remarks	Yong Jin Jo Director, Defense Technology Policy Division of DAPA
Session I R&D Cooperation between ROK and the Netherlands		
09:05 - 09:20 (16:05-16:20)	General overview and Potential International Collaboration Project	LEE Young-Sik Director of Agency for Defense Development (ADD)
09:20 - 09:35 (16:20-16:35)	Introduction of TNO (Netherlands Organization for Applied Scientific Research) and Technologies (ONLINE)	Dr. Louk H.J. Absil Director Protection, Munitions and Weapons of TNO (Toegepast Natuurwetenschappelijk Onderzoek, English: Netherlands Organisation for Applied Scientific Research)
09:35 - 09:50 (16:35-16:50)	Introduction of Royal NLR (Netherlands Aerospace Center) and technologies (ONLINE)	Ivo Nienhaus Business Manager Aerospace Vehicles of Royal NLR

Session II International Joint R&D Opportunities in Defense Science & Technologies		
09:50 - 10:00 (16:50-17:00)	Introduction of Eulji Research Center and International Cooperation	KIM Man-ki Professor of Eulji Research Center KAIST
10:00 - 10:10 (17:00-17:10)	Innovation Projects of Innovation & Impact Centre (ONLINE)	Kemo Agovic Director Innovation & Impact Centre at Delft University of Technology
10:10 - 10:20 (17:10-17:20)	Defense Industries for NATO (ONLINE)	Ron C. Nulkes NIDV Special Advisor Netherlands Industries for NATO
10:20 - 10:40 (17:20-17:40)	Introduction of NATO Science for Peace and Security Programme (ONLINE)	PARK Sung-ho <i>Defense Attaché to Belgium, the Netherlands & Luxembourg Military Representative to NATO & EU</i>
10:40 - 10:50 (17:20-17:30)	Introduction of Joint R&D Program for Defense Technology and Specialized Fields for Cooperation (ONLINE)	PARK Jae-Woo EU office Senior Researcher, KRIT
10:50 - 11:00 (17:50-18:00)	Q&A / Closing remarks (ONLINE)	Peter Huis in't Veld NIDV (The Netherlands Industries for Defense & Security)

* The seminar will be held in English only (Simultaneous interpretation: English to Korea)

- Potential topics to discuss:

1. Autonomous-intelligent surveillance & reconnaissance
2. Hyper connected intelligent command & control
3. High speed-high impact precision strike
4. Manned-unmanned co-operation.
5. High tech individual combatant equipment
6. Cyber active defense and next gen protection
7. Future technologies
8. C-UAV technologies

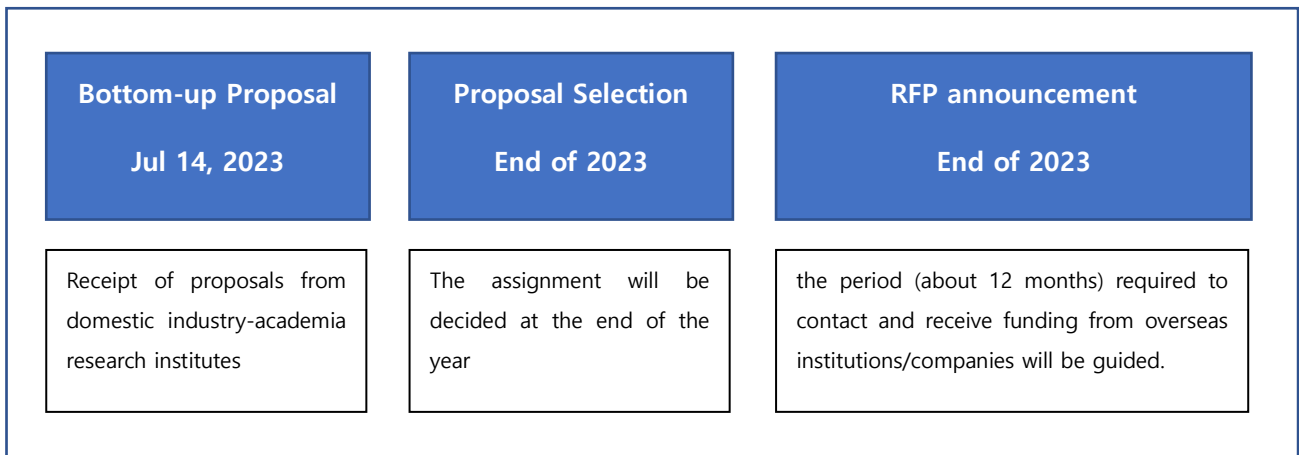
* Attached (ROK Defense Strategy 4.0)

Appendix 1. International Joint R&D Process (KRIT)

The revision of DAPA guidelines on Feb 09,2023 has made it possible for industry, academia, research institution to participate in international joint research on weapon systems, we are exploring possibility of collaboration those agencies.

2023 Call for International Joint R&D program

- Target period: 2024-2028
- Business period: 3 to 5 years
- Process International R&D Project



It is a DAPA program to encourage the development of core technologies for future weapons systems that require strategic intensive development by utilizing the world's best technology, industry, academia, and research institute.

The countries (14) subject to international co-operation are United States, the United Kingdom, France, Australia, Singapore, Israel, India, Indonesia, Colombia, **the Netherlands**, Poland*, Egypt, Sweden, and Norway*.

· Timeline:

	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May
1w				DAPA								
2w		Call Closing International R&D			Spin-off event							
3w					ADEX							
4w	K2K					NEDS						
International R&D		Proposal Closed (Bottom up - KR)				Announce Selected proposal and RFP (KR- 14 countries)	The period (about 12 months) required to contact and receive funding from overseas institutions/companies will be guided.					

· Target Technology (64)

	Target technology	Weapon system
1	Target System Analysis Technology 표적체계분석 기술	command and control/communication
2	Artificial intelligence-based surface-mounted flat-panel antenna and bulletproof radome technology 인공지능 기반 표면실장형 평판안테나 및 방탄레이돔 기술	command and control/communication
3	Design/Production Technology of Long-term Autonomous Unmanned Water Bodies 장기 자율기동형 무인수상체 설계/제작 기술	surveillance / reconnaissance
4	Millimeter waveband array jamming transmission technology 밀리미터웨이브대역 배열재밍송신기술	surveillance / reconnaissance
5	High-density multi-threat signal pulse train tracking technology 고밀집 다중위협신호 펄스열 추적기술	surveillance / reconnaissance
6	Electronic Warfare Information Integration Technology Based on NCW System NCW 체계기반 함정간 전자전정보 통합기술	surveillance / reconnaissance
7	Long distance signal transmission and power supply technology 장거리 신호전송 및 전원공급 기술	surveillance / reconnaissance
8	Short-waveband radar signal processing technology 단파 대역 레이더 신호처리 기술	surveillance / reconnaissance
9	Automatic mission control technology based on heterogeneous cluster drones 이기종 군집 무인기 기반 자동 임무통제 기술	surveillance / reconnaissance
10	Automatic Technology of Remote Connection Control 복합감시 기반 원격교전 통제 자동화 기술	surveillance / reconnaissance
11	Development Technology of Small/Light Microwave Radio Meter for Unmanned Vehicles 무인기용 소형/경량 마이크로파 라디오미터 개발기술	surveillance / reconnaissance
12	Development Technology of Small Weather Radar for UAV 무인기용 소형 기상관측레이더 개발 기술	surveillance / reconnaissance
13	Design/Production Technology of High Output Transmitter HF 대역 고풍력 송신기 설계/제작 기술	surveillance / reconnaissance
14	Intelligent low-pitam antibody launch/impact point prediction and detection/tracking technology 지능형 저피탐 항체 발사/탄착점 예측 및 탐지/추적 기술	surveillance / reconnaissance
15	Wearable operation and remote control technology 착용형 조작 및 원격제어 기술	Maneuver
16	High weight handling and precision special operation technology for humanoid robots 휴머노이드 로봇용 고중량 핸들링 및 정밀 특수조작 기술	Maneuver

17	Design Technology of Multi-channel Fiber Optic Cable Gigabit Slip Ring 다채널 광섬유케이블 기가비트급 슬립링 설계 기술	Maneuver
18	Intelligent Survival Protection Optimization Technology 인텔리전트 생존보호기능 최적화 기술	Maneuver
19	Extreme Environment Power Technology 극한환경 전원기술	Maneuver
20	Design Technology for Torpedo Projection Tube Appearance Optimization 어뢰 발사관 외형 최적화 설계 기술	Naval Ship
21	torpedo forced ejection technology 어뢰 강제사출 기술	Naval Ship
22	Operation Technology of Unmanned Submersible Armed System 무인잠수정 무장체계 운용기술	Naval Ship
23	Self-generation platform and station operation technology for underwater organ concealment 수중 장기 은닉을 위한 자가발전용 플랫폼 및 스테이션 운용 기술	Naval Ship
24	Dual flight deck design and calculation technology for Sotti generation rate of unmanned aerial vehicles 이중 비행갑판 설계 및 무인항공기 소티 생성률 산출 기술	Naval Ship
25	Real-time high-speed radio communication technology for the control of engagement between ships and unmanned systems 함정과 무인체계 간 교전통제를 위한 실시간 초고속 무선통신 기술	Naval Ship
26	Submarine Combined Mission Module Implementation Technology 잠수함 복합임무모듈 구현기술	Naval Ship
27	Aircraft/Helic Acoustic Manual Detection Technology 항공기/헬기 음향 수동탐지 기술	Naval Ship
28	Design Technology of Multi-Band Co-Site Antenna for Rotary Wing 회전익용 다대역 Co-site 안테나 설계 기술	Aero
29	Development of high-performance materials and built-in sensors for aircraft 항공기용 고성능 소재 및 내장형 센서 개발 기술	Aero
30	Low Pitam ADS and Atmospheric Calibration Technology 저피탐 ADS 및 대기 보정 기술	Aero
31	Development of Energy Storage System for Aircraft 항공기용 에너지 저장장치 개발 기술	Aero
32	Low Pitam Radome Development Technology 저피탐 레이돔 개발 기술	Aero
33	Design Technology of Nassel Tilting System for Tilt Rotor Aircraft 틸트로터형 항공기의 나셀 틸팅 시스템 설계 기술	Aero

34	Technology for Developing High Energy Storage Devices 고에너지 저장장치 개발 기술	Firepower
35	Design Technology of Ultra High Heat Resistance Antenna for Hypersonic Environment 극초음속 환경용 초고내열 안테나 설계 기술	Firepower
36	Optical Window Design Technology for Hypersonic Environments 극초음속 환경용 광학창 설계 기술	Firepower
37	Dual-Band Integrated Conversion Control Technology for Multi-layer Defense 다층방어를 위한 이중대역 통합교전통제 기술	Firepower
38	High-power power technology 대전력 전원기술	Firepower
39	High-energy laser focusing technology 고에너지 레이저 집속기술	Firepower
40	Underwater Launch Propulsion Engine/Booster Design Technology 수중발사 추진기관/부스터 설계 기술	Firepower
41	Rail-type electronic bubble technology 레일형 전자기포 기술	Firepower
42	Electronic bubble armature circuit design technology 전자기포 전기자 회로 설계 기술	Firepower
43	High-Speed Induction Control Technology for Rail Guns 레일건용 초고속 사출탄 유도제어 기술	Firepower
44	Impact Technology for High Speed Injection Balloon for Rail Guns 레일건용 초고속 사출탄 내고충격 기술	Firepower
45	Smaller technology for ultra-common environment target detection area 초공동환경 표적탐지부 소형화 기술	Firepower
46	Turbo Pump Technology for Seawater Absorption 해수흡입용 터보펌프기술	Firepower
47	Stealth Suspected Gas/Area Detection Technology 스텔스 의심기체/영역 탐지기술	Protection
48	AESA radar-quantum radar fusion technology AESA 레이더-양자레이더 융합기술	Protection
49	Optical source-based quantum radar miniaturization/lightening technology 광소스 기반 양자레이더 소형화/경량화 기술	Protection
50	Quantum Radar Long Range Transmission Technology 양자레이더 장거리 송신 기술	Protection
51	Quantum radar high-sensitivity receiving technology 양자레이더 고감도 수신 기술	Protection
52	Microwave source-based quantum radar miniaturization/lightening technology 마이크로파 소스 기반 양자레이더 소형화/경량화 기술	Protection

53	Quantum radar cooler (including quantum storage, transducer) miniaturization/lightening technology 양자레이더 냉각기(양자 저장장치, 변환기용 포함) 소형화/경량화 기술	Protection
54	Automation Technology for Collaborative Mission Control in Unmanned Systems 유무인체계 협업 임무통제 자동화 기술	Protection
55	Chemical agents and radioactive detection techniques 화생작용제 및 방사능 탐지 기술	Protection
56	aircraft-mounted armament separation technology 항공기 탑재 무장 분리 기술	SPACE
57	High performance integrated induction control technology 고성능 통합유도조종 기술	SPACE
58	Air Launch Platform Modification and Flight Safety Security Technology 공중발사 플랫폼 개조 및 비행안전성 확보기술	SPACE
59	Interworking and monitoring technology for aerial projectiles 공중발사체 탑재 연동 및 모니터링 기술	SPACE
60	Multi-tank warhead design technology 다중탄자 탄두 설계 기술	Firepower
61	Development Technology of W-band High Power Amplifier W-대역 고출력증폭기 개발 기술	Firepower
62	Development of Active Gastrointestinal Technology Using Electronic Paper 전자종이를 이용한 능동 위장막 기술 개발	Maneuver
63	Development of Lightweight High-Temperature Materials for TiAl Base for Improvement of Room Temperature Behavior 상온취성개선 TiAl 기지 경량 고온재료 개발	Firepower
64	Development of Core Technology of Electrical Thrusters for Satellite Orbit Transition 위성 궤도 천이를 위한 전기추력기 핵심기술 개발	SPACE

· Potential R&D Collaboration Partners (KR)

No.	Category	Organization/Company Name	
1	Research	ETRI	Electronics and Telecommunications Research Institute
2	Research	KARI	Korea Aerospace Research Institute
3	Research	KASI	Korea Astronomy and Space Science Institute
4	Research	KIST	Korea Institute of Science and Technology
5	Research	KIMS	Korea Institute of Materials Science
6	Research	KERI	Korea Electrotechnology Research Institute
7	Research	KIOST	Korea Institute of Ocean Science & Technology
8	Research	KRISS	Korea Research Institute of Standards and Science
9	Research	KIMM	Korea Institute of Machinery and Materials
10	Research	KRIBB	Korea Research Institute of Bioscience & Biotechnology
11	Research	KITECH	Korea Institute of Industrial Technology
12	Research	KIER	Korea Institute of Energy Research
13	Research	KAERI	Korea Atomic Energy Research Institute
14	Research	KRICT	Korea Research Institute of Chemical Technology
15	Research	KFRI	Korea Food Research Institute
16	Academia	KAIST	Korea Advanced Institute of Science and Technology
17	Academia	POSTECH	Pohang University of Science and Technology
18	Academia	HU	Hanyang University
19	Industry	HANWHA	Hanwha R&D Center (Daejeon)
20	Industry	HD GRC	HD Hyundai Global R&D Center (Pangyo)
21	Industry	KAI	Korea Aerospace Industries Ltd.
22	Industry	Hyundai Rotem	Hyundai Rotem (Eui-wang/Changwon)
23	Industry	POONSAN	Poongsan Institute of Technology (Daejeon)
24	Industry	LIG NEX1	LIG Nex1 Research Institute (Pangyo)

Appendix 2. Exhibition Overview

KCEF(Korea Defense Component and Equipment Fair) is an event to promote products of defense enterprises (manly SMEs) products. And it's to support the formation of a network between users (Military personnel and OEMs etc.) and SMEs. KCEF is held every two years by the DAPA. This year's event is specially integrated with the 'Defense Industry Fair', which has been held every year since 2009 by Daejeon City, which claims to be a 'Defense Science City'. It is to participate in the national task of building high-tech military strength and expanding defense industry exports.

- KCEF & DIF 2023: <http://www.kcef.or.kr/>
(Korea Defense Component and Equipment Fair & Advanced Defense Industry Fair 2023)
- Period: 28(Wed.)~30(Fri.) June 2023
- Venue: Daejeon Convention Center(DCC) Exhibition Center I, II, Daejeon, Korea
- Organizers: Defense Acquisition Program Administration, Daejeon Metropolitan City, Korea Research Institute for defense Technology planning and advancement, Daejeon Tourism Organization



Appendix 3. Status of equipment (venue: Grand ballroom)

Division	Details
- Two halls can be divided	164kW panel board can be used
- 164kW panel board can be used	Light batten SUS, two out of three are available.
- each. #201 (six wired and four wireless)	Three out of five ceilings are available. There are 70 channels in total (one channel: 3kW) Load: 200kg
- #202 (Two wired, two wireless)	Stage size : Width 24m × Length 6m × Height
- 790 storage chairs	0.98m (stage ceiling height 6.8m)
- Screen	<ul style="list-style-type: none"> • #201: 300 inches (6m x 4.5m), beam projector 30000 ANSI laser, • #202: 300 inches beam projector 7500 ANSI / 15000 ANSI • #201: LED screen width 15m x length 4m, 611 inches / 3,836 pixel, 3.9mm pitch

