

Human Security & Defense Sector

New/ Ongoing	Completed	Target
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Updated as of 27 October 2023

Overall Strategies:

Human Resource

- Training courses on new and emerging technologies for defense applications.

R&D Technologies

- Unmanned vehicle systems
- Weapons
- Communications/ Imaging/ Sensing
- Vehicles/Conveyance
- Textiles, armors and vests

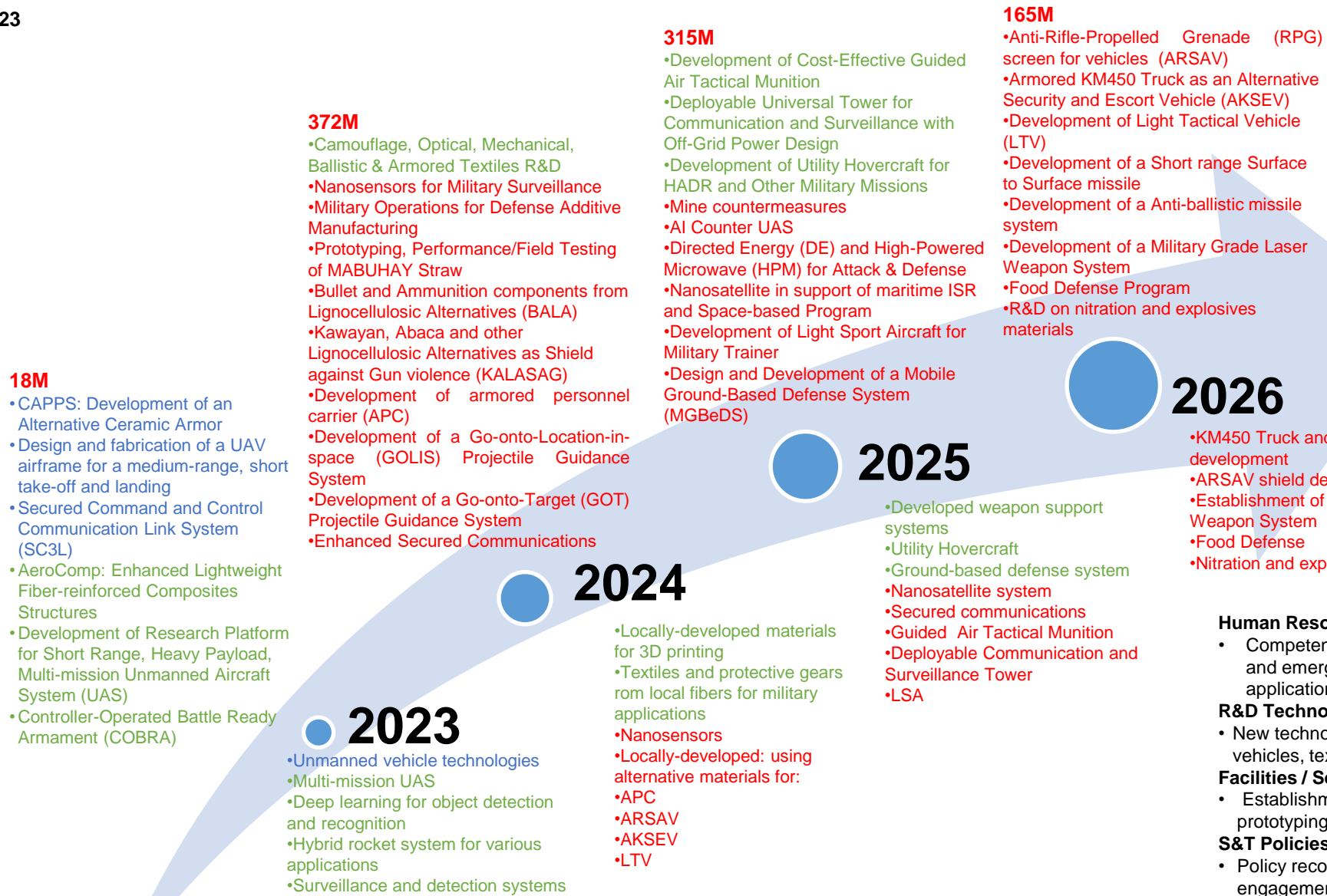
Facilities/Services

- Common Testing Facility, SMART Research Laboratory using IoT, Prototyping facilities for aerial, surface and geographic vehicle, Chemical and Rocket Propulsion Laboratory, Bio-Composite R&D Facility, d. S&T

S&T Policies

- Policy/ Guidelines on: System Engineering for R&D, Civil-Military Engagement undertaking joint DOST-DND programs

**for further vetting w/ DND*



18M

- CAPPs: Development of an Alternative Ceramic Armor
- Design and fabrication of a UAV airframe for a medium-range, short take-off and landing
- Secured Command and Control Communication Link System (SC3L)
- AeroComp: Enhanced Lightweight Fiber-reinforced Composites Structures
- Development of Research Platform for Short Range, Heavy Payload, Multi-mission Unmanned Aircraft System (UAS)
- Controller-Operated Battle Ready Armament (COBRA)

2023

- Unmanned vehicle technologies
- Multi-mission UAS
- Deep learning for object detection and recognition
- Hybrid rocket system for various applications
- Surveillance and detection systems

372M

- Camouflage, Optical, Mechanical, Ballistic & Armored Textiles R&D
- Nanosensors for Military Surveillance
- Military Operations for Defense Additive Manufacturing
- Prototyping, Performance/Field Testing of MABUHAY Straw
- Bullet and Ammunition components from Lignocellulosic Alternatives (BALA)
- Kawayan, Abaca and other Lignocellulosic Alternatives as Shield against Gun violence (KALASAG)
- Development of armored personnel carrier (APC)
- Development of a Go-onto-Location-in-space (GOLIS) Projectile Guidance System
- Development of a Go-onto-Target (GOT) Projectile Guidance System
- Enhanced Secured Communications

2024

- Locally-developed materials for 3D printing
- Textiles and protective gears from local fibers for military applications
- Nanosensors
- Locally-developed: using alternative materials for:
 - APC
 - ARSAV
 - AKSEV
 - LTV

315M

- Development of Cost-Effective Guided Air Tactical Munition
- Deployable Universal Tower for Communication and Surveillance with Off-Grid Power Design
- Development of Utility Hovercraft for HADR and Other Military Missions
- Mine countermeasures
- AI Counter UAS
- Directed Energy (DE) and High-Powered Microwave (HPM) for Attack & Defense
- Nanosatellite in support of maritime ISR and Space-based Program
- Development of Light Sport Aircraft for Military Trainer
- Design and Development of a Mobile Ground-Based Defense System (MGBeDS)

2025

- Developed weapon support systems
- Utility Hovercraft
- Ground-based defense system
- Nanosatellite system
- Secured communications
- Guided Air Tactical Munition
- Deployable Communication and Surveillance Tower
- LSA

165M

- Anti-Rifle-Propelled Grenade (RPG) screen for vehicles (ARSAV)
- Armored KM450 Truck as an Alternative Security and Escort Vehicle (AKSEV)
- Development of Light Tactical Vehicle (LTV)
- Development of a Short range Surface to Surface missile
- Development of a Anti-ballistic missile system
- Development of a Military Grade Laser Weapon System
- Food Defense Program
- R&D on nitration and explosives materials

2026

- KM450 Truck and LTV vehicle development
- ARSAV shield development
- Establishment of a Military Grade Laser Weapon System
- Food Defense
- Nitration and explosive materials

Vision

- Locally-developed technologies towards a self-reliant defense capability
- Philippine defense industry
- AFP defense technology production capability

Overall Outcomes

Human Resource

- Competent and trained S&T personnel on new and emerging technologies for defense applications

R&D Technologies

- New technologies on UVS, weapons, armor, vehicles, textiles, and communications systems.

Facilities / Services

- Establishment of a common testing facility for prototyping purposes.

S&T Policies

- Policy recommendations on civil-military engagements for DOST-DND programs.

List of Projects (for the whole duration of the roadmap)

R&D Technologies	Project Title	Budget Allocation ('000)							Status
		2022	2023	2024	2025	2026	2027	2028	
Communications / Imaging / Sensing	Secured Command and Control Communication Link System	4,000	-	-	-	-	-	-	Completed
Textiles, armors, and vests	AeroComp: Enhanced Lightweight Fiber-reinforced Composites Structures for Aerospace and Defense Applications	19,000	-	-	-	-	-	-	Ongoing
Textiles, armors, and vests	CAPPS: Development of an Alternative Ceramic Armor	5,000	3,000	-	-	-	-	-	Completed
Unmanned Vehicle Systems	Development of Research Platform for Short Range, Heavy Payload, Multi-mission Unmanned Aircraft System (UAS)	27,000	7,000	-	-	-	-	-	Ongoing
Weapons	Controller-Operated Battle Ready Armament (COBRA)	18,000	6,000	-	-	-	-	-	Ongoing
Unmanned Vehicle Systems	Design and fabrication of a UAV airframe for a medium-range, short take-off and landing	-	2,000	-	-	-	-	-	Completed



List of Projects (for the whole duration of the roadmap)

R&D Technologies	Project Title	Budget Allocation ('000)							Status
		2022	2023	2024	2025	2026	2027	2028	
Communications / Imaging / Sensing	Nanosensors for Military Surveillance	-	-	37,200	-	-	-	-	Potential Proposal
Weapons / Textiles, armors, and vests	Military Operations for Defense Additive Manufacturing	-	-	37,200	-	-	-	-	Potential Proposal
Textiles, armors, and vests	Prototyping, Performance/Field Testing of MABUHAY Straw	-	-	37,200	-	-	-	-	Potential Proposal
Textiles, armors, and vests	Camouflage, Optical, Mechanical, Ballistic & Armored Textiles R&D	-	-	37,200	-	-	-	-	Potential Proposal
Weapons	Bullet and Ammunition components from Lignocellulosic Alternatives (BALA)	-	-	37,200	-	-	-	-	Potential Proposal
Textiles, armors, and vests	Kawayan, Abaca and other Lignocellulosic Alternatives as Shield against Gun violence (KALASAG)	-	-	37,200	-	-	-	-	Potential Proposal
Vehicles/Conveyance	Development of armored personnel carrier (APC)	-	-	37,200	-	-	-	-	Potential Proposal
Weapons	Development of a Go-onto-Location-in-space (GOLIS) Projectile Guidance System	-	-	37,200	-	-	-	-	Potential Proposal



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		2022	2023	2024	2025	2026	2027	2028	
Communications / Imaging / Sensing	Enhanced Secured Communications	-	-	37,200	-	-	-	-	Potential Proposal
Weapons	Development of a Go-onto-Target (GOT) Projectile Guidance System	-	-	37,200	-	-	-	-	Potential Proposal
Textiles, armors, and vests	Mine countermeasures	-	-	-	35,000	-	-	-	Potential Proposal
Unmanned Vehicle Systems	AI Counter UAS	-	-	-	35,000	-	-	-	Potential Proposal
Weapons	Directed Energy (DE) and High-Powered Microwave (HPM) for Attack & Defense	-	-	-	35,000	-	-	-	Potential Proposal
Communications/ Imaging/ Sensing	Nanosatellite in support of maritime ISR and Space-based Program	-	-	-	35,000	-	-	-	Potential Proposal
Weapons	Development of Cost-Effective Guided Air Tactical Munition	-	-	-	35,000	-	-	-	Potential Proposal
Communications/ Imaging/ Sensing	Deployable Universal Tower for Communication and Surveillance with Off-Grid Power Design	-	-	-	35,000	-	-	-	Potential Proposal



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		2022	2023	2024	2025	2026	2027	2028	
Vehicles/ Conveyance	Development of Light Sport Aircraft for Military Trainer	-	-	-	35,000	-	-	-	Potential Proposal
Vehicles/ Conveyance	Development of Utility Hovercraft for HADR and Other Military Missions	-	-	-	35,000	-	-	-	Potential Proposal
Weapons	Design and Development of a Mobile Ground-Based Defense System (MGBeDS)	-	-	-	35,000	-	-	-	Potential Proposal
Vehicles/ Conveyance	Anti-Rifle-Propelled Grenade (RPG) screen for vehicles (ARSAV)	-	-	-	-	25,000	-	-	Potential Proposal
Vehicles/ Conveyance	Armored KM450 Truck as an Alternative Security and Escort Vehicle (AKSEV)	-	-	-	-	20,000	-	-	Potential Proposal
Vehicles/ Conveyance	Development of Light Tactical Vehicle (LTV)	-	-	-	-	20,000	-	-	Potential Proposal
Weapons	Development of a Short range Surface to Surface missile	-	-	-	-	20,000	-	-	Potential Proposal
Communications/ Imaging/ Sensing	Development of a Anti-ballistic missile system	-	-	-	-	20,000	-	-	Potential Proposal
Weapons	Development of a Military Grade Laser Weapon System	-	-	-	-	20,000	-	-	Potential Proposal
Textiles, armors, and vests	Food Defense Program	-	-	-	-	20,000	-	-	Potential Proposal
Weapons	R&D on nitration and explosives materials	-	-	-	-	20,000	-	-	Potential Proposal

