EUROPEAN DEFENCE AGENCY

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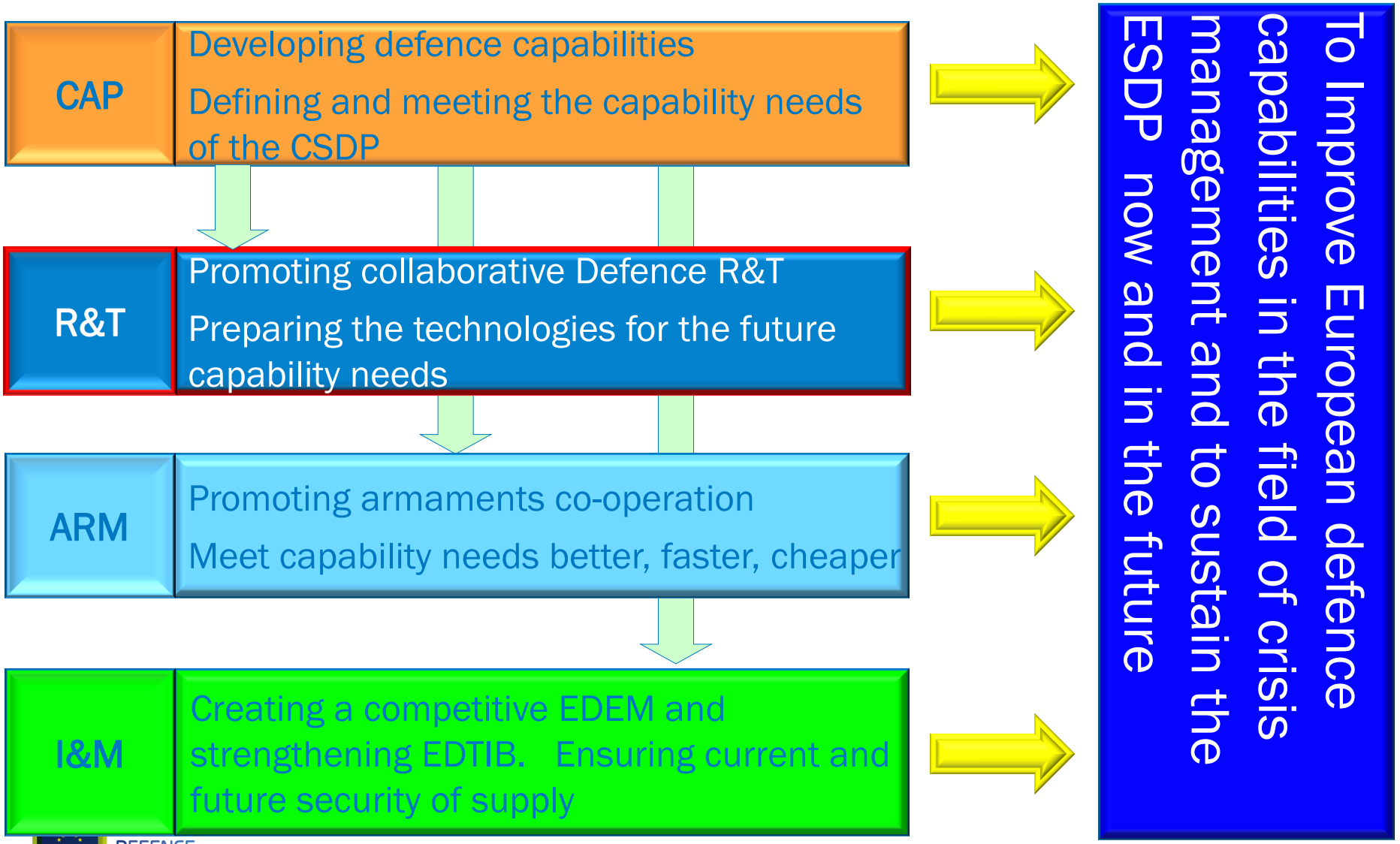
Financiamento europeu para inovação tecnológica nas indústrias de defesa – domínios tecnológicos e oportunidades

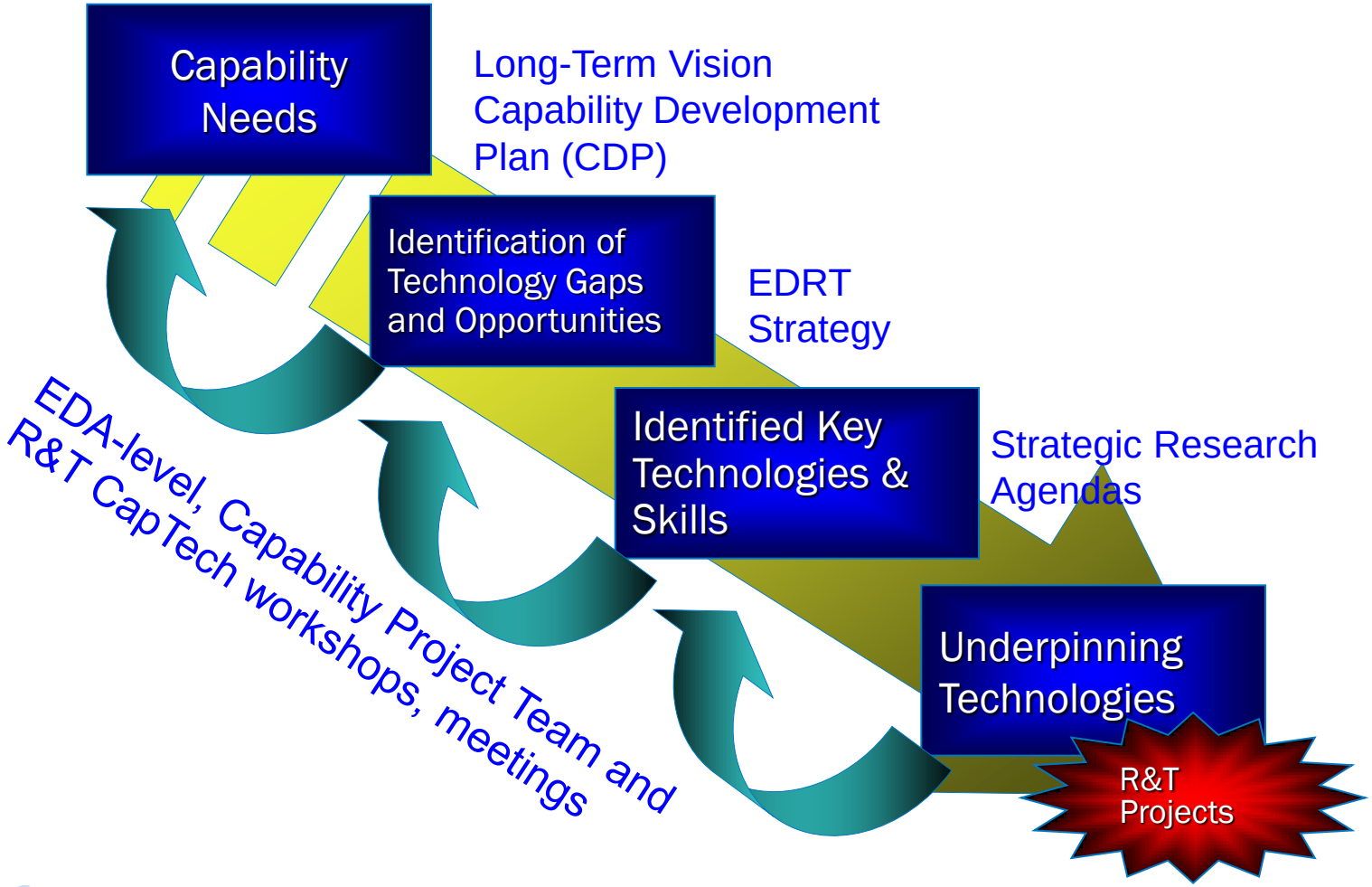
EDA: a Capability Driven Approach



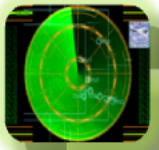
Capability Development Plan priorities

CDP "Top 10"	Maturing actions	Core drivers / environments
1. Counter Improvised Explosive Device (C-IED)	1. Maritime Mine Counter-Measures	1. Comprehensive Approach
2. Medical Support	2. Chemical Biological Radiological and Nuclear	2. Network Enabled Capabilities
3. Intelligence Surveillance and Reconnaissance	3. Counter-Man Portable Air Defence Systems	3. Radio Spectrum Management for EU Capabilities
4. Increased Availability of Helicopters	4. Military Human Intelligence	4. Space
5. Cyber Defence		5. Single European Sky
6. Multinational Logistic Support		
7. CSDP Information Exchange		
8. Strategic and Tactical Airlift Management		
9. Fuel and Energy		
10. Mobility Assurance		

Combining capability drive and technology push



EDA R&T Technology areas



Information Aquisition and Processing

- **IAP 1** Components
- **IAP 2** RF Sensor Systems & Signal Processing
- **IAP 3** Optical Sensor Systems & Signal Processing
- **IAP 4** CIS & Networks

Guidance Energy and Materials

- **GEM 1** Materials & Structures
- **GEM 2** Energetics, Missiles & Munitions
- **GEM 3** Ground Systems & their Environment
- **GEM 4** Guidance and Control

Environment Systems & Modelling

- **ESM 1** Naval Systems & their Environment
- **ESM 2** Aerial Systems & their Environment
- **ESM 3** Systems of Systems, Space, Simulation & Experiment
- **ESM 4** Human Factors & CBR Protection

Opportunities for cooperation

- **OB Studies:** Using the Agency Operational budget
- **JIP:** Joint Investment Programmes
- **Ad-hoc projects:** Cooperations among MS
- Examples for Portugal:

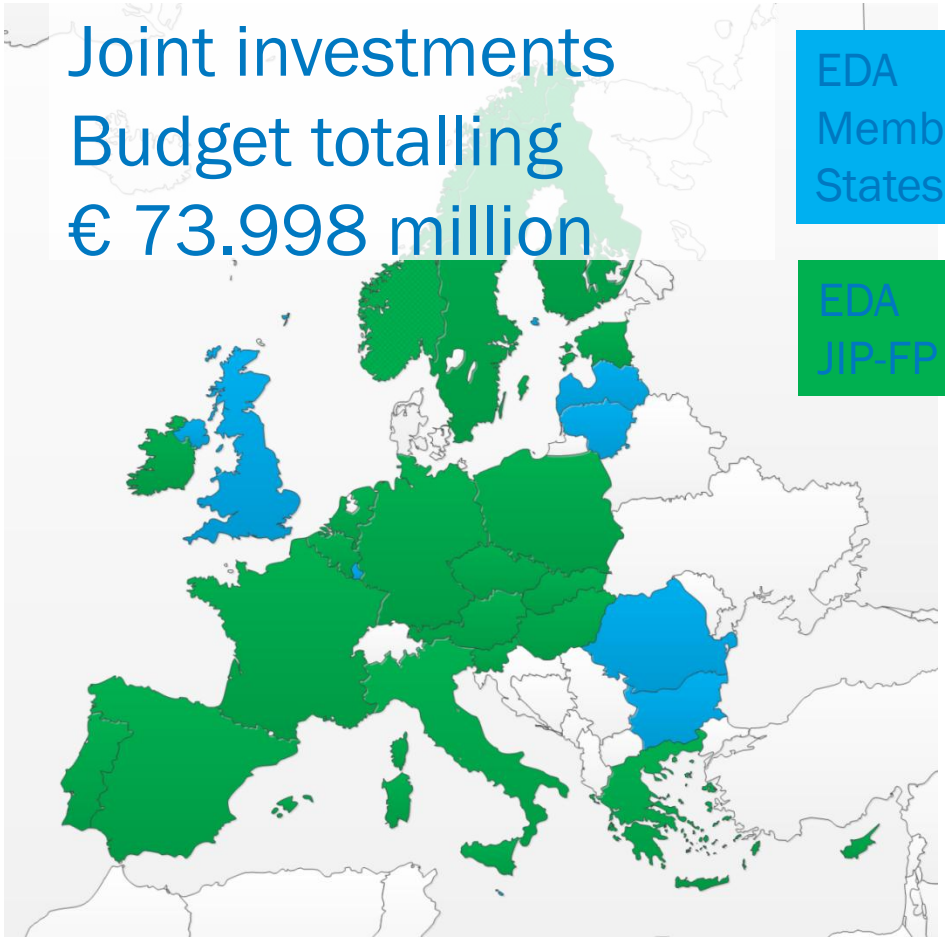
  Bio-Chemical : Detection and vaccination - *Inst Tecnologia Quimica e Biológica (U Nova);Nanopore Solutions.* Univ. Coimbra –Faculdade Farmácia, Centro de Neurociências e Biologia Celular

  CIS&Networks : TEKEVER, Edisoft

  Energy, missiles & munitions: ADAI/LEDAP; DEM/UC, ADAI, IDD

EDA JIP-Force Protection
the pilot Category A programme launched 2006

Joint investments
Budget totalling
€ 73.998 million



EDA Member States

EDA JIP-FP

MUSAS	GMV-SKYSOFT
AHEAD	TEKEVER, LBD
AD-HELW	FCUL-LOLS-INETI

- share in the Ad Hoc Budget is 124% for Portugal

ESM 1 – UMS Programme

UMS - Unmanned Maritime Systems

Aim - to improve European capabilities in a number of naval application (but primarily for MCM) by improving capabilities of unmanned maritime systems, taking into account a system-of-systems approach; cover interoperability, modularity and inter-changeability of modules; and standardization

- cM - BE, DE, ES, FI, FR, IT, NL, NO, PL, PT, SE

- Financial value 53.7 M€ (11 UMS-projects of 40.1 M€ + 3 Cat.Bs to be combined 13.6 M€)

  - NECSAVE - FEUP; FAP(FA);MAR(FA)
  - Mission Planning - INESC - PORTO

EFC concept

European Framework Cooperation

- Overall objective: promote R&D security cooperation between EDA and European Commission
  - Meaning: coordination of projects to avoid duplication and to find coherence
  - Maximising complementarity among civilian security and defence-related security
- Governance:
  - separate frameworks, separate budgets, and separate rules – BUT
  - common objectives, synchronised calendars, sharing of expertise & information
- Concrete:
  - Identify suitable topics: CBRN , UAS, Situation Awareness (Cyber Defence)
  - Time alignment of work programmes and calls where possible
  - Evaluation pooling and exchanging expertise where possible
  - Simultaneous and coordinated implementation and demonstration
  - Information sharing in workshops and conferences

Technical Topics JIP CBRN

Improved Stand off detection of C agents

Simultaneous analysis of CBR agents (mixed samples)

Next generation point detection for B agents

M&S of CBRN system architectures

Improved Decontamination (DECON) control for B

Next generation DECON for B and C

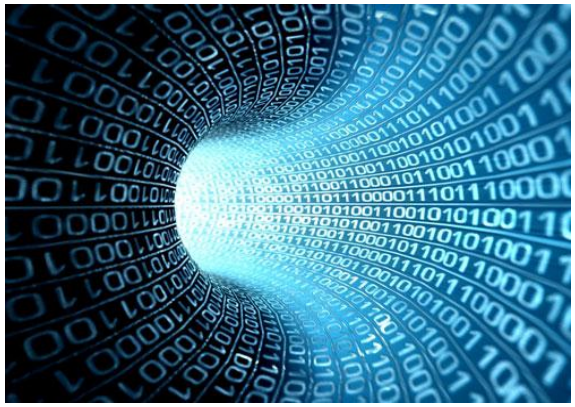
CBRN SA through detector networking and data fusion

Next generation Collective Protection (COLPRO)

Next generation individual protection

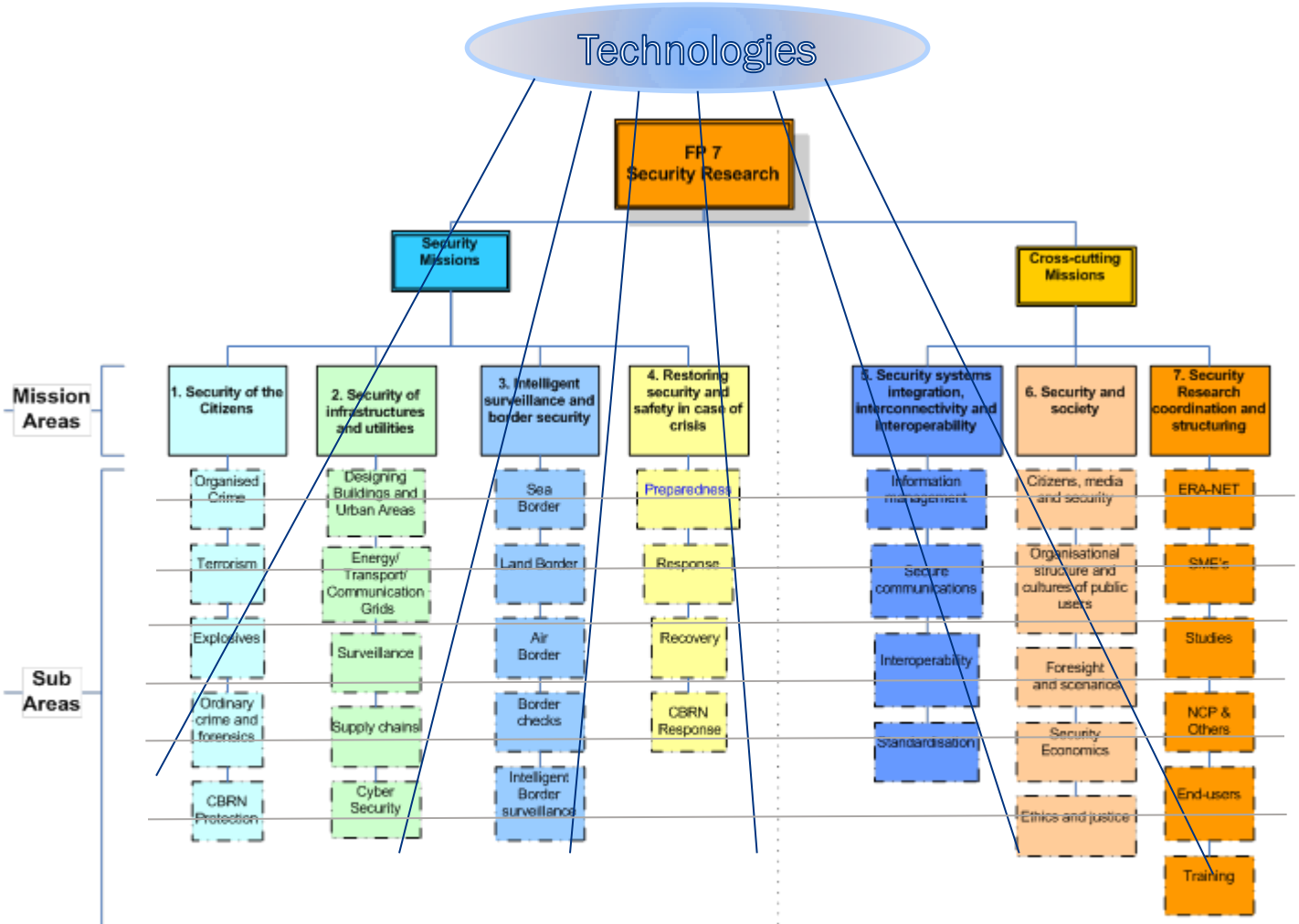
FCUL; GMV-SKYSOFT; INOV-INESC; LDB; GMV; INESC-Porto; TEKEVER; NanoPore Solutions; UNL-FCT; UC; UL-FC; ITQB; FFA (LDBE)

Cyber Defence within EFC



- Cyber Defence identified as CDP priority
- Stock-taking study (contract Rand) to identify Cyber Security and Defence stakeholders at national, EU level and NATO
- R&T directorate working with pMS to establish a research agenda and to identify potential collaborative research projects
- Consultation with European Commission; FP7 projects related to Critical Information Infrastructure Protection; and FP7 projects related to secure network infrastructures, secure and trustworthy service infrastructures.

Defence R&T vs Security research



Defence R&T vs Security research - examples

IED –

- terrorism
- Ordinary crime and forensics
- explosives

(Mission Area 1)

EDA relevant projects

Title	Short description	Type
IED- Forensics	Creating the European architecture for an Incident Recorder for use in existing and future land vehicles with the purpose of exploiting forensic information from an IED incident.	Study
Signature IEDs	To devise a generic parametric model for a specific type of IED signature as a benchmark that can then be applied on other types of IED signatures. The parametric model will be validated through actual data acquisition.	Study
TERIFIEC	Terahertz for the Identification of Explosive Chemicals- Establish the capabilities of terahertz sensing technology for the remote detection of explosives and to produce roadmaps towards fielding robust military equipment in 1-10 years.	Study
E-STAR	Explosive detection – Spectroscopy, Terahertz Technology and Radar - Develop a prototype of a new close to real time 3D Terahertz imager and spectrometer for remote detection of hidden items with data fusion possibilities. Expected result to allow for the construction of a new and improved near real time 3D THz imager and spatially resolved spectrometer with data fusion possibilities.	JIP-ICET
TRAM	Development of New Transparent Materials for Armour Applications - Develop and demonstrate light-weight solutions for transparent armour with good transparency properties in the relevant wavelength spectrum.	Proj
Protection Against EFP	Protection of Armoured Fighting Vehicles Against EFP - Propose solutions for protection of vehicles from bottom plate attack by Explosively Formed Projectiles (EFP) and blast mines	Proj

Defence R&T vs Security research - examples

CBRNE –

- Ordinary crime and forensics
- Protection
- Preparedness (HF)
- Standardization

(Mission Areas 1, 4, 5 & 6)

EDA relevant projects

Title	Short description	Type
SOCUMOD	Cultural and behavior modeling factors influencing effective operation of EU coalition forces in modern conflicts	Proj
RAMBO	Rapid Air Particle Monitoring Against Biological Threats - Develop advanced methods, instrumentation and sensing strategies/protocols for continuous monitoring of air particles against biological threats. Detect to Warn response time (<5 min) Man-Portability	Proj
T	Protocols exist for test and evaluation (T&E) of equipment in order to render it defence forces. In the case of Biological Detection, Identification and T&E programs are not coordinated across national g response capability by gaps in knowledge and causing ing a Europe-wide bio-DIM capability. The aim is to define evaluation (T&E) regarding biological detection,	Proj
FODAI		Proj
Database - B	Contribute to the network. Improve in the military an (Biological and Toxin Wea	atory – agents) C Proj
PATCH	Use new develop nents in nanotechnology for the design and development of a novel "Personal Biological Aerosol Collector for Exposure Control".	JIP-ICET

EBLN (*follow-on*) to establish a networking of CBRN labs with FP7 project

Input to IFREACT – FP7 project on protection measures for first responders ⇔ outcome can be used in JIP CBRN Call 2 (personal protection)

Defence R&T vs Security research - examples

MISSION PLANNING

- Organised crime
- Terrorism
- Behaviour
- Preparedness
- Foresight Scenarios

(Mission Areas 1, 4 & 6)

EDA relevant projects

Title	Short description	Type
SIMS	Smart Information for Mission Success	JIP FP
CARDINAL	CApability study to investigate the essential man-machine Relationship for improved Decision	JIP FP
EUSAS	European Urban Simulation for Asymmetric Scenarios	JIP FP
SMUVO	Scenarios for Multiple Unmanned Vehicle Operations	Study

Defence R&T vs Security research - examples

MARITIME

- Sea Border
- Intelligent border Surveillance
- Interoperability
- Standardization

(Mission Areas 1, 2, 3 & 5)

EDA relevant projects

Title	Short description	Type
DMD	Drifting mines detection	JIP UMS
NECSAVE	Network Enabled Cooperation System of Autonomous Vehicles	JIP UMS
BURMIN	Buried Mines	JIP UMS
CAPEM	Conformal array performance estimation modelling	JIP UMS
ETLAT	Evaluation of Thin Line Array Technologies	JIP UMS
HaPS	Underwater systems for harbour and base protection	JIP UMS
STANDIN	Standards and Interfaces for more interoperable European Unmanned Maritime Systems	JIP UMS
SIRAMIS	Signature Response Analysis on Multi-influence mines	JIP UMS
SARUMS	Safety and Regulations for European Unmanned Maritime Systems	JIP UMS
MUSV	Maritime USVs; stock taking of the EU maritime defence industries capabilities regarding USVs : key technologies, opportunities, challenges and need for R&T	JIP UMS

Defence R&T vs Security research - examples

SITUATION AWARENESS/ SURVEILLANCE

- Information Gathering
- Information Management
- Surveillance
- Intelligent border Surveillance
- Sensors
- Communication

(Mission Areas 1, 2, 3 & 5)

EDA relevant projects (1/2)

Title	Short description	Type
SUM	Surveillance In An Urban Environment Using Mobile Sensors - Develop a low-cost multisensory vehicle protection system, using a data fusion engine in order to enhance situational awareness and aid command and control for a moving vehicle in an urban environment.	JIP FP
MEDUSA	Multi Sensor Data Fusion Grid for Urban Situational Awareness - Realize a robust, highperformance, integrated, intelligent, autonomous and versatile multi-sensor data fusion grid. It will significantly improve Situational Awareness and Command and Control in the context of force protection in urban environments.	JIP FP
DAFNE	Designing and experimenting a real-time distributed multi sensor fusion engine that will combine data from heterogeneous sensors in order to generate reliable estimates about the entities and events in a urban warfare scenario. To provide data to be exploited for tasks such as target detection, localization, tracking, identification and recognition.	JIP FP
D-FUSE	Data Fusion in Urban Sensor Networks - Focuses on how to increase situational awareness by fusing data within networks of sensors. The project takes a stepwise approach, defining three types of sensor networks and their related data fusion architectures.	JIP FP
AUDIS	Acoustic Urban Threat Detector for Improved Surveillance Capabilities -Designing and developing a novel cognitive sensor that offers flexibility and adaptivity to the encountered scenario while ensuring a neat capability improvement in recognition and characterization of such ground threats.	JIP FP
ICAR	Intelligent Control Adv. Radio-comms - Capability shortfall related to the reliable selective prevention, control, capture and blocking of adversary mobile communications, with reduced collateral effects, in multi-path environments as urban or mountain areas. Define affordable, complete and integrated response to intercept, localize, monitor and selectively block the threats at the radio interface, in operational and realistic theatres.	JIP FP

Defence R&T vs Security research - examples

SITUATION AWARENESS/ SURVEILLANCE

- Information Gathering
- Information Management
- Surveillance
- Intelligent border Surveillance
- Sensors

(Mission Areas 1, 2, 3 & 5)

EDA relevant projects (2/2)

Title	Short description	Type
SMRF	Definition of a multi-scalable architecture for future multifunction RF systems to demonstrate achievable reductions in development, procurement and life cycle costs and conduct the eventual evolution of the SMRF architecture into an open standard.	Progr
TELLUS	Enabling technologies for Radar and Electronic Support Systems (ESM) in urban terrain focusing on light, affordable and energy efficient systems.	Project
SPREWS	Address significant technological development for enhanced RF system performance through new and improved signal processing functionality in the fields of Radar, Electronic Support Systems (ESM) and Radar and ESM functions in Networks.	Project
RIBA	Identify, analyse, describe and give a proof of concept for radar systems solutions that could provide the capability of Situation Awareness inside buildings. The location of these radar systems should be outside the buildings.	Study
ITP-SIMCLAIRS	Build the technology base of a future European capability in the field of light and compact UAV (Unmanned Aerial Vehicle) RF (Radio Frequency) payloads with functionality delivering a combination of SAR/MTI, FOPEN, ESM and possibly communications in an integrated ISTAR (Intelligence, Surveillance, Target Acquisition and Reconnaissance) package	Project
ASAR	Identification and understanding of the key technologies to realise an Adaptive, self-learning and anticipative radar (ASAR) system. Development of a common functional architecture that will support future development of ASAR systems. Develop technology roadmap for an architecture within a realistic time horizon.	Study
SPERI	Develop and test new advanced ISAR functionalities: 3D Interferometric ISAR and Super Resolution ISAR (2D & 3D). Develop new Non Cooperative Target Recognition (NCTR) techniques based on 2D&3D ISAR images	Project

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Thank you for your attention!