Terrorists attack preventing system

Proposal full title:
Builth information system for preventing terrorists attack on public events

Proposal acronym:
Terrorist takedown

Work programme topic addressed
Tehnologies to enhance the fight against crime and terrorism- SU-FCT02-2018-2019-2020

Type of funding sheme:
STREP

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List of participans:

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1(coordinator)	Faculty of Mathematics, University of Belgrade, http://www.matf.bg.ac.rs	MATF	Serbia
2	Swiss Federal Institute of Technology https://www.ethz.ch	ETHZ	Switzerland
3	Secret Intelligence Service https://www.sis.gov.uk	MI6	United Kingdom
4	National Intelligence Service http://www.nis.gr	NIS	Greece
5	Security Information Agency http://www.bia.gov.rs/	BIA	Serbia
6	Faculty of mechanical engineering, University of Belgrade http://www.mas.bg.ac.rs	MAS	Serbia

Proposal abstract

Terrorist is one of the biggest worlds problem today. Every country in the world must be aware of this problem and do everything in theirs power to prevent it and eliminate. In the past years this problem growing and quick and efficiently solution is necessary.

The key is to follow and preserve information of potentional threats and act quick before they do damage. Today, as we already know, terrost act on places where is concentrated a large number of people. This project will have great impact on these situation, track and find suspision people, and notify police and army instantly.

Terrorist takedown will have great impact on world security and he will helped to deal with threat once for all.

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Section 1. Scientific and/or technical quality, relevant to the topics addressed by the call

1.1 Concept and objectives

Terrorist takedown is information system which with use of drones take picture of peoples on events and proccessing pictures, with use of artificial inteligence and machine learning algorithms, and anylizing if there is suspicious people.Today we have people who secure events and watchs for suspicious people, but that is not good solution because people cant memorize much different faces and lot of peple wouldnt be recognized. Our system will have big database with pictures of all suspicious people collected and algorithm which will very quick compare picture of people in event with all people from database.

Every country in the world which buy our system will have access to all info that other countries collected and it will be easily to exchange informations.

This major strategy is compatible with major goals expressed in Call H2020-SU-SEC-2018-2019-2020

This is very important thing and can`t be continued to deal with it on old-fashioned way, newest techology must be used.

The following are the main project objectives:

Objective 0: Project management

The goal of this objective is to make sure that absolutely each and every detail of this proposal, if it is awarded, be properly taken care of, which means:

(a) All deliverables delivered in time,
(b) All deliverables delivered at quality levels that satisfy the highest standards,
(c) All deliverables delivered in a form which is consistent and helps convey essence in a way which is easy to comprehend. For all this to happen, an effective set of system of reminders will be set.
(d) All deliverables will be automatically upgraded when it is needed.

Success criteria:
Optimization of the reporting processes involved in the project (deadlines)
Optimization of the control processes involved in the project

Objective 1 : making drones

Firstly we need do make drones which have all functions needed by our system. This requires consultation with army experts and mechanical engineers. Every drone needs to have connection with rest of the system every moment when they are in action.

Success criteria:
- All drones are working while their warranty is active.

- Feedback from experts is positive.
- Max flight speed dont decrease over the time.
- Taking picture and sending them to the system don`t decrease over the time.

Objective 2: Designing an algorithm

All details related to software has to be developed. Firstly, we need to make an accurate algorithm which serves the purpose. This requires consultation with AI experts. Picture recieved from drone must be quickly compered with pictures of potentional terrorists in database.

Success criteria:

-Algorithm has positive feedback from experts.
- Terrorist is faster and more often recognized with this algorithm.
- Algorithm in real time fulfill all tasks

Objective 3: Implementation

By implementing IS we meen lease and server configuration with implementation of database. This part of project will be developed in Serbia with intelligence services, which will provade information on terrorist.

Success criteria:
-Database have large amount of information on terrorist.

Objective 4: Testing

Testing will be set in Serbia.It will require a team of agents of secret service and group of people. Some of them will acting terrorist. Agent will get pictures of all potentional threats and try to find some of them in large grop of people.The result is data about efficiency of our software. The data would consist of the numbers of terrorist detected without the use of the our systemand also the number of terrorist detected while using it.

Success criteria:

-Significantly larger number of terrorist detected with our system.
-Every aspect of our system work without any error while is tested.

1.2 Progress beyond the state-of-the-art

One of the biggest problems in defense against terrorism is inability to agree between countries in the world. Also problem is slow information exchange and people can not act precisely and fast like machines. Our system will improve all this, because information of all potentional threats will be in one place.

References:
1. 2016 Berlin attack during which a truck was driven into the Christmas market next to the Kaiser Wilhelm Memorial Church at Breitscheidplatz in Berlin, left 12 people dead and 56 others injured. Webtribune December 19. 2016.

2. 2017 Barcelona attacks - Three separate attacks in Barcelona (location pictured) kill at least fifteen people and injure more than one hundred others. "Authorities believe the men to be part of 12 member Islamic Terror cell". The group was held 120 gas canisters being ready to bomb a major target. BBC August 17.2017.

1.3 S/T methodology and associated work plan

1.3.1 Describing the overall strategy of the work plan

The project is organized in 5 work packages.

-WP0 Project management
-WP1 Making drones
-WP2 Designing an algorithm
-WP3 Implementation
-WP4 Testing in real-life scenario

WP0 refers to menagment. Next 3 packages refers to developing of software and building devices which is included in system(drones, cameras...). Last package refers to testing the product.

Start date : 1.1.2018
End date : 31.12.2018.

1.3.2 Work packages - Gantt chart

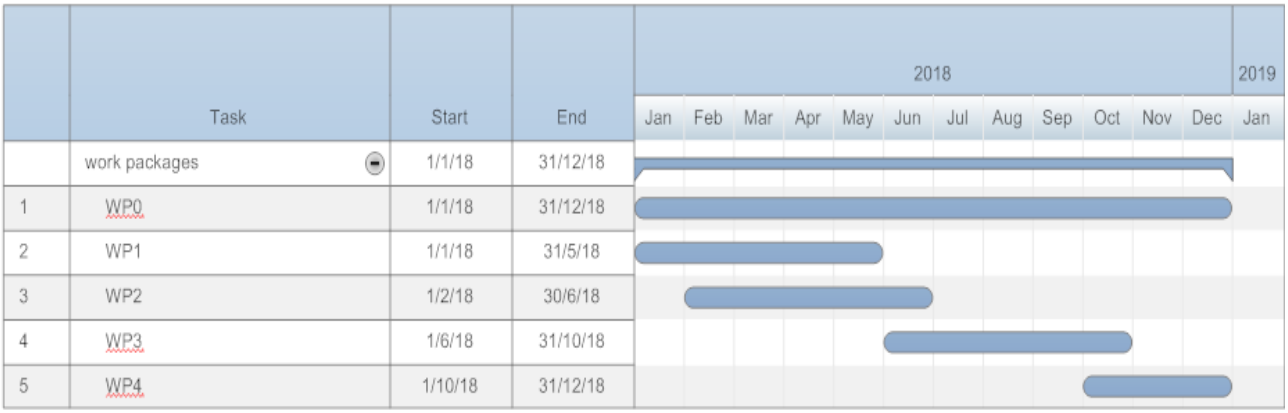


Figure 1 - Grantt chart for the workpackages

1.3.3.a Work package list

Work package No.	Work Package title	Type of activity	Lead partic. no.	Lead partic. Short name	Person-months	Start month	End month
WP0	Project management	MGT	1	MATF	25	M1	M12
WP1	Building drones	RTD	6	MAS	40	M1	M5
WP2	Designing algorithm	RTD	1,2	MATF, ETHZ	15	M2	M6
WP3	Implementation	RTD	1,3,4, 5	MI6,NIS, BIA,MATF	200	M6	M9
WP4	Testing	DEM	1,3,4, 5	MI6,NIS, BIA,MATF	200	M10	M12
	TOTAL				480		

Legend:

Workpackage number: WP 1 – WP n.
RTD - Research and technological development;
DEM - Demonstration;
MGT - Management of theconsortium
Lead partic. no. - Number of the participant leading the work in this work package.
Person-months - The total number of person-months allocated to each work package.
Start month - Measured in months from the project start date (month 1).

1.3.3.b List of Deliverables

Del. no.[1]	Deliverable name	WP no.	Nature[2]	Dissemi-nation level[3]	Delivery date[4] (proj. month)
D0.1	Signing contract	WP0	R	PU	M1
D0.2	Monthly report of work	WP0	R	PU	M1,M2, M3,M4, M5,M6, M7,M8, M9,M10 M11,M12
D0.3	Progress report of whole project	WP0	R	PU	M12
D1.1	Building drones	WP1	P	RE	M3
D1.2	Installing sensores	WP1	P	RE	M4
D1.2	Installing cameras	WP1	P	RE	M5

1Deliverable numbers in order of delivery dates. Please use the numbering convention <WP number>,<number of deliverable within that WP>.
For example, deliverable 3.1. would be the first deliverable from work package 3.

2Please indicate the nature of the deliverable using one of the following codes:

R = Report

P = Prototype

D = Demonstrator

O = Other

3Please indicate the dissemination level using one of the following codes:

PU = Public

PP = Restricted to other programme participants (including the Commission Services)

RE = Restricted to a group specified by consortium (including the Commission Services)

CO = Confidential, only for members of the consortium (including the Commission Services)

4 Measured in months from the project start date (month 1)

D2.1	Writing and documenting code	WP2	R	CO	M4
D2.2	Database is projected	WP2	P	CO	M4
D2.3	Final code documented and testing procedures written	WP2	R	CO	M6
D3.1	Gathering data from intelligence services	WP3	R	CO	M9
D3.2	Filling database with gathered data	WP3	P	CO	M9
D3.3	System is fully functional	WP3	P	CO	M10
D4.1	Report on testing results	WP4	R	CO	M12

1.3.3.c Milestones

Milestone number	Milestone name	Work package(s) involved	Expected date[5]	Means of verification[6]
M0.1	Signed contract	WP0	M1	
M0.2	Checking on optimization of the reporting processes involved in the project (deadlines)	WP0	M1	
M0.3	End of project	WP0	M12	
M1.1	Built drones	WP1	M3	
M1.2	Installed sensors	WP1	M4	
M1.3	Installed cameras	WP1	M5	
M2.1	Checking implementation without bugs	WP2	M6	
M2.2	Database is created	WP2	M6	
M3.1	Gathered data from intelligence services	WP3	M8	
M3.2	Database is filled with gathered data	WP3	M9	
M3.3	System is fully functional	WP3	M10	
M4.1	Fully report on testing results	WP4	M12	

5
Measured in months from the project start date (month 1).

6Show how you will confirm that the milestone has been attained. Refer to indicators if appropriate.
For example: a laboratory prototype completed and running flawlessly; software released and validated by a user group; field survey complete and data quality validated.

1.3.3.d Work package description

Work package number	WP0		**Start date or starting event:**		M1		
Work package title	Project management						
Activity type	MGT						
Participant number	1						Total
Participant short name	MATF						
Person-months per participant	25						25

Objectives

The objectives of WP0 are the overall management, progress monitoring and stakeholders management of the project. WP0 aims at:

Setting up, operating and maintaining the project administrative and scientific management infrastructure.

Ensuring the overall technical coordination of the project.

Ensuring collaboration and coordination with relevant government bodies regarding research programmes.

Conducting progress reviews for each month from M1 to M12.

Description of work

WP Leader: MATF

Description of work (possibly broken down into tasks) and role of partners

T0.1-(MATF): risk menagement – understanding posibly risks and preventing it.
T0.2-(MATF): change menagement – fast and efficient react on unwilling change
T0.3-(MATF): control quality menagement - road and detailed control of developed of project

Deliverables

D0.1(M1) – Signing contract

D0.2 (M1 – M12) – Monthly report of work

D0.3 (M12) – Progress report of the whole project

Work package number	WP1		**Start date or starting event:**		M1		
Work package title	Making drones						
Activity type	RTD						
Participant number	6						Total
Participant short name	MAS						
Person-months per participant	40						40

Objectives

The main objective of this WP is building drones which serves the aforementioned purpose. Exceprts from MAS have goal to design and built drones, small unmanned aircraft, which have cameras, sensors and can be programmed and remotely controlled.

Description of work

WP Leader: MAS

Description of work (possibly broken down into tasks) and role of partners

T1.1-(MAS) : Gathering all parts which is needed – specifying necessary parts and importing them from China

T1.2-(MAS) : Bulding drones – Composition parts into drones and building it

T1.3-(MAS): Installing sensors – upgrading drones with sensors for movement detection

T1.4-(MAS) : Installing cameras – upgradin drones with cameras which capture faces of people presented in the event

T1.5-(MAS) : Testing drones – testing movement, speed of detection, stability and other capability of drone

Deliverables

D1.1 (M3) – Building drones

D1.2 (M4) – Installing sensors

D1.3(M5) - Installing cameras

Work package number	WP2		**Start date or starting event:**		M2		
Work package title	Designing an algorithm						
Activity type	SUPP						
Participant number	1	2					Total
Participant short name	MATF	ETHZ					
Person-months per participant	5	10					15

Objectives

The main objective of this WP is making an accurate algorithm which serves the aforementioned purpose. Experts from MATF and ETHZ will join forces to create fast and accurate face recognition algorithm. This algorithm will compare important points on the face captured image to images from database, and notify services if there is matching.
Also experts from MATF will projecting database.

Description of work

WP Leader: ETHZ

T2.1 – (MATF, ETHZ) : designing algorithm – Experts from this faculties are designing algorithm which detecting and compare faces of people

T2.2 – (MATF, ETHZ) : implementing algorithm- Students and theirs mentors programming and documenting the algorithm.

T2.3 – (MATF) : Projecting database – Experts from MATF projecting a large database where will be stored information about potential threats (their faces, general info...)

T2.4 – (MAT, ETHZ) : documenting code and writing testing procedures

Deliverables

D1.1 - (M4) – writing and documenting code

D1.2 – (M4) : projecting database

D1.3 – (M6) - documenting code and writing testing procedures

Work package number	WP3	**Start date or starting event:**		M6		
Work package title	Implementation					
Activity type	SUPP					
Participant number	1	3	4	5		
Participant short name	MATF	MI6	NIS	BIA		
Person-months per participant	10	60	30	100		

Objectives

The objective of WP2 is gathering information from intelligence services and filling system database with gathered info.

Description of work

WP Leader: BIA

T1 – (MATF) : getting in touch with intelligence services – Meetings and exchange of opinions between project leaders and chiefs of intelligence services and defining a protocol of cooperation.

T2 – (MATF, BIA, NIS, MI6) : gathering data - Intelligence services provide informations and send them to development of IS.

T3 – (MATF) : filling database with gathered data – Students from MATF fiilling databases with gathered informations and starting procedures for testing consistency of information relationship

Deliverables

D3.1 (M9) – Gathering data from intelligence services

D3.2 (M9) – Filling database with data

D3.3 (M10) – System is fully functional

Work package number	WP4		**Start date or starting event:**		M10		
Work package title	Testing						
Activity type	SUPP						
Participant number	1	3	4	5			Total
Participant short name	MATF	MI6	NIS	BIA			
Person-months per participant	20	60	60	60			200
Objectives The goal of this objective is to find bugs and to compare efficiency of this IS with current practise.							
Description of work WP Leader: MATF T4.1 - (MATF, BIA) : Testing in Serbia T4.2 – (MATF, MI6) : Testing in UK T4.3 – (MATF, NIS) : Testing in Greece T4.4 – (MATF) : Analysis of gathered results – All results from different testing (T4.1, T4.2, T4.3, T4.4) are comparing with expected results. Estimates success of IS and reporting all faults.							
Deliverables D4.1(M12) – Report on testing results							

1.3.3.e Summary of effort

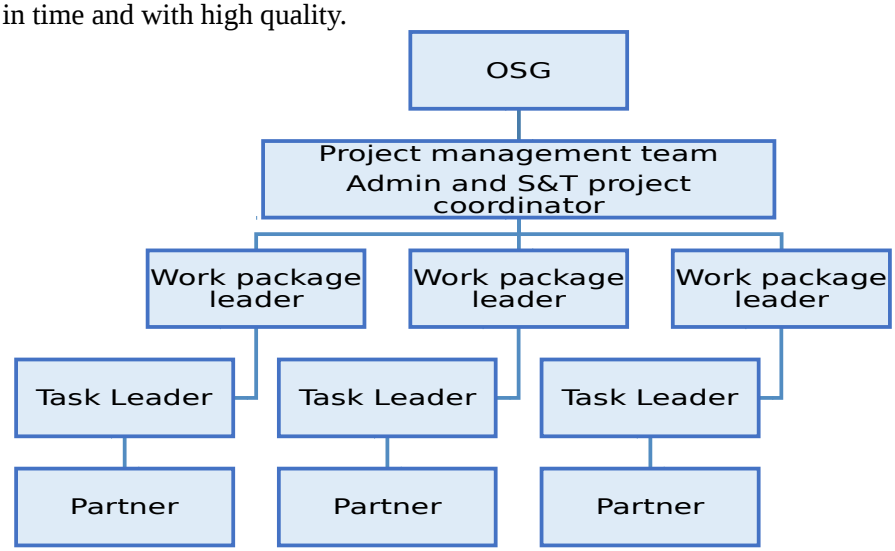
A summary of the effort is useful for the evaluators. Please indicate in the table number of person months over the whole duration of the planned work, for each work package by each participant. Identify the work-package leader for each WP by showing the relevant person-month figure **in bold**.

Partic. no.	**Partic. short name**	**WP 0**	**WP 1**	**WP 2**	**WP 3**	**WP4**	**Total person months**
1	MATF	25	0	5	10	20	60
2	ETHZ	0	0	10	0	0	10
3	MI6	0	0	0	60	60	120
4	NIS	0	0	0	30	60	90
5	BIA	0	0	0	100	60	160
6	MAS	0	40	0	0	0	40
Total		25	40	15	200	200	**480**

Section 2. Implementation

2.1 Management structure and procedures

Due to size of the project we need to include several partners,experts and students from different countries. The basic project management approach for the project is to have a scientific coordinator focus on the technology and to have an administrative coordinator handle the overall operational and day-to-day business. Following project management structure will ensure that the project meets its objectives and delivers the results in time and with high quality.



2.2 Individual participants

University of Belgrade, Faculty of Mathematics, MATF

Faculty of mathematics have more than 6000 graduate mathematicians, 400 doctors of mathematics and computer sciences, 700 Magisters of Science and many specialists. Numerous graduates occupy various positions in research institutions, government offices, companies and schools in the country and abroad. Department for Informatics and Computer Science have big impact on development of Computer Science in Serbia.

University of Belgrade, Faculty of mechanical engineering, MAS

MAS perform basic, applied, development and scientific research to improve education and scientific research in the areas of production engineering and application computers, machinery (transport, construction and mining machinery), agricultural mechanical engineering, motor vehicles and trailers (transport, labor and special) effectiveness of mechanical systems, thermodynamics, thermal power, hydropower, railway engineering, shipbuilding, aviation, military mechanical engineering, weapons systems, and cosmic technology. Organizing scientific conferences and seminars, cooperation with educational, scientific and other organizations at home and abroad.

ETH Zurich

At ETH Zurich, students discover an ideal environment for independent thinking, researchers a climate which inspires top performance. Situated in the heart of Europe, yet forging connections all over the world, ETH Zurich is pioneering effective solutions to the global challenges of today and tomorrow. ETH Zurich is one of the Europe leader in development of Machine Learning and Artificial Intelligence.

Security information agency Serbia, BIA

The Security-Information Agency (BIA) is established on the bases of the Law on the Security-Information Agency which came into effect on July 27, 2002, as a special organization of the Government of the Republic of Serbia, with legal entity status. BIA is a civil, national security service and a part of a unique security-intelligence system of the Republic of Serbia. It functions on the bases and within the framework of the Constitution, laws, other regulations and general acts, national security strategy, defense strategy and defined security-intelligence policy of the Republic of Serbia. Competences of the Security-Information Agency are : -protection of the security of the Republic of Serbia; -research, gathering, processing and assessment of security-

intelligence data and findings significant for the security of the Republic of Serbia, as well as informing the relevant state authorities on the said data...

Secret intelligence service UK, MI6

The Secret Intelligence Service (SIS), commonly known as MI6, is the foreign intelligence service of the government of the United Kingdom, tasked mainly with the covert overseas collection and analysis of human intelligence (HUMINT) in support of the UK's national security. SIS is a member of the country's intelligence community and its Chief is accountable to the country's Foreign Secretary. The stated priority roles of SIS are counter-terrorism, counter-proliferation, providing intelligence in support of cyber security, and supporting stability overseas to disrupt terrorism and other criminal activities.

National Intelligence Service Greece, NIS

The National Intelligence Service (NIS) is the national intelligence agency of Greece. Originally modeled after the United States Central Intelligence Agency, it was established in 1953 as the Central Intelligence Service (CIS), specializing in intelligence gathering, counterintelligence activities and securing sensitive state communications. As Greece's primary intelligence agency, NIS is responsible for a range of domestic and foreign matters, ranging from criminal activities and civil rights violations, to terrorism and espionage.

2.3 Consortium as a whole

Consortium is made of universities which is well known by excellent work in theirs areas of operation. Members of consortium have appropriate skills and knowledge needed for succesfully realisation of the project. They have massive experience and huge amount of project which helping them to succesfully create solution.
All of them are opened for collaboration and that is very significant for project of great extensions.

Project leader is MATF, they have main role in designing and testing information system. MAS have main role in building drones and installing all components which is important for project. ETHZ have role in desining algorithm based on AI and machine learning which will be used in face recognition. BIA, MI6 and NIS, their role is to gathered data on all potential threats and they will have important role in testing.

2.4 Resources to be committed

Mobilization of resources

The resources needed for the project activities are integrated from three academic organizations and three intelligence services. The resources profile and the participating partners are complementary in many respects. The project targets both shorter term and longer term activities that will set the basis for sustainable collaboration between the partner organizations and takes great care of particular regional strategic needs. External experts that agreed to take active part in project activities will bring additional expertise into the project and will improve the impact of the project both in terms of the project and its partners' promotion as well as in more extensive people networking opportunities.

Mechanical team recources

This team is made up from students of MAS and experts in mechanical engineering.
Main job of mechanical team is building drones, therefore they need parts(parts for drones, sensors, cameras..). Resources are importing from China, also there is costs for transport and similar expenses, which are difficult to precise at this point, but expected costs are around E400k. Also mechanical team is pretty large and we need to provide monetary compesation for them and also we need to pay for the work place, expected costs are around E100k.

Development team recources

Development team consists of highly skilled programmers from two universities.
We need to provide them licences for all software they need, monetary compesation, and also traveling expences. Expected costs are around E800k.

Testing recources

The recources needed for testing are difficult to estimate precisely at this point.
There are transport expences, in testing are involved large number of people for whom we need to provide monetary compesation and also we will need to rent places to preform our test. Expected costs are around E1000000.

Financial plan

Overall budget of the project is around 2.500.0000,00 Euro.

Section 3. Impact

Impact 3.1

Expected impacts listed in the work programme Terrorist takedown project will have great influence on security of all people on the world. This project will reduce and possibly eliminate one of the greates threat to our society - terrorism. Also every country which will decide to purchase this information system will reduce costs, becuase there will be no need for large number of agents, also system will improve communication between countries and there will be faster flow of information and large network of potentional threats.

3.2 Dissemination and/or exploitation of project results, and management of intellectual property

Dissemination is grouped into two major groups of activities: internal and external.

The internal activities are targeting researchers from the organizations participating in the project, in particular those coming from the WBC and the EU's convergence region. The external activities are what is usually referred to when dissemination is discussed. These activities are targeting research community, general public and industry in order to promote results and achievements of the project.

The following external dissemination channels and activities are planned:

- Project will be presented in business forums with support of Serbian gouverment.
- Website and Presentation
- Access through media (local TV and radio stations, newspapers)

Section 4. Ethical Issues

The proposed project does not directly involve any ethical, legal, social or safety issues.

	YES/NO	PAGE
Informed Consent		
• Does the proposal involve children?	NO	
• Does the proposal involve patients or persons not able to give consent?	NO	
• Does the proposal involve adult healthy volunteers?	YES	
• Does the proposal involve Human Genetic Material?	NO	
• Does the proposal involve Human biological samples?	NO	
• Does the proposal involve Human data collection?	YES	
Research on Human embryo/foetus		
• Does the proposal involve Human Embryos?	NO	
• Does the proposal involve Human Foetal Tissue / Cells?	NO	
• Does the proposal involve Human Embryonic Stem Cells?	NO	
Privacy		
• Does the proposal involve processing of genetic information or personal data (eg. health, sexual lifestyle, ethnicity, political opinion, religious or philosophical conviction)	YES	
• Does the proposal involve tracking the location or observation of people?	YES	
Research on Animals		
• Does the proposal involve research on animals?	NO	
• Are those animals transgenic small laboratory animals?	NO	
• Are those animals transgenic farm animals?	NO	
• Are those animals cloned farm animals?	NO	
• Are those animals non-human primates?	NO	

Research Involving Developing Countries		
• Use of local resources (genetic, animal, plant etc)	NO	
• Impact on local community	NO	
Dual Use		
• Research having direct military application	YES	
• Research having the potential for terrorist abuse	NO	
ICT Implants		
• Does the proposal involve clinical trials of ICT implants?	NO	
I CONFIRM THAT NONE OF THE ABOVE ISSUES APPLY TO MY PROPOSAL	YES	