

Principles for Composing the Technical Response

Section 1 – General Information

1. Background:

- 1.1. The number of multirotor and UAS in general, in Israel, that their maximum takeoff weight is lower than 25 kg is predicted to grow to the tens of thousands as a hobby, several thousand for military use, and several hundred for a variety of commercial uses.
- 1.2. Both the aircraft for use by the military and those used as a hobby – in principle, are not intended for operation in an urban area.
- 1.3. It would seem that during the coming decades, the need for operating UAS/multirotor in the urban airspace will grow significantly.
- 1.4. The ability to operate a small multirotor/UAS without endangering users of the airspace, on the one hand, without endangering the population on the ground – on the other hand, without constituting a nuisance to air-defense systems, and without posing as a terror threat – has yet to be regulated not in Israel, or anywhere else in the world, except local initiatives.
- 1.5. At the same time, Israeli airspace is required to support large passenger aircraft, in a volume of up to 1,000 movements in a day, agricultural spray planes, helicopters, ultralights, paragliders, and large volumes of air force activity and more.
- 1.6. UTM¹ activity in the United States (FAA², NASA), and U-Space³ in the European Union (EASA⁴, Eurocontrol, CORUS⁵).

2. Given the nature of the required services, bidders may offer proposals, including:

- 2.1. Companies that view themselves as a lead contractor of the Unmanned Aerial System Service Provider (USP) that as a default, plans to be located in the metropolitan control center.
- 2.2. Companies that view themselves as a subcontractor of those as mentioned above (including in the field of air traffic control, providing aviation meteorological forecasts and warnings, companies that specialize in connection with the Israel Airports Authority and the CAAI, in the laws and procedures of "Eurocontrol," EASA, FAA, NASA and other relevant entities, in aviation accident investigations, the technical interfaces with the air force/ATC Units Command, and controller training, etc.)
- 2.3. Simulation companies in various "fidelity" levels supporting run-ups of various scenarios, in the Israeli environment, particularly for the benefit of verification, stress loads, and evolution experimentation. These companies must also work with the system suppliers, the USP, and various UAS operators.
- 2.4. UAS operator companies that view themselves as such that can provide the services detailed below during the first years of the activity (before the establishment of the USP, dedicated simulation companies, and the like).

¹ Unmanned Aircraft System (UAS) Traffic Management (*UTM*)

² Federal Aviation Administration

³ The [SESAR](#) Joint Undertaking, which is a public-private partnership supported and funded by the European Union, Eurocontrol and a number of industry partners, has defined the U-Space Blueprint. U-space is a set of new services relying on a high level of digitalisation and automation of functions and specific procedures designed to support safe, efficient, and secure access to airspace for large numbers of drones.

⁴ European Union Aviation Safety Agency (*EASA*)

⁵ Concept of Operation for European UTM Systems

- 2.5. Technological companies interested in starting R&D processes or supply innovative solutions, or both, in the fields below:
 - 2.5.1. An online information sharing system – on civilian Internet communications infrastructures, in the standards of aviation, including information push capabilities, information sharing, information security, cyber defense, and acceptable protocols in the aviation world.
 - 2.5.2. Algorithmics for flight path management – while considering the ground risk level and those concerning aspects of air transport risk levels (according to the rules of airspace assessment.)
 - 2.5.3. Algorithmics of flight path planning (routing) – including the need to create the necessary safety buffers.
 - 2.5.4. Algorithmics for managing several aircraft from the same operations station / with a single human operator.
 - 2.5.5. UI for the benefit of presenting an aerial photo for all stakeholders.
 - 2.5.6. Development of a transceiver within the aircraft – for work points of support in mesh topology – including an algorithm to prevent any collision "on the aircraft." Including aspects concerning energy, heat dissipation, compliance with environmental conditions, reliability, and costs of approximately a few tens of dollars.
 - 2.5.7. Development of BVLOS⁶ capabilities.
 - 2.5.8. Development of civilian Remote Identification (RID) capabilities that are simple, light-weight, consume little energy and capture limited volume and as such the cost of which is up to around \$10 (as a default – a SIM card may be utilized and is based on mobile telephone networks), and insofar as possible adapted to American/European standardization (if differences exist – give preference to EU standards).
3. **Fundamental Assumptions:**
 - 3.1. There is a demand that will enable profitable UAS activity over time (and if it does not exist at present, it will in the coming decade).
 - 3.2. During long years, most of the business potential of the companies is abroad, and accordingly, there is an interest in constructing the smart space such that it will also adapt to operations in the United States, and the countries comprising the European Union, to the extent possible.
 - 3.3. In Israel, there are unique needs in everything related to air defense, for the need to operate in airspace controlled by the military, in all aspects connected to cyber threats in general, and GNSS⁷ blockages in particular and in the various aspects of security and the need to prevent the use of a multirotor/small UAS as a tool for criminal and terrorist activity.

⁶ Beyond Visual Line of Sight

⁷ Global Navigation Satellite System (**GNSS**)

4. Basic Policy and the Plan's Principles

- 4.1. The Bidder will engage in the field's development, insofar as possible, such that the industry's development will also match activity abroad (as directed by the director of the CAAI, in any place where there is a difference between the United States and Europe, as a default, give preference to the European Conops.)
- 4.2. The Bidder will develop, to the extent possible, "open code" software, open architecture, and protocols that allow for a connection between various systems – such that will be possible to integrate at least three different industries in each applicable component and without dependence on a single supplier for any component. "The Information Sharing System," as a default, will be a web-based application in acceptable/aviation formats such that anyone who has a "subscription" can receive the information that is required – by pulling/pushing, as long as he has access to the internet (including on landline infrastructure, Wi-Fi infrastructure, or mobile infrastructures or any other infrastructure).
- 4.3. In the coming years, it would seem, most of the activity, in the context of the current document, will focus on aircraft that their maximum weight on takeoff is less than 25 kg.
- 4.4. In the coming years, most of the activity, in the context of the current document, will focus on missions in which it is possible to delimit the mission performance phase – or a designated zone (polygon, Geo-Fencing), or defined flight paths (pre-authorized routes). This designation is intended to enable minimum risk towards the population on the ground.
- 4.5. The Bidder will engage in the field's development to comply with the safety engineering goal of less than one death per decade and the LARA⁸ principle.
- 4.6. The Bidder will engage in the field's development in phases and under the policy "from the easy to the difficult" – daytime flights before nighttime flights, flights on assignments that enable pre-authorized routes before flights that enable "free operation," and so forth, except for the following reservations below:
 - 4.6.1. Already from the first phase – there is a need to address the matter of BVLOS flights.
 - 4.6.2. Already from the first phase – there is a need to address the matter of GNSS blockages.
 - 4.6.3. Already from the first phase – there is a need to address the challenges concerning air defense.
 - 4.6.4. From the first phase – there is a need to address preventing crime and terrorism risks.

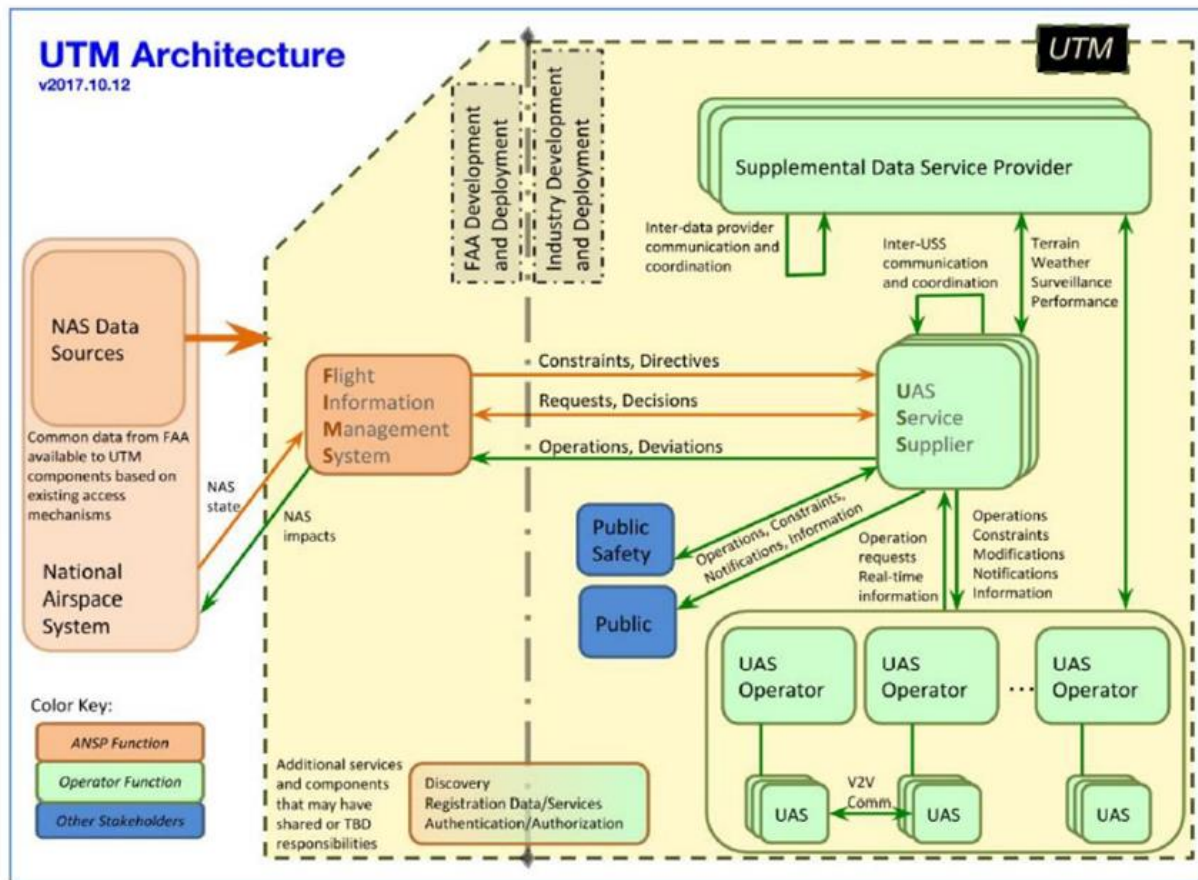
⁸ According to this principle, regardless of binding regulations or engineering calculations, each player should take a path in which the risk is as low as can be reasonably accepted. (For example – if there is an experiment that can be performed above a non-populated area, this is preferable to performing the experiment in an urban area - regardless of any meticulous calculation, assuming that the two options are priced similarly.)

5. A Logical Description of the Concept's Components

An initial logical description of the information entities appears in the diagram below (extracted from the USPACE documents of the European Union):



6. The possible, illustrative architecture of the response (extracted from UTM documents of the FAA/USA -and to the extent, there is a discrepancy with the European documents – the European documents, as the default, will receive preference):



A possible mapping of response components, based on UTM/FAA:

6.1. Managing the National Airspace (NAS):

- 6.1.1. Under the responsibility of the Israel Airport Authority, and through ACC North / ACC South and the various control towers (in the volume controlled by the civilian authorities)
- 6.1.2. Under the responsibility of the ACUs, military control towers (in the volume controlled by the military/air force)
- 6.1.3. Everything is subject to the regulations of the CAA and the ICAO.
- 6.1.4. This component is not related to the present tender.

6.2. Unmanned Aerial System Service Provider:

- 6.2.1. The Default Alternative, the USP, is situated physically in the Metropolitan Control Center.
- 6.2.2. The Control Center is the entity that supplies the information to the UAS operators as a default – it is the entity that receives the necessary information details from both the UAS operators and the secondary information providers, both pre-flight and in-flight.
- 6.2.3. The control center is the entity that reflects relevant data – to/from IAA and/or ACUs

6.3. UAS Operator:

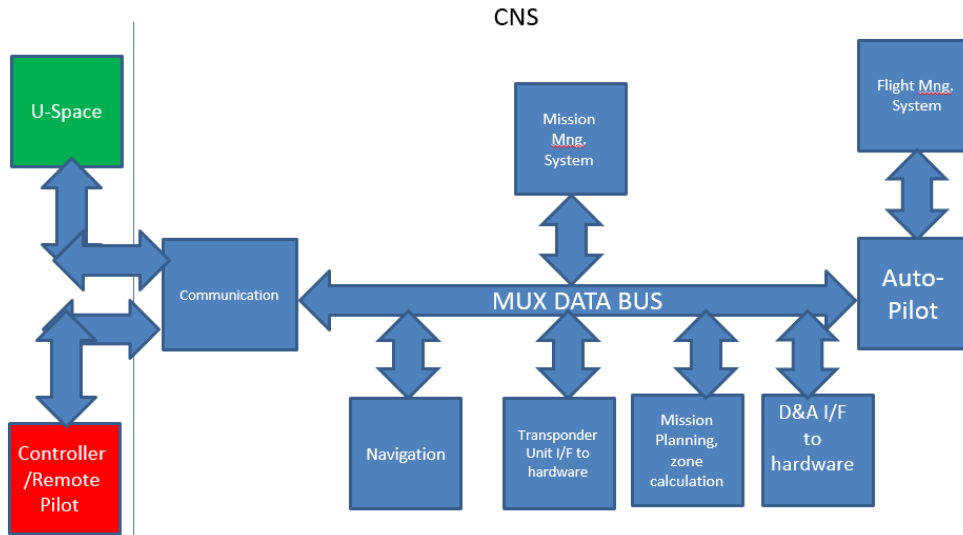
- 6.3.1. The traditional UAS Operator (As an aspiration, multiple UAS operated by an individual pilot/operator should be permitted – it seems that it is this capability that is a

condition for sustainable economic viability, and accordingly, the response's components must address this subject.)

7. Possible avionic architecture, inside the aircraft (this section was written for the benefit solely of completing the picture – the tender relates exclusively to the interfacing components of the "Smart Airspace," including the various communications components):

- 7.1. The communications within the aircraft will be performed based on the Mux Bus, in the hardware and known protocol configurations.
- 7.2. **Automatic Pilot:** the avionics kit that knows "to fly" the aircraft in a safe manner – it is the kit responsible for low level/physical flight, i.e., to compensate for turbulence/wind blasts, to preserve flight with the permitted safety and performance envelope for the various aircraft and whatnot. Generally speaking, this is the kit that contains gyroscopes (in the solvent technique, for example), acceleration gauges, and INS systems that know to calculate angles of the aircraft in the space, etc.
- 7.3. **Flight Control Computer:** the avionics kit that knows to calculate the route, the turning radius, the battery/fuel onboard status of the aircraft, "to understand" what a navigational coordinate is, what is a DDS, what is a landing strip, what is the desired flight altitude, where there are "closures," or what is the polygon boundary where aircraft are permitted to be, where are the areas where emergency landings are permitted and more. If there is a system that knows how to calculate collision avoidance paths, this kit should conduct the calculations after receiving the flight plan, the current location from the INS, and the like. If the aircraft has sensors (for example, to prevent obstacle collisions), generally, this is the kit that receives the data from the sensor.
- 7.4. **The RF Communications Kit to the Pilot, or the USP, or both:** this kit contains transceivers, modems, antennas, and the like. It enables the transmission of information between the USP and the operator to/from the aircraft.
- 7.5. **Navigation System:** the system that supplies the aircraft's attitude, self-positioning across acceptable datum (generally WGS84), and the direction relative to point north. Generally, the system also provides acceleration and speed vector.
- 7.6. **Electronic Identification System** – RID
- 7.7. **The Mapping Assembly** – the topographic details (DTM) and surface details (DSM) – include the flight obstacle layer.
- 7.8. **Conflict Identity and Collision Avoidance System:**
 - 7.8.1. At the planning level (preventing flight paths that, by definition, are liable to cause a decrease in safety buffers – in the sense that the plan is performed to be at the same place and height, simultaneously with the planning of someone else).
 - 7.8.2. At the real-time level - an algorithmic that combines the "in the ground station" in the aircraft and/or in the USP – but does not include direct communication between aircraft.
 - 7.8.3. At the real-time level – while relying on direct communications between aircraft (for example, TCAS and/or future designated developments).
 - 7.8.4. There is no specification as part of this tender for a Sense & Avoid System capable of coping with aircraft that are not "in the network" (there is no requirement for a designated radar or electro-optical system on the aircraft – like one that would be able to identify collision paths with aircraft that are not "in the network" and the current tender does not relate to national ELNET or radar arrays) which is to be addressed through national radar coverage of the IAF and/or under the responsibility of the aircraft not in the network.
- 7.9. A possible illustration of "Functional Blocks" in aircraft is detailed below:

Functional Block Diagram - CNS



Section 2 – An Outline of the Technical Response

8. Respondent Submission Specifications (I-M, an RFI where a response is mandatory, I-O, an RFI where a response is optional, D- it is obligatory to include an offer to conduct a demonstration):

Numbering	Subject	What is the Response's Content?	What is the Response's Format?	Comments	The Essence of the Specification	The requirement is relevant to <u>Service Package No:</u>
Regulation-1	Mapping Existing Players & Standards	<p>Provide a listing of all those responsible for providing a service/information – is there a mandatory regulation for the field in the US or Europe, and if so, what?</p> <p>Prepare a detailed comparison of the tables of responsibility for UTM, for CONOPS, the FAA, and of CORUS</p>	Document	<p>For example: which standards must a planning /information sharing system comply with (e.g., development software standards)</p> <p>For example: what is required from a surface data provider, etc.?</p> <p>Please remain true to the tender to the extent possible, and if presenting a solution substantially different – please explain the reasons and the POC method employed.</p>	I-M	All packages
C2 Metropolitan -1	Preliminary characterization of the online support system during the planning, information sharing, and	A document containing all of the concrete stakeholders in Israel, a list of the information entities meant to pass through all		To the extent possible – propose a solution that relates to "lean" end-user stations and suitable in their character (look	I-O	1+2

	<p>service provision phase in the smart space</p>	<p>the stakeholders, defense measures designed to protect the information, protocols, initial access to UI, SLA, technical support, maintenance throughout the entire lifecycle of the system and all other relevant information.</p> <p>Relate to the possible interfaces with the other functions of the Metropolitan Control Center planned for the Gush Dan Region (from the POV of regular ground transportation).</p> <p>The architecture must support small UAS operators – based on the simplicity of the system and the interface that will be "almost just" between the operator and the USP (i.e., release to the extent possible the operator from the need to maintain contact with multiple agencies and bodies – e.g., ACUs).</p>		<p>and feel) to that which is acceptable in the work of flight control/traffic supervision.</p> <p>Detail the server architecture/end-user stations/information storage capability for the benefit of continuous recording (at a minimum of cyclical for the past three months).</p> <p>Attach samples of the suitable operational screen and/or film clips</p> <p>The proposal must include upgrade development and deployment – from a state of "one remote controller operates a single drone" through a state in which a few dozen drones are operated and without the USP component (the control tender in the Metropolitan Control Center) until a state in which there are several dozens of drones above Israeli cities, and the Control</p>		
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				Center is at full-scale operations. Detail the work plan's general SOW and estimate the number of resources (time and money ROM)		
C2 Metropolitan -2	Characterize interfaces with ACUs of the IAF, with IAF control towers, to the Central Control Unit, to Ben Gurion Airport, to ACC North, to ACC South (as a default – the various bodies are those that define the protocols and solution providers should extract from them the specifications)	Propose a means for system deployment – including aspects of human factors, costs, and who bears them, the means of installation in the various locations (or – how is the process suitable and with whom). Strive for a state where the communications between operators and ACUs will be solely through the USP – so that both sides will have a single POC.		Detail the work plan's general SOW and estimate the number of resources (time and money ROM)	I-O	1+2
C2 Metropolitan -3	Characterize the mission planning components – and the means for distributing the planning, including a solution for the aspects concerning the preservation of commercial confidentiality.			Include means for presenting aircraft performance – including the aspects of planning (e.g., range/stay time), and the means of presenting the data to the users of the various systems.	I-O	2
C2 Metropolitan -4	User management, verifications, identification and preventing				I-M	1+2

	unauthorized use, and so forth					
C2 – Characteristics and Services - 1	Geofencing capabilities			Detail information concerning both the technological and organizational facets – who provides the closed zones, who is responsible for their updating, and so forth. Please related to the time dimension (Dynamic Geo-Fencing).	I-M	2
C2 – Characteristics and Services - 2	Routing method, safety separation, and similar issues.			Relate to both the planning and flight phases – the algorithmics is performed "in the ground station" of the UAS Operator and/or in the USP. Relate to the possibility of application within or adjacent to the transceivers - the communications are V2V	I-M for the ground station and USP components in the planning and flight phases I-O concerning the airborne transceiver	2+4
Information Provider - 1	Aviation meteorology in general and "micro-meteorology" in particular, with an emphasis on the specific urban airspace	Detail the standards		Detail the work plan's general SOW and estimate the number of resources (time and money ROM)	I-O	1+2
Information Provider - 2	Surface details – including a list of the relevant standards for updating and precision			It is proposed to examine the possibility of interfacing with the GIS systems of the municipalities/existing suppliers	I-O	2

				Detail the work plan's general SOW and estimate the number of resources (time and money ROM)		
Information Provider - 3	Flight obstacle data such as power lines, electricity towers, mobile phone antennas, and cranes, etc. – including a list of the methods for preserving a state of the art systems at the relevant level			<p>From where does the information come?</p> <p>Who supplies the information?</p> <p>How can the current status and level of precision be assured?</p> <p>Detail the work plan's general SOW and estimate the number of resources (time and money ROM)</p>	I-O	2
Information Provider - 4	Population density map			<p>Relate to the planning phase ("fixed" maps)</p> <p>Detail the work plan's general SOW and estimate the number of resources (time and money ROM)</p>	I-O	2
Information Provider - 5	Real-time and planning information – concerning open-air gatherings			<p>Who supplies the information?</p> <p>How can the current status and level of precision be assured?</p> <p>Detail the work plan's general SOW and estimate the number of resources (time and money ROM)</p>	I-O	2
Information Provider - 6	Sensitive installations (relate to the			Who supplies the information?	I-O	2

	facilities that already appear in the AIP, as well as those installations that become sensitive in real-time – such as a stadium during a football match, or a kindergarten when children are attending, a performance at the Yehoshua Gardens in Tel Aviv, and so forth.			How can the current status and level of precision be assured? Detail the work plan's general SOW and estimate the number of resources (time and money ROM)		
Sim ¹ - 1	Simulation systems for the Metropolitan C2 Level			Please list what may be simulated. What is the quality of the simulation, what it is designed to serve? What is the output of each run, etc.? Is the system intended for development/testing/load stress planning, or training and practice for officials? This clause relates to Metropolitan C2. Detail the work plan's general SOW and estimate the number of resources (time and money ROM)	I-O	2
Sim ¹ - 2	A simulation system for the aircraft to station level			As noted above – for the level of USP (the company that operates the UAS, the content world of the	I-O	2

				<p>aircraft itself, communications with the ground station, etc.)</p> <p>Detail the work plan's general SOW and estimate the number of resources (time and money ROM)</p>		
Sim' - 3	Aircraft simulation system (the aircrafts' algorithms, etc.)			<p>Detail the work plan's general SOW and estimate the number of resources (time and money ROM)</p>	I-O	2
USP - 1	Relate to USPs of the Na'ama Initiative and how they will have to interface with the Metropolitan C2			<p>As a design goal – the Metropolitan C2 needs to interface with the operational stations of the USP – in such a way that the operator will require minimum changes at its position</p>	I-O	2+4
Training - 1				<p>List the specifications for each profession (competencies), the skill training required for the various professions, and a recommendation to establish a designated training academy? OJT? Combining with existing training mechanisms?</p> <p>Detail the work plan's general SOW and estimate the number of</p>	I-O	1

				resources (time and money ROM)		
R&D - 1	A collision prevention transceiver – carried onboard an aircraft, based on air2air communications , one with the other			<p>A target price of up to \$20 –</p> <p>Targeted weight</p> <p>Targeted energy consumption</p> <p>Targeted reliability</p> <p>Detail the work plan's general SOW and estimate the number of resources (time and money ROM) – spread across R&D years</p>	I-O	4
R&D - 2	Aircraft registration. The solution must contain an "intimate" link to the CAAI registration system – and as default, CAAI is the primary user/defines standards			<p>An integrated application – contains a detailed listing of who holds the database, who are the users, aspects of accident investigations, privacy, etc. Please address existing international standards – including ASTM, and detail examples of countries abroad, and their policies</p> <p>Detail an alternative based on a SIM card and information distribution through a "regular" online system.</p> <p>Address the standards of</p>	D	3+4

				critical databases (e.g., banks, insurance companies, IDF, and medical institutions, etc.) Detail the work plan's general SOW and estimate the number of resources (time and money ROM)		
R&D - 3	Inexpensive and reliable RID ⁹ system			The proposal must contain a possibility by which the ID is based on regular, commercial SIM, including the possibility of utilizing the SIM, which constitutes a communications channel for flight and providing a distribution service through the USP (and/or ACUs, the towers, and the web for a public application.) It is recommended to examine the possibility of leveraging an existing application like Flightradar 24 or similar.	D	4
R&D - 4	A technical response for the capability to fly backed by BVLOS			In any case, address the possibility of "flight" through mobile phone networks.	I-O	4

⁹ Remote ID

				Address the matter of Ministry of Communications approvals		
R&D - 5	A solution for obstacles/disturbances/disruptions/lack of reception/multi-pass GNSS with a emphasis on GPS			Relate to situations of mid-flight disruptions. To a state of non-continuous GNSS (including pre-takeoff), and precision capabilities in DDS and the return to base. Detail the work plan's general SOW and estimate the number of resources (time and money ROM)	I-M	2+4
R&D - 6	Preparation of Automated Emergency Landing Sites			A detailed characterization – including a demonstration on a relevant area in Israel, and details concerning current status and testing a "clean zone."	I-M	2+4
R&D - 7	Proof of flight safety above railroad tracks			Detail the work plan's general SOW and estimate the number of resources (time and money ROM)	I-O	2+4
R&D - 8	Proof of flight safety above roads			Detail the work plan's general SOW and estimate the number of resources (time and money ROM)	I-O	2+4
R&D - 9	Proof of flight safety in proximity to buildings			Detail the work plan's general SOW and estimate the number of resources (time and money ROM)	I-O	2+4

R&D - 11	Methods for sharing "plans and intentions" – including flight paths and mission– in a manner that will enable an improved and joint aerial picture for other operators and USP – while ensuring "balanced" service for all the companies and prevent discrimination that favors the large and wealthy companies.			The Bidder will construct an automated system that knows to receive from each UAS operator his flight plan – test for conflicts, and suggest a solution to those involved + define a compulsory flight plan/limitations so as not to require USP involvement other than for information. The USP will have the ability to intervene. Detail the work plan's general SOW and estimate the number of resources (time and money ROM)	D	2
R&D - 12	A set of connections between USP (assuming there will be up to three of these in Israel)				I-O	1
R&D - 13	Case and response analysis				I-M	All packages
R&D - 14	Avoid striking flight obstacles				I-M	2+4
R&D - 15	Information security and cyber protection – emphasize preventing unauthorized use of the systems				I-M	All packages

R&D - 16	Integrating into the community – includes giving the public the ability to submit complaints in a way that will allow the identity of the flight and the specific aircraft for which a complaint has been received				I-M	All packages
R&D - 17	High-preference special flights (e.g., Search & Rescue) or a predicted infiltration of a crewed aircraft into the flight zone				I-M	2+4
R&D - 18	Equal opportunities for access to the smart airspace				I-M	2
R&D - 19	Analysis according to scenarios			As a minimum – relate to the scenarios detailed in the CONOPS document of the American UTM (FAA)	I-M	All packages
R&D - 20	Managing "requests for aerial closures."				I-M D	2
R&D - 21	The set of interfaces with private (not commercial) drones				I-O	1+2
R&D - 22	The set of interfaces with crewed aircraft and/or drones without RID				I-M	1+2

9. Demonstration Plan:
 - 9.1. Metropolitan C2 – the Bidder should propose a developing three-year demo plan – including an analysis of which of the components can be demonstrated, when and the ROM pricing as per the target dates below:
 - 9.1.1. Information sharing at the "flight log level on Google Drive" – during 2020.
 - 9.1.2. July 2021 – Demonstrating a system that can support at least three operating companies simultaneously and two activity zones – one south of TMA and the second one to its north (so that each zone of this type will be in the area of another IAF ACU). An additional zone may be operational – within/under the TMA.
 - 9.1.3. January 2022 – A demo of all the functions designated above.
 - 9.2. RID and Aircraft Registration – with/without all the drones used as a hobby (in the quantitative aspect – there are up to 50,000 of these).
 - 9.3. Simulations – at the Bidder's discretion
 - 9.4. V2V Transceiver – Including hardware analyses (weight, electrical consumption, volume, compliance with environmental conditions, RF performances including delays and similar), an ability to perform "automated lane separations," and similar capabilities – at the bidders' discretion.
 - 9.4.1. A demonstration of "hardware calculation" and BOM for demonstration during 2020
 - 9.4.2. Demonstrating the RF component assembly in a hardware laboratory – including communications between aircraft and report to base – the first half of 2021.
 - 9.4.3. Systematic simulations – including routing to prevent loss of separation – by December 2021.
 - 9.4.4. A possible plan for supporting flights on drones, the maximum weight on takeoff is lower than 25kg – by December 2022.

10. Details Concerning Services Packages

It is clarified that the material detailed below constitutes an estimate solely and does not constitute an obligation; the full and compulsory scope of services will be detailed as part of the Individual Referral for Mission Execution, as detailed in the Terms of Tender Volume:

The Package	Primary Specifications	Comments
Service Package No. 1- "Metropolitan Service Center" Operator – "Mishmar" (USP)	<ol style="list-style-type: none"> 1. Manning positions by two on-call service representatives 24/7 – at least one of them should be an active reserve duty military flight controller or hold a valid CAAI/IAA supervisor's license. The on-call representatives will be available by telephone within no more than 15 minutes and available for physical on-site arrival at "Mishmar" within 90 minutes. 2. Manning positions by three functionaries at Mishmar, two of whom are a controller/supervisor as stated above – two hours before the start of planned flights until an hour of the last landing. – the third – a shift manager. 3. The provision of services as characterized in this document – for UAS/multirotor operators and compliance in connection with all relevant stakeholders as detailed in the document. 	<ol style="list-style-type: none"> 1. On-call positions are expected to be manned in the immediate time frame (this is solely an estimate and does not constitute any commitment). 2. The actual manning of the Mishmar center – it would seem and without the above-mentioned constituting a commitment, will begin from 2021 and depends on the speed and tempo of the initiative's development.
Service Package No. 2 – Characterization of the development, demonstrations, simulations, and actual deployment of the Metropolitan C2 (UTM)	As per the definitions in this document and the remaining Tender Documents	--
Service Package No. 3 – Characterization of the development, demonstrations, simulations, and actual deployment of an aircraft registration system.	As per the definitions in this document and the remaining Tender Documents	--
Service Package No. 4 – Characterization of the development, demonstrations, simulations, and actual deployment of an RID system.	As per the definitions in this document and the remaining Tender Documents	