Summary of all JIP-FP contracts

Call	Start of contracts	Contracts placed
1. Collective survability	December 2007	SNIPOD, EPIDARM, GUARDED, Patho-ID Chip, MUSAS
2. Tactical wireless communication and individual protection technology forecasting	Fall 2008	AHEAD, AD-HELW, WOLF
3. Data analysis and data fusion	Summer 2009	MEDUSA, SUM, DAFNE, D-FUSE, AUDIS
4. Mission planning/training in an asymmetric environment and secured tactical wireless communications	Early 2010	SIMS, ICAR, EUSAS, ATHENA, CARDINAL

Contract A-0376-RT-GC "SNIPOD"

| **Sniper Positioning and Detection** | Indicative total value: | 2.8 Million Euro |
| | Duration: | 30 months from 07/2008 |

EADS IW, Suresnes (FR) - CILAS, Orleans (FR) – EADS DE, Ulm (DE) - FOI, Linköping (SE) – SNIPOS A/S, Våle (NO) - MUT, Warsaw (PL)

Past and recent crisis management operations in the Urban Environment have highlighted the issue of snipers. Not only direct effects on local population and multinational forces are significant, with killed or injured people, but political impact of such events, emphasised now by the use of videotaping for propaganda goals, is very high. Urban areas are by nature highly populated, heterogeneous, highly cluttered. They offer multiple potential sniping posts in almost all directions. There is therefore a real need of improved and affordable systems that could detect snipers before and after the shot in the complex urban environment, localise and classify them with accuracy and speed, in order to deter, prevent and react without collateral damage. In order to improve the current capabilities, the SNIPOD project will tackle the limitations of up-to-date systems, mainly acoustic and laser-based solutions, investigate complementary promising or upstream technologies, develop signature databases and explore multisensor monitoring and data fusion techniques.

Contract A-0377-RT-GC "EPIDARM"

European Protective Individual Defence Armour	Indicative total value: 3.9 Million Euro Duration: 36 months from 02/2008

OUVRY, LYON (FR) - BLUECHER, ERKRATH (DE) – ONERA, CHATILLON (FR) – ISL, SAINT-LOUIS, (FR) - ENSAIT, ROUBAIX (FR) - RMA, BRUSSELS (BE) – AERO SEKUR, APRILIA (IT)

EPIDARM deals with R&T on innovative and low cost materials (natural fibres …) and constructions (use of nano particles, 3D textiles structures …) and definition of a multifunctional individual ballistic and CBRNE protective system. The system integrates functions like CBRN modular protection, heat stress regulation and medical monitoring. An early integration scheme will enable to reduce the operational capacity shortfalls, to reduce the weight and improve the overall mobility thanks to lighter and more flexible material already developed in the aerospace Industry. The consortium will integrate End Users (especially from FR, BE, IT and DE MoDs). Demonstrators will be defined and manufactured under technical specifications based on the operational requirements. They will be tested in laboratories (as well as the material and sub system level) and fielded in real conditions. The consortium intends to industrialize the results of the project.

Contract A-0378-RT-GC "GUARDED"

Generic Urban Area Robotized Detection of CBRNE Devices	Indicative total value: 3.5 Million Euro Duration: 36 months from 01/2008

ECA, ORSAY (FR) - DDSC, ASNIERES-S-SEINE (FR) - ION, INNSBRUCK (AT) - IPS, LJUBLJANA (SI) - ENV, MIKKELI (FI)

The aim of this project is to demonstrate a remote controlled mobile platform for sniffing a suspect and/or dangerous area, having on bard a set of complementary CBRNE sensors to provide a safe diagnostic obtained through data fusion between various sensors, enabling weddings and solving the old paradox of the need for compromising between resolution and detection. Therefore, after a state of the art of various detection techniques allowing to give an overview of what can be detected and how nowadays, use cases scenarios will be established with the help of operational experts to place the project in a realistic context. From then, an intensive trials campaign will conducted. Technologies like Ground Penetrating Radar techniques for localisation, even through walls or buried objects, Proton transfer Reaction coupled with Mass Spectrometry, Chemical and Biological based on handheld devices and improving new sampling techniques etc. will be used. To validate the approach, a trial period is planned after the integration & tests phase, which is traditionally crucial, allowing to point out and measure the effects of the project, i.e. completion of the inspection & securing mission.

Contract A-0379-RT-GC "PathoID-Chip"

Robust and autonomous airborne threat detection system as lab-on-a-chip device with integrated optoelectronic sensors and combined pathogen enrichment	Indicative total value:	2.9 Million Euro
	Duration:	36 months from 02/2008

MCS, Jena (DE) - Clemens, Waldbüttelbrunn (DE) - IMB, München (DE) - FLI, Jena (DE) - NANOIDENT, Linz (AT) – JR-Graz, Graz (AT) - Bertin, Montigny-le-Bretonneux (FR)

The goal of the project is the development of an autonomous lab-on-a-chip based standoff B detection system that combines sample enrichment of airborne pathogenes, lab-on-a-chip lysis, and chemiluminescence-based quantification and identification of PCR products, using photosensors. The combination of the lab-on-a-chip instrument with a sample collection device will enable a complete system analyzing minor amount of airborne threats within the relevant air volume being inhaled by a physically active person. The system will be designed for the relevant bacteria. It should be pointed out that the overall system architecture with a disposable core lab-on-a-chip greatly simplifies the decontamination procedures necessary for repeated use in the field.

Contract A-0380-RT-GC "MUSAS"

Multi Sensor **Anti Sniper System**	Indicative total value: 5.7 Million Euro Duration: 30 months from 02/2008

GMV, Tres Cantos (ES) - Metravib, Limonest (FR) - DS PISA, SAN PIERO A GRADO (IT) - PIAP, Warsaw (PL) - Skysoft, Lisboa (PT) - UoU, Udine (IT)

A sniper is a highly skilled warrior tasked to shoot from a concealed position over longer ranges than regular infantry, and usually shoots at high value. In the recent years, and mainly in asymmetric conflicts, sniper confrontation has proven to be a decisive threat which has to be duly faced. Snipers are used more as a mean to spread terror by indiscriminately shooting even civilian population. Therefore the sniper should be detected before the shooting, but existing techniques have proven to be highly unreliable leading to an unacceptable level of false alarms. The main objective of this proposal is to research different technologies (acoustic and radar sensors, image processing, enhancement of data fusion, inclusion of intelligence information, human machine interface…). Objective is to obtain a real-time reliable estimation of the sniper position before the first shot and disseminate this information in a properly manner optimising the resources for neutralisation. The project will assess different scenarios (military base, convoy and dismounted soldier) and platforms (fixed, wearable, vehicle mounted). It is envisioned to develop a laboratory demonstrator which will show the feasibility of the system and its integration with in future soldier programmes.

Contract A-0690-RT-GC "AD-HELW"

| **Air Defense High Energy Laser Weapon** | Indicative total value: | 4.2 Million Euro |
| | Duration: | 36 months from 11/2008 |

LFK (MBDA), Unterschleissheim (DE) - CILAS, ORLEANS (FR) – INETI, Lisbon (PT) – MUT, Warsaw (PL) – DLR, Stuttgart (DE) – ISL, Saint-Louis (FR)

Existent air defence weapons use missiles or cannons as effectors. These systems are well suited for engagements against large air targets as aircraft, but they show strong drawbacks for the defence against attacks of small targets as mortar grenades or artillery rockets (RAM-targets). High energy laser weapons possess the abilities to be used against such targets successfully: a short reaction time, a high accuracy, a strong impact on the target. Further the costs per shot are low and they cause no collateral damages. The feasibility of such a laser effector will be evaluated by experimental investigations, which deliver data on atmospheric influences on high energy laser beam propagation, on achievable target tracking accuracy and on the laser beam impact on RAM-targets containing explosive loads. Data on the efficiency of the laser weapon will be obtained from system simulations, using the results of the experiments. A conceptual lay out for a laser weapon will be derived. Especially the interception of RAM-attacks in urban environment will be considered.

Contract A-0691-RT-GC "AHEAD"

ADVANCED HELMET AND DEVICES FOR INDIVIDUAL PROTECTION	Indicative total value:	2.9 Million Euro
	Duration:	18 months from 11/2008

GALILEO AVIONICA, Milan (IT) – EA, Milano (IT) - PIAP, Warsaw (PL) - MUT, Warsaw (PL) – AFIT, Warsaw (PL) – LDB, Lisboa, (PT) - TEKEVER, Lisboa (PT) – IABG, Ottobrunn (DE)

The objective of the proposed Project is to forecast the evolution of the existing or new technologies which can improve the Protection of the individual. The main type of operations of today's military engagement is mainly determined by asymmetric conflicts. The Consortium will state clearly what is, today, the equipment used by the Soldier and Warrior Programmes (FELIN, SOLDATO FUTURO, FUTURE WARRIOR, FIST) in different countries. The Consortium will then propose an evolution of the "System Soldier" outlining the requirements from the above mentioned scenario, evaluating the existing and novel technologies and foreseeing their evolution in sensors, actuators and others devices with the possibility to integrate them in intelligent, modular and portable equipment. The Consortium will demonstrate the real consistency of the proposed solutions in different ways (Demo, Model ,Data base , Workshop and Documentation) in order to give to the customer a more complete understanding, being based on real HW with live demo and SW modelling.

Contract A-0692-RT-GC "WOLF"

Wireless rObust Link for urban Force operations	Indicative total value:	10.9 Million Euro
	Duration:	24 months from 12/2008

THALES, Colombes (FR) – SAG, Paris (FR) – CWC, Oulu (FI) – FOI, Linköping (SE) – TIT, CHIETI SCALO (IT) – SEL, Pomezia (IT) – TNO, The Hague (NL) – MUT, Warsaw (PL) – IND, Aranjuez (ES) – UPV, Valencia (ES) – AMP, GETAFE (MADRID) (ES) – TDD, Pforzheim (DE) – R&S, Muenchen (DE)

The WOLF project is the response formulated by a consortium of European organisations having a valuable background in military tactical communications.

The WOLF project will provide innovative solutions in order to increase the "Wireless & robust communication" and "Information processing & situation awareness" capabilities, in order to increase survivability of force protections in case of urban operations.

The WOLF project presents a clear roadmap and objectives for a new system gap-filling the lacks of existing networks or products.

The project will have a duration of 24 months providing deliverables at identified milestones, and integrates a requirements definition, a global architecture specification, the capabilities solutions definition and evaluation, and demonstrations.

Contract A-0826-RT-GC "MEDUSA"

| **Multi Sensor Data Fusion Grid for Urban Situational Awareness** | Indicative total value: | 5.6 Million Euro |
| | Duration: | 24 months from 06/2009 |

VITROCISET, Rome (IT) – AGH University of Science and Technology, Cracow (PL) – Research and Education Laboratory in Information Technology, Peania (EL) – Centre for R&T Hellas, Thermi-Thessaloniki (EL) – Columba Global Systems, Dublin (IE) – CS Systèmes d'Information, Toulouse (FR) – Indra Sistemas, Valencia (ES) – ISL, Saint Louis (FR) – Plath, Hamburg (DE) – Computer and Automation Research Institute, Budapest (HU) – Bundeswehr University Munich (DE)

The goal of the MEDUSA project is to realize a robust, high-performance, integrated, intelligent, autonomous and versatile multi-sensor data fusion grid. This grid will significantly improve Situational Awareness and Command and Control in the context of force protection in urban environments, by providing a comprehensive Operational Ground Picture. The project considers the need to address current or prospective "information overload" conditions, and to generate both the deliverable content and its means of delivery. In addition, the project incorporates the development of a prototype which will clearly demonstrate the various technology deliverables and will illustrate a capability for users to select various combinations of sensors and the associated types of contextual information.

Contract A-0827-RT-GC "SUM"

| **Surveillance in an Urban environment using Mobile Sensors** | Indicative total value: | 2.7 Million Euro |
| | Duration: | 36 months from 07/2009 |

GMV Aerospace and Defence, Tres Cantos (ES) – DLR Microwave and Radar Institute, Wessling (DE) – Royal Military Academy, Brussels (BE) – Technical University of Munich (DE)

The aim of the SUM project is to develop a low-cost multi-sensor 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. It will also contribute to protecting critical static points such as road blocks or outposts. The system will be able to detect potential threats at large distances while driving at a normal cruising speed. Furthermore, the system will be able to recognize and characterize threats in more details at smaller distances and at slower speeds. Based on the working conditions and the operator's instructions, the system will be able to switch between operating modes for the overall system and for the individual sensors (spot mode, scanning mode, etc).

Sensors will include a visual camera, an thermal infrared camera, a microwave imaging radiometer, and a microwave active radar. The developed system will be demonstrated and evaluated within a realistic environment.

Contract A-0830-RT-GC "DAFNE"

Distributed and Adaptive multisensor Fusion Engine	Indicative total value: 3.8 Million Euro Duration: 30 months from 06/2009

Ingegneria Dei Sistemi, Pisa (IT) – University of Udine (IT) – FGAN, Ettlingen (DE) – TNO Defence, Security and Safety, The Hague (NL) – Warsaw University of Technology (PL) – VOP-026 Sternberk, Brno (CZ)

The DAFNE project aims at 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.

These sensors provide data that can be exploited for tasks such as target detection, localization, tracking, identification and recognition. Each task can benefit from the availability of multiple sources providing additional data of the redundant or complementary type. In both cases, the reliability of the estimates on a given entity can be improved through fusion processes that fall under the "levels 1 and 2" categorization of the JDL model.

The project will also address the "level 4", which comprises a number of algorithms and techniques that examine the outputs of the fusion levels and, regulate and adjust sensors and algorithms in order to optimize the processes to better achieve the mission's objectives.

Data Fusion in Urban Sensor Networks	Indicative total value:	5.2 Million Euro
	Duration:	36 months from 09/2009

Thales Nederland, Delft (NL) – Przemysłowy Instytut Telekomunikacji, Warsaw (FR) – SAAB Systems, Järfälla (SE) – Thales Air Systems, Limours (FR) – Columba Global Systems, Dublin (IE) – Dadactica, Tampere (FI)

The D-FUSE project 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.

The first type of sensor network consists of several (<10) here called "high capability" sensors, such as portable ground surveillance radars or TV/IR cameras. Such sensors deliver a lot of information, such as range, bearing, elevation, size, colour, etc. at high data rates.

The second type of network consists of simple sensors, such as trip wires, small microphones or very short range detectors. Such sensors deliver little information by themselves, and it is only after data fusion that any meaningful information, such as a plot or track, is created.

The third sensor network type contains a mix of high capability and simple sensors, and probably best represents the future "ideal" case, because neither of the two earlier cases can fully cover the complete urban operational area.

Contract A-0829-RT-GC "AUDIS"

Acoustic Urban Threat Detector for Improved Surveillance Capabilities	Indicative total value: 2,3 Million Euro Duration: 36 months from 09/2009

D'Appolonia, Genova (IT) – ITTI, Poznan (PL) – University of Pannonia, Veszprém (HU) – Research Academic Computer Technology Institute, Patras (EL)

The AUDIS project aims at 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.

The AUDIS sensor is a multi modal, in–air passive acoustic device working in arrayed/sparse configuration. It offers the high number of degrees of freedom that is necessary for optimal disturbance rejection, detection of potential threats, tracking of threats represented by ground vehicles and hostile crowds or human beings, threat classification and friend-foe-neutral elements identification, and threat behaviour analysis and risk evaluation.

Following a bio-inspired approach, AUDIS will focus in four aspects: sensor design, sensor control and management, acoustic data processing, and acoustic data exploitation.

Contract A-0934-RT-GC "SIMS"

Smart Information for Mission Success	Indicative total value:	3.7 Million Euro
	Duration:	24 months from 01/2010

Thales Raytheon Systems, Massy (FR) – Thales R&T, Palaiseau (FR) – PY Automation, Colombes (FR) – TNO Defence, Security and Safety, Delft (NL) – Thales Nederland, Hengelo (NL) – ITTI, Poznan (PL) – National Defence University, Warsaw (PL) – Academy of Armed Forces, Liptovsky Mikulas (SK)

The SIMS project focuses on the protection of joint forces in coalition operations, using the information already collected on the threats. The objectives of the SIMS project are:
• To collect threat data in a knowledge database,
• To use reasoning techniques to extract "smart information" from raw data,
• To disseminate this information both at operational and tactical levels including, deployment plan and tactics for mission preparation, and smart data for mission execution,
• To improve mission debriefings, especially to overcome the current time delay.

SIMS will adopt a human centred approach, taking into account human system integration considerations, in order to provide adaptive solutions designed for the military users at the operational and tactical mission planning levels and the tactical mission execution level.

Contract A-0935-RT-GC "ICAR"

Intelligent Control of Adversary Radio-communications	Indicative total value:	4.2 Million Euro
	Duration:	30 months from 01/2010

Thales Communications, Colombes (FR) – Military University of Technology, Warsaw (PL) - Royal Military Academy, Brussels (BE) – JOANNEUM RESEARCH, Graz (AT) – TNO Defence Security and Safety, Delft (NL) – Fraunhofer FKIE, Wachtberg (DE) – Academy of Armed Forces (SK) – Teletel, Athens (EL)

The ICAR project addresses the 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. It aims at studying and defining an affordable, complete and integrated response to the needs of intercepting, localizing, monitoring, and selectively blocking the threats at the radio interface, in operational and realistic theatres, facing current and new mobile radio-communication technologies.

ICAR proposes to study and validate experimentally the performance of a highly efficient and reactive control system at the radio interface, targeting radio cellular, professional mobile radio and SATCOM mobile phones, in an optimised and realistic approach.

Contract A-0936-RT-GC "CARDINAL"

Capability study to investigate the essential man-machine relationship for improved Decision making in urban military environment	Indicative total value: 2.7 Million Euro Duration: 30 months from 01/2010

TNO, Soesterberg (NL) – Thales Nederland, Delft (NL) – Thales Research & Technology, Palaiseau (FR) – ITTI, Poznan (PL) – PIAP, Warsaw (PL) – Kongsberg Defence & Aerospace, Kongsberg (NO) – Tallin University of Technology (EE)

The CARDINAL project aims at designing and developing an information coordination system that will provide real-time tactical support to military troops on the ground while performing their tasks in urban environments.

The project will first make an operational analysis of information requirements in view of expected available NEC functionalities, like acoustic devices or Unmanned Aerial Vehicles imagery for the detection of snipers, hit-and-run ambushes or hostile crowds. Then artificial intelligence techniques and human factors engineering will be applied to design and develop a man-machine collaborating information coordination system. Finally, the system will be coupled to a virtual environment in which military scenarios can be performed for assessing its operational benefits.

Contract A-0937-RT-GC "ATHENA"

| **Asymmetric Threat Environment Analysis** | Indicative total value: | 3.7 Million Euro |
| | Duration: | 30 months from 01/2010 |

TNO, Delft (NL) –EADS Defence and Communication Systems, Elancourt (FR) – FFI, Kjeller (NO) – ITTI, Poznan (PL) – Military University of Technology, Warsaw (PL) – Tallin University of Technology (EE) – VTT (FI)

The goal of the ATHENA project is to improve and create asymmetric and urban threat models and scenarios for EU operations. The project will draw from the current state-of-the-art in the areas of physical engagements models, socio-cybernetics models, data exchange models and technologies, especially suited for distributed simulation.

The models will fall into three core categories: asymmetric engagements, "hearts and minds", and emerging threat scenarios. The project will demonstrate the interconnection of these models, with a view for an application to mission planning and training.

Contract A-0938-RT-GC "EUSAS"

European Urban Simulation for Asymmetric Scenarios	Indicative total value: 3.2 Million Euro Duration: 30 months from 01/2010

EADS Defence and Security Systems, Val de Reuil (FR) – EADS, Unterschleissheim (DE) – FOI, Kista (SE) – Cyfronet, Cracow (PL) – Institute of Informatics, Bratislava (SK) – Jozef Stefan Institute, Ljubljana (SI)

The aim of the EUSAS project is to develop, demonstrate and deliver a new approach to mission analysis and training for low level units facing asymmetric threats in an urban environment.

By appropriate use of data farming for mission analysis and "serious game" technology for mission training, EUSAS will provide the following enhancements up to TRL 4:
• Mission analysis and training capabilities in a virtual environment with high level of fidelity (taking into account physical, emotional, social, cultural, environmental aspects) and a large variety of behaviours modelled,
• Automatic learning to ease human behaviour modelling digitisation into applications and adaptation of existing models,
• Evaluation and optimization of rules of engagement and military procedures,
• Verification, validation and accreditation of human behaviour models through qualitative and quantitative evaluation.