Change A=added D=deleted M=modified	Domains	Regulatory activity	Content of the Regulation	Regulatory organisation	Target date for regulatory material publication	EASA UAS categories	Status	Standardisation activity	Short description of the deliverable	SDO	Target date for publication	Type of document (standard, supporting material etc.)	Status	Comments
1	**General**													
	Definition and classification							AS6969	This data dictionary provides a mathematically coherent set of definitions for quantity types used in data models for unmanned systems. In this data dictionary, a quantity is defined as a property of a phenomenon, substance, or body whose value has magnitude.	SAE AS-4UCS Unmanned Systems (UxS) Control Segment Architecture	Jun-18	standard	ongoing	
	Definition and classification							ARP6128 Unmanned Systems Terminology Based on the ALFUS Framework	This SAE Aerospace Recommended Practice (ARP) describes terminology specific to unmanned systems (UMSs) and definitions for those terms. It focuses only on terms used exclusively for the development, testing, and other activities regarding UMSs. Terms that are used in the community but can be understood with common dictionary definitions are not included in this document. Further efforts to expand the scope of the terminology are being planned.	SAE AS-4JAUS Joint Architecture for Unmanned Systems Committee		recommended practice	published	
	Definition and classification							AS#### UAS Propulsion System Terminology		SAE E-39 Unmanned Aircraft Propulsion Committee	May-19	standard	planned	
	Definition and classification							ASTM WK62416 New Standard Terminology for Unmanned Aircraft Systems	This terminology covers definitions of terms and concepts related to unmanned aircraft systems (UAS). It is intended to encourage the consistent use of terminology throughout all ASTM International UAS standards. Audience: Committee F38, ASTM International, the UAS industry, and the global community. 1.2 This terminology contains a listing of terms, abbreviations, acronyms, and symbols related to aircraft covered by Committees F38 standards. Cross-referenced terms (for example, see or compare) are for information only and provide support or clarification.	ASTM F38 Unmanned Aircraft Systems	Mar-18	standard	ongoing	Under development. A new description of the deliverable Sub-committee commerrts and negatives being adjudicated.
	Definition and classification							ISO 21895 - Requirements for the categorization and classification of civil UAS	Requirements for the categorization and classification of civil UAS. The standard applies to their industrial regulation, development and production, delivery and usage.	ISO TC20/SC16/WG1	Oct-19	standard	ongoing	At DIS stage and publicly available first week of April 2019.
	Definition and classification							ISO 21384-1 - General requirements for UAS for civil and commercial applications, UAS terminology and classification	Provides the foundation and common terms, definitions and references relevant to the whole Standard, the purpose of which is to provide a safety quality standard for the safe operation of all UAS through the provision of synergistic standards for manufacturing and operations.	ISO TC20/SC16/WG1	May-20	standard	ongoing	At DIS stage and publicly available first week of April 2019.
								ISO 21348-4 - Unmanned aircraft systems -- Part 4: Terms and definitions	Provides terms and definitions to support ISO/TC 20/SC 16 standards	ISO TC20/SC16/WG1	Jul-20	standard	ongoing	At DIS stage and publicly available first week of April 2019.
	Definition and classification							ASTM WK62744 General Operations Manual for Professional Operator of Light Unmanned Aircraft Systems (UAS	This standard defines the requirements for General Operations Manual for Professional Operator of Light Unmanned Aircraft Systems (UAS). The standard addresses the requirements and/or best practices for documentation and organization of a professional operator (i.e., for compensation and hire). The intent is for this standard to support professional entities that will receive operator certification by a CAA, and provide standards of practice for self- or third-party audit of operators of UAS Not all CAAs have operator certificates. This would provide a standard for operators and identify gaps that are not currently addressed as it relates to: (1)Individuals, who are currently remote pilots (i.e. FAA under Part 107) in jurisdictions that do not separately certify Operators, who want to voluntarily comply with a higher standard, and (2)Operators, who are seeking certification from a CAA for Light Unmanned Aircraft Systems, who want to voluntarily comply with an industry standard (3)Public agencies interested in developing unmanned aircraft systems programs.	ASTM F38 Unmanned Aircraft Systems	Mar-19	standard	onging	
M	Manuals							ASTM F3366-19 Standard Specification for General maintenance Manual (GMM) for small Unmanned Aircraft Systems (sUAS)	This specification provides the minimum requirements for a General Maintenance Manual (GMM) for an unmanned aircraft system (UAS) designed, manufactured, and operated in the small UAS category as defined by a Civil Aviation Authority (CAA).	ASTM F38 Unmanned Aircraft Systems		standard	published	
	Manuals	EU 2019/945	**Part 1(8),** UAS in class C0 shall be placed on the market with a user's manual providing: (a) the characteristics of the UA including but not limited to the: — UA class — UA mass (with a description of the reference configuration) and the maximum take-off mass (MTOM); — general characteristics of allowed payloads in terms of mass dimensions, interfaces with the UA and other possible restrictions; — equipment and software to control the UA remotely; — and a description of the behaviour of the UA in case of a loss of data link; (b) clear operational instructions; (c) operational limitations (including but not limited to meteorological conditions and day/night operations); and (d) appropriate description of all the risks related to UAS operations adapted for the age of the user.	EASA	Jun-19	open	Regulation applicable						Opinion 05-2019: the characteristics of the UA including but not limited to the: — UA class; — UA mass (with a description of the reference configuration) and the maximum take-off mass (MTOM); — general characteristics of allowed payloads in terms of mass, dimensions, interfaces with the UA and other possible restrictions; — equipment and software to control the UA remotely; and — a description of the behaviour of the UA in case of a loss of the command and control link;
	Manuals	EU 2019/945	**Part 6(4),** direct remote identification add-on shall be placed on the market with a user's manual providing the reference of the transmission protocol used for the direct remote identification emission and the instruction to: (a) install the module on the UA; (b) upload the UAS operator registration number.	EASA	Jun-19	open	Regulation applicable						
	Manuals	EU 2019/945	**Part 5(4),** UAS in class C4 shall be placed on the market with a user's manual providing: (a) the characteristics of the UA including but not limited to the: — class of the UA — UA mass (with a description of the reference configuration) and the maximum take-off mass (MTOM); — general characteristics of allowed payloads in terms of mass dimensions, interfaces with the UA and other possible restrictions; — equipment and software to control the UA remotely; — and a description of the behaviour of the UA in case of a loss of data link; (b) clear operational instructions; (c) maintenance instructions; (d) troubleshooting procedures; (e) operational limitations (including but not limited to meteorological conditions and day/night operations); and (f) appropriate description of all the risks related to UAS operations;	EASA	Jun-19	open	Regulation applicable						

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ASTM

Test method - a definitive procedure that produces a test result.

Guide - information or series of options that does not recommend a specific course of action.

Practice - a definitive set of instructions for performing one or more specific operations that does not produce a test result.

Classification - a systematic arrangement or division of materials, products, systems, or services into groups based on similar characteristics such as origin, composition, properties, or use.

Terminology - a document comprising definitions of terms; explanations of symbols, abbreviations, or acronyms.

EUROCAE

Minimum Aviation Systems Performance Standards (MASPS) - describes and specifies the operational and/or functional requirements of a complete end-to-end system, which may include airborne, on-ground and space segments. It should provide a high-level architecture describing the individual components, and should allocate between those components the performance, safety and interoperability requirements.

Operational Services and Environment Definition (OSED) - a document dedicated to the operational concept description: it provides the definition of the considered services and of the environment, in which they have to be provided. It is usually published as an annex to the SPR.

Safety and Performance Requirements Standard (SPR) - a standalone document dedicated to operational safety and performance issues: it provides an allocation of the requirements between the segments for the different approval types.

Interoperability requirements standard (INTEROP) - a standalone document dedicated to interoperability issues between the different segments: for each of them, it identifies the technical interface and related functional requirements

Process Standard - specifies generic methods, which are not specific to individual components, e.g. software or hardware development, environmental testing

Minimum Operational Performance Standard (MOPS) - specifies the performance of a component (piece of equipment, protocols, exchange formats, …), which is the minimum necessary performance to satisfy a regulatory requirement. In particular, it specifies the tests to be made to ensure that the specified performance is achieved.

Technical Standard - specifies performance of a component, which reflects the best industrial practice.

	Manuals	EU 2019/945	**Part 2(18), 3(19) and 4(15)** UAS in class C1, C2 and C3 shall be placed on the market with a user's manual providing: (a) the characteristics of the UA including but not limited to the: — class of the UA; — UA mass (with a description of the reference configuration) and the maximum take-off mass (MTOM); — general characteristics of allowed payloads in terms of mass dimensions, interfaces of with the UA and other possible restrictions; — equipment and software to control the UA remotely; — reference of the transmission protocol used for the direct remote identification emission; — sound power level; — and a description of the behaviour of the UA in case of a loss of data link; (b) clear operational instructions; (c) procedure to upload the airspace limitations; (d) maintenance instructions; (e) troubleshooting procedures; (f) operational limitations (including but not limited to meteorological conditions and day/night operations); and (g) appropriate description of all the risks related to UAS operations;	EASA	Jun-19	open	Regulation applicable							Opinion 05-2019 (a)the characteristics of the UA including but not limited to the: — class of the UA; — UA mass (with a description of the reference configuration) and the maximum take-off mass (MTOM); — general characteristics of allowed payloads in terms of mass, dimensions, interfaces of with the UA and other possible restrictions; — equipment and software to control the UA remotely; — the procedures to upload the UAS operator registration number into the electronic identification system; — reference of the transmission protocol used for the direct remote identification emission; — sound power level; — description of the behaviour of the UA in case of a loss of the command and control link, and the method to recover the UA; and
	Manuals	Opinion 05-2019	**Part 16(7)** UAS class C5 shall in addition to the information indicated in point (15)(a) of Part 4, include in the user's manual a description of the means to terminate the flight	EASA	Jun-20	Specific	Opinion published							
	Manuals	Opinion 05-2019	**Part 17(8)** UAS class C6 shall in addition to the information indicated in point (15)(a) of Part 4, include in the user's manual: (a) a description of the means to terminate the flight; (b) a description of the function that limits the access of the UA to certain airspace areas or volumes; and (c) the distance most likely to be travelled by the UA after activation of the means to terminate the flight defined in paragraph (5), to be considered by the UAS operator when defining the ground risk buffer	EASA	Jun-20	Specific	Opinion published							
	Manuals	Opinion 05-2019	**Part 16** UAS class C6 accessories kit shall be accompanied by a user's manual providing: (a) the list of all class C3 UAS to which the kit can be applied; and (b) instructions on how to install and operate the accessory kit.	EASA	Jun-20	Specific	Opinion published							
	Definition and classification	EU 2019/945	**Part 2(11), 3(13), 4(8) and 6(2)** UAS in class C1, C2 , C3 and the direct remote identification add-on shall have a unique physical serial number compliant with standard ANSI/CTA-2063 Small Unmanned Aerial Systems Serial Numbers;	EASA	Jun-19	open	Regulation applicable							Opinion 05-2019: have a unique serial number of the UA compliant with standard ANSI/CTA-2063-A Small Unmanned Aerial Systems Serial Numbers
	Definition and classification							ANSI/CTA - 2063 Small Unmanned Aerial Systems Serial Numbers	This standard outlines the elements and characteristics of a serial number to be used by small unmanned aerial systems.	CTA R6 Portable Handled and In-Vehicle Electronics Committee WG 23 Unmanned Aerial Systems		standard	published	
	Definition and classification	EASA Decision 2019/021/R	OSO#23 Environmental conditions for safe operations defined, measurable and adhered to (Criterion #1 Definition)	EASA	Oct-19	Specific	published							
	Operator organisations	EASA Decision 2019/021/R	OSO#1 Ensure the operator is competent and/or proven	EASA	Oct-19	Specific	published							
	manufacturer organisation	EASA Decision 2019/021/R	OSO#2 UAS manufactured by competent and/or proven entity	EASA	Oct-19	Specific	published							
	Maintenance organisation	EASA Decision 2019/021/R	OSO#3 UAS maintained by competent and/or proven entity (e.g. industry standards). (Criterion #1 Procedure)	EASA	Oct-19	Specific	published							
	Maintenance organisation	EASA Decision 2019/021/R	OSO#3 UAS maintained by competent and/or proven entity (e.g. industry standards). (Criterion #2 Training)	EASA	Oct-19	Specific	published							
	service provider	EASA Decision	OSO #13 - External services supporting UAS operations are adequate to the operation	EASA	Oct-19	Specific	published							
	Operator organisations	EASA Decision	OSO #07 - Inspection of the UAS (product inspection) to ensure consistency to the ConOps	EASA	Oct-19	Specific	published							

Guidance Document - supplements the information contained in the types of documents described above. Usually illustrative information to another EUROCAE document.

Internal Report - represents the opinion of a WG on a certain technical topic. It is identified with a WG reference number and date only.

EUROCONTROL

Specifications - Define technical and/or operational procedures that advance ATM

Guidelines - Provide more general implementation support to stakeholders.

NOTE: Standards are developed and maintained as both harmonising standards and as means of compliance. Standards are used as reference material by ICAO and EASA, and continue to provide the basis of Community Specifications for the extant EU SES regulations in accordance with regulation EC 552/2004 (Interoperability Regulation).

ISO

International Standard - provides rules, guidelines or characteristics for activities or for their results, aimed at achieving the optimum degree of order in a given context. It can take many forms. Apart from product standards, other examples include : test methods, code of practice, guideline standards and management systems standards.

Technical Specification - addresses work still under technical development, or where it is believed that there will be a future, but not immediate, possibility of agreement on an International Standard. A Technical Specification is published for immediate use, but it also provides a means to obtain feedback. The aim is that it will eventually be transformed and republished as an International Standard.

Technical Report - contains information of a different kind from that of the previous two publications. It may include data obtained from a survey, for example, or from an informative report, or information of the perceived " state of the art ".

Publicly Available Specification- is published to respond to an urgent market need, representing either the consensus of the experts within a working group, or a consensus in an organization external to ISO. As with Technical Specifications, Publicly Available Specifications are published for immediate use and also serve as a means to obtain feedback for an eventual transformation into an International Standard. Publicly Available Specifications have a maximum life of six years, after which they can be transformed into an International Standard or withdrawn.

International Workshop Agreement - is a document developed outside the normal ISO committee system to enable market players to negotiate in an " open workshop " environment. International Workshop Agreements are typically administratively supported by a member body. The published agreement includes an indication of the participating organizations involved in its development. An International Workshop Agreement has a maximum lifespan of six years, after which it can be either transformed into another ISO deliverable or is automatically withdrawn.

Guides - help readers understand more about the main areas where standards add value. Some Guides talk about how, and why, ISO standards can make it work better, safer, and more efficiently.

SAE

Standards - these Technical Reports are a documentation of broadly accepted engineering practices or specifications for a material, product, process, procedure or test method.

	Operator organisations	EASA Decision	OSO #08 - Operational procedures are defined, validated and adhered to (to address technical issues with the UAS): Criteria 1, 2,3	EASA	Oct-19	Specific	published							
	Operator organisations	EASA Decision	OSO #11 - Procedures are in-place to handle the deterioration of external systems supporting UAS operation: Criteria 1, 2,3	EASA	Oct-19	Specific	published							
	Operator organisations	EASA Decision	OSO #14 - Operational procedures are defined, validated and adhered to (to address Human Errors): Criteria 1, 2,3	EASA	Oct-19	Specific	published							
	Operator organisations	EASA Decision	OSO #21 - Operational procedures are defined, validated and adhered to (to address Adverse Operating Conditions): Criteria 1, 2,3	EASA	Oct-19	Specific	published							
	Operator organisations	EASA Decision	OSO#19 Safe recovery from Human Error (Criterion #1 Procedures and checklists)	EASA	Oct-19	Specific	published							
	Operator organisations	EASA Decision	OSO#16 Multi crew coordination. (Criterion #1 Procedures)	EASA	Oct-19	Specific	published							
	Operator organisations	EASA Decision	OSO#23 Environmental conditions for safe operations defined, measurable and adhered to (Criterion #1 Procedures)	EASA	Oct-19	Specific	published							
	Operator organisations	EASA Decision	M#1 An Emergency Response Plan (ERP) is in place, operator validated and effective (Criterion #1 Operational)	EASA	Oct-19	Specific	published							
2	**UAS Traffic Management**													
	U-space	Opinion 05-2019	**Part 2(20), 3(21), and 4(17)** UAS in class C1, C2 , C3, if equipped with a network remote identification system it shall: (a) allow the upload of the UAS operator registration number in accordance with Article 14 of Implementing Regulation (EU) 2019/947 and exclusively following the process provided by the registration system. The system shall not accept an invalid UAS	EASA	Jun-20	Open category and Specific	Opinion published							
							ISO TR 23629-1 - UAS Traffic Management (UTM) -- Part 1: General requirements for UTM - Survey results on UTM	This project intends to start s survey on UTMs in each country, which is expected to reveal hundreds of commercial applications already in place, as well as social systems as their background conditions. Based on those results, we will analyze benefits and gaps for possible future standardization topics in consultation with authorities such as ICAO.	ISO/TC 20/SC 16/WG 4	Sep-22	Technical Report	ongoing	Will be published before 2022; currently showing limit date
							ISO 23629-7 - UAS Traffic Management (UTM) -- Part 7: UTM data and information transfer at interface of traffic management integration system and UAS service suppliers - Data model related to spatial data for UAS and UTM	This standard specifies the data model that is related to various spatial information for common use between the operator for drone flight planning (UAS: Unmanned Aircraft System) and the system for operation control (UTM: UAS Traffic Management).	ISO/TC 20/SC 16/WG 4	Jan-22	Standard	ongoing	Will be published before 2022; currently showing limit date
D	Electronic Identification						MASPS for UAS e-identification	"Minimum Aviation Systems Performance Standard for UAS e-identification" defining minimum system level end-to-end requirements for the implementation of the electronic identification function for UAS.	EUROCAE WG-105	Nov-18	standard		
	Electronic Identification						MOPS for UAS e-identification	"Minimum Operational Performance Standard for UAS e-identification" defining minimum requirements for the e-identification function at the level of individual components.	EUROCAE WG-105	Dec-19	standard	planned	
	U-space						ASTM WK63418 Protocol for Service Provided under UAS Traffic Management (UTM)	Develop minimum requirements ensuring deconfliction of routes in the same operating region and develop industry agreed protocols that would promote the interchange and use of data between USSs (UAS Service Suppliers) to enable aircraft separation in the same region. These protocols will enable safe and efficient low-altitude airspace operations by providing services such as airspace design, corridors, dynamic geofencing, severe weather and wind avoidance, congestion management, terrain avoidance, route planning and re-routing, separation management, sequencing and spacing, and contingency management.	ASTM F38 Unmanned Aircraft Systems	TBD	standard	ongoing	Drafting of standard has begun.
	U-space						ASTM WK65041 New Practice for UAS Remote ID and Tracking	Identify the requirements and data transmission protocols for meeting the security and public safety needs of the law enforcement, homeland defence, and national security communities for the remote identification and tracking of UAS. Evaluate the need to provide information that could assist in threat discrimination and determination of hostile intent. Will also inform requirement for civil and commercial operators to ensure appropriate compliance with regulation.	ASTM F38 Unmanned Aircraft Systems	TBD	standard	ongoing	Intial draft to near completion with a target date of early February.
	U-space						AIR6388 Remote Identification and Interrogation of Unmanned Aerial Systems	The information presented in this AIR is intended to provide information about current remote identification methods and practical considerations for remotely identifying UAS. Depending on rigor and adherence requirements, Aerospace Standard (AS) and Aerospace Recommended Practice (ARP) documents may be developed. For example, ARPs may provide methods to remotely identify UAS using existing hardware technologies typically available to most consumers. ARPs may also specify the information exchange and message format between unmanned aerial systems and remote interrogation instruments. An AS, however, may highlight the wireless frequency band, message type, message encoding bits, and message contents.	SAE AS-4UCS Unmanned Systems (UxS) Control Segment Architecture	Dec-18	information report	ongoing	
	U-space						ASTERIX Category 129 UAS Identification Reports	Defines a message structure allowing transmitting the identification of a UAS as well as its the aircraft's current position. This data is required in order to establish the basic principles of UTM (UAS Traffic Management) which shall enable the safe integration of UAS into non-segregated airspace.	EUROCONTROL	Apr-18	standard	published	

Recommended Practices - these Technical Reports are documentations of practice, procedures and technology that are intended as guides to standard engineering practice. Their content may be of a more general nature, or they may propound data that have not yet gained broad acceptance.

Information Reports - these Technical Reports are compilations of engineering reference data or educational material useful to the technical community.

Aerospace Material Specifications - these Technical Reports identify material and process specifications conforming to sound, established engineering and metallurgical practices in aerospace sciences and practices.

	Local E-identification	EU 2019/945	**Part 2(12), 3(14) and 4(9)** UAS in class C1, C2 and C3 shall hhave a direct remote identfication that: (a) allows the upload of the UAS operator registration number in accordance with Article 14 of Implementing Regulation (EU) [20190517-120] and exclusively following the process provided by the registration system; (b) ensures, in real time during the whole duration of the flight, the direct periodic broadcast from the UA using an open and documented transmission protocol, of the following data, in a way that they can be received directly by existing mobile devices within the broadcasting range: i the UAS operator registration number; ii the unique physical serial number of the UA compliant with standard ANSI/CTA-2063; iii the geographical position of the UA and its height above the surface or take-off point; iv the route course measured clockwise from true north and ground speed of the UA; and v the geographical position of the remote pilot; (c) ensures that the user cannot modify the data mentioned under paragraph (b) points ii, iii, iv and v;	EASA	Jun-19	open category and specific	Regulation applicable							Opinion 05-2019: UAS in class C1, C2, C3 an shall have a direct remote identification system that: (a) allows the upload of the UAS operator registration number in accordance with Article 14 of Implementing Regulation (EU) 2019/947 and exclusively following the process provided by the registration system. The system shall not accept an invalid UAS operator registration number; (b) ensures, in real time during the whole duration of the flight, thedirect periodic broadcast from the UA using an open and documented transmission protocol, of at least the following data, in a way that it can be received directly by existing mobile devices within the broadcasting range: i the UAS operator registration number; ii the unique serial number of the UA compliant with standard ANSI/CTA-2063-A
	Local E-identification	EU 2019/945	**Part 6(1, 3 and 4)** A direct remote identification add-on shall comply with the following: (1) allows the upload of the UAS operator registration number in accordance with Article 14 of Implementing Regulation (EU) [20190517-120] and exclusively following the process provided by the registration system; (3) ensures, in real time during the whole duration of the flight, the direct periodic broadcast from the UA using an open and documented transmission protocol, of the following data, in a way that they can be received directly by existing mobile devices within the broadcasting range: i the UAS operator registration number; ii the unique physical serial number of the add-on compliant with standard ANSI/CTA-2063; iii the geographical position of the UA and its height above the surface or take-off point; iv the route course measured clockwise from true north and ground speed of the UA; and v the geographical position of the remote pilot or, if not available, the take-off point; (4) ensures that the user cannot modify the data mentioned under paragraph (3) points ii, iii, iv and v;	EASA	Jun-19	open category and specific	Regulation applicable							remote identification add-on shall comply with the following: (1) allow the upload of the UAS operator registration number in accordance with Article 14 of Implementing Regulation (EU) 2019/947 and exclusively following the process provided by the registration system. The system shall not accept an invalid UAS operator registration number; (3) ensure, in real time during the whole duration of the flight, the direct periodic broadcast from the UA using an open and documented transmission protocol, of at least the following data, in a way that it can be received directly by existing mobile devices within the broadcasting range: (a) the UAS operator registration number; (b) the unique serial number of the UA compliant with standard ANSI/CTA-2063-A
	Marking and Registration	EU 2019/947	**Art 14(8)** The UAS operators shall display their registration number on every unmanned aircraft meeting the conditions described in paragraph 5	EASA	Jun-19	Open category and Specific	Regulation applicable from 1 July 2020							
	Marking and Registration							ASTM F2851-18 Standard Practice for UAS Registration and Marking (Excluding Small Unmanned Aircraft Systems)	This practice follows ICAO Annex 7 SARPS except in areas where the unique aspects of UAS may not allow compliance. In these cases, this document will address the issue and recommend the need for an alternate compliance method.	ASTM F38 Unmanned Aircraft Systems		standard	published	Renewed 2018
D	Marking and Registration							ASTM F2851-10 Standard Practice for UAS Registration and Marking (Excluding Small Unmanned Aircraft Systems)	This practice follows ICAO Annex 7 SARPS except in areas where the unique aspects of UAS may not allow compliance. In these cases, this document will address the issue and recommend the need for an alternate compliance method.	ASTM F38 Unmanned Aircraft Systems		standard	published	Delete this is duplicated
	Geo-awareness	EU 2019/945	**Part 2(13), 3(15) and 4(10)** UAS in class C1, C2 and C3 shall be equipped with a geo-awareness system that provides: (a) an interface to load and update data containing information on airspace limitations related to UA position and altitude imposed by the geographical zones, as defined by Article 15 of Implementing Regulation (EU) [20190517-120], which ensures that the process of loading or updating such data does not degrade its integrity and validity; (b) a warning alert to the remote pilot when a potential breach of airspace limitations is detected; and (c) information to the remote pilot on the UA's status as well as a warning alert when its positioning or navigation systems cannot ensure the proper functioning of the geo-awareness system	EASA	Jun-19	Open category and Specific	Regulation applicable							opinion 05-2019: be equipped with a geo-awareness function that provides: (a) an interface to load and update data containing information on airspace limitations related to UA position and altitude imposed by the geographical zones, as defined by Article 15 of Implementing Regulation (EU) 2019/947, which ensures that the process of loading or updating such data does not degrade its integrity and validity; and (b) a warning alert to the remote pilot when a potential breach of airspace limitations is detected; and (c) information to the remote pilot on the UA's status as well as a warning alert when its positioning or navigation systems cannot ensure the proper functioning of the geo-awareness function;
	Definition of zones	EU 2019/947	**Article 15** Operational conditions for UAS geographical zones 1. When defining UAS geographical zones for safety, security, privacy or environmental reasons, Member States may: (a) prohibit certain or all UAS operations, request particular conditions for certain or all UAS operations or request a prior operational authorisation for certain or all UAS operations; (b) subject UAS operations to specified environmental standards; (c) allow access to certain UAS classes only; (d) allow access only to UAS equipped with certain technical features, in particular remote identification systems or geo awareness systems. 2. On the basis of a risk assessment carried out by the competent authority, Member States may designate certain geographical zones in which UAS operations are exempt from one or more of the 'open' category requirements. 3. When pursuant to paragraphs 1 or 2 Member States define UAS geographical zones, for geo awareness purposes they shall ensure that the information on the UAS geographical zones, including their period of validity, is made publicly available in a common unique digital format.	EASA	Jun-19	Open category and Specific	Regulation applicable from 1 July 2020							
D	U-space							MASPS for UAS Geo-Fencing	"Minimun Aviation Systems Performance Standard for UAS geo-fencing" defining minimum system level end-to-end requirements for the implementation of the geo-fencing function for UAS.	EUROCAE WG-105	Nov-18	standard	ongoing	
	U-space							MOPS for UAS Geo-Fencing	"Minimum Operational Performance Standard for UAS geo-fencing" defining minimum requirements for the geo-fencing function at the level of individual components.	EUROCAE WG-105	Dec-19	standard	ongoing	
	U-Space							MOPS for UAS geo-caging	"Minimum Operational Performance Standard for UAS geo-caging" defining minimum requirements for the geo-caging function at the level of individual components.	EUROCAE WG-105	Dec-19	standard	planned	

M	U-space							prEN4709-3 Aerospace series - Unmanned Aircraft Systems (UAS) - Security Requirements	This European standard will provide means of compliance to cover geo awareness related requirements for Part 2 to 4 of the delegated act. More specifically, the standard will provide requirements related to the main characteristics of the geo-awareness function, namely: •An interface to load and update data containing information on airspace limitations which ensures that the process of loading or updating of this data does not degrade its integrity and validity •A warning alert to the pilot when a potential breach of airspace limitations is detected •Information to the pilot on the UA's status as well as a warning alert when its positioning or navigation cannot ensure the proper functioning of the geo-awareness system In the context of this standard, geo-awareness is defined as an UAS function that warns the remote pilot if the UA is going to enter into an unauthorized zone. The standard will be developed in coordination with EUROCAEWG 105 / SG 33	ASD-STAN D5WG8	Jun-20	preEN / European standard	ongoing	
3	**Command, Control and Communication**													
	C3 datalink and communication							MOPS (Terrestrial LOS)	Minimum Operational Performance Standard for the terrestrial Line of Sight Command and Control Data Link	EUROCAE WG-105	Jun-20	standard	ongoing	
	C3 datalink and communication							MOPS (SATCOM)	Minimum Operational Performance Standard for the satellite Command and Control Data Link	EUROCAE WG-105	Nov-18	standard	ongoing	Under WG-105 review
	C3 datalink and communication							MASPS	Minimum Aviation System Performance Standard for the Command and Control Link	EUROCAE WG-105	Sep-19	standard	ongoing	
	C3 datalink and communication							ASTM F3002-14a Standard Specification for Design of the Command and Control System for Small Unmanned Aircraft Systems (sUAS)	This specification is provided as a consensus standard in support of an application to a nation's governing aviation authority (GAA) for a permit to operate a small unmanned aircraft system (sUAS) for commercial or public use purposes. This standard outlines the general, spectrum and link requirements for C2.	ASTM F38 Unmanned Aircraft Systems		standard	published	Under revision
	C3 datalink and communication							AIR6514 UxS Control Segment (UCS) Architecture: Interface Control Document (ICD)	This interface control document (ICD) specifies all software services in the Unmanned Systems (UxS) Control Segment Architecture, including interfaces, messages, and data model.	SAE AS-4UCS Unmanned Systems (UxS) Control Segment Architecture		information report	published	
	C3 datalink and communication							AIR6514A UxS Control Segment (UCS) Architecture: Interface Control Document (ICD)	This interface control document (ICD) specifies all software services in the Unmanned Systems (UxS) Control Segment Architecture, including interfaces, messages, and data model.	SAE AS-4UCS Unmanned Systems (UxS) Control Segment Architecture	Nov-18	information report	ongoing	
M	C3 datalink and communication							AS6522A Unmanned Systems (UxS) Control Segment (UCS) Architecture: Architecture Technical Governance	The UCS technical governance comprises a set of policies, processes, and standard definitions to establish consistency and quality in the development of architecture artifacts and documents. It provides guidance for the use of adopted industry standards and modeling conventions in the use of Unified Modeling Language (UML) and Service Oriented Architecture Modeling Language (SoaML), including where the UCS Architecture deviates from normal UML conventions. This document identifies the defining policies, guidelines, and standards of technical governance in the following subjects:	SAE AS-4UCS Unmanned Systems (UxS) Control Segment Architecture	Nov-18		ongoing	
	C3 datalink and communication							AIR6515 Unmanned Systems (UxS) Control Segment (UCS) Architecture: EA Version of UCS ICD Model	This User Guide describes the content of the Enterprise Architect (EA) version of the UCS Architectural Model and how to use this model within the EA modeling tool environment. The purpose of the EA version of the UCS Architectural Interface Control Document (ICD) model is to provide a working model for Enterprise Architect tool users and to serve as the source model for the Rational Software Architect (RSA) and Rhapsody models (AIR6516 and AIR6517). The AIR6515 EA Model has been validated to contain the same content as the AS6518 model for: - all UCS ICD interfaces - all UCS ICD messages - all UCS ICD data directly or indirectly referenced by ICD messages and interfaces - the Domain Participant, Information, Service, and Non Functional Properties Models. Preconditions for using the AIR6515 EA Model include:-access to / experience with Enterprise Architect 10 or higher, Corporate Edition. -experience with the Unified Modeling Language (UML)‚Äì-an understanding of the UCS Architectural Model as originally created in the EA Model AS6518-MODEL	SAE AS-4UCS Unmanned Systems (UxS) Control Segment Architecture		information report	published	
	C3 datalink and communication							AIR6516 Unmanned Systems (UxS) Control Segment (UCS) Architecture: RSA Version of UCS ICD Model	This User Guide describes the content of the Rational Software Architect (RSA) version of the UCS Architectural Model and how to use this model within the RSA modeling tool environment. The purpose of the RSA version of the UCS Architectural Interface ICD model is to provide a model for Rational Software Architect (RSA) users, derived from the Enterprise Architect (EA) ICD model (AIR6515). The AIR6515 EA Model, and by derivation, the AIR6516 RSA Model, have been validated to contain the same content as the AS6518 model for: - all UCS ICD interfaces - all UCS ICD messages - all UCS ICD data directly or indirectly referenced by ICD messages and interfaces - the Domain Participant, Information, Service and Non Functional Properties Models. Preconditions for using the AIR6516 RSA Model include:-access to Rational Software Architect. Version 9.0 or higher. This release was checked with version 9.1.1. -experience with the Unified Modeling Language (UML) ‚Äì-an understanding of the UCS Architectural Model as originally created in the EA model AS6518 MODEL.	SAE AS-4UCS Unmanned Systems (UxS) Control Segment Architecture		Information Report	published	
	C3 datalink and communication							AIR6517 Unmanned Systems (UxS) Control Segment (UCS) Architecture: Rhapsody Version of UCS ICD Model	This User Guide describes the content of the Rhapsody version of the UCS Architectural Model and how to use this model within the Rhapsody modeling tool environment. The purpose of the Rhapsody version of the UCS Architectural Interface Control Document (ICD) model is to provide a model for Rhapsody users, derived from the Enterprise Architect (EA) model (AIR6515). The AIR6515 EA Model, and by derivation, the AIR6517 Rhapsody Model, have been validated to contain the same content as the AS6518 model for: - all UCS ICD interfaces - all UCS ICD messages - all UCS ICD data directly or indirectly referenced by ICD messages and interfaces - the Domain Participant, Information, Service and Non Functional Properties Models. Preconditions for using the AIR6517 Rhapsody Model include: -access to / experience with the Rhapsody Modeling Tool Environment version 8.1 or higher. This product was validated using Rational Rhapsody Architect for System Engineers, version 8.1.1‚Äì-experience with the Unified Modeling Language (UML)‚Äì-an understanding of the UCS Architectural Model as originally created in the EA model AS6518-MODEL.	SAE AS-4UCS Unmanned Systems (UxS) Control Segment Architecture		information report	published	
	C3 datalink and communication							AIR6519 UxS Control Segment (UCS) Architecture: UCTRACE	The Use Case Trace (UCTRACE) is SAE publication AIR6519 of the Department of Defense Unmanned Control Segment (UCS) Architecture. This document is the SAE publication of the Department of Defense UAS Control Segment (UCS) Architecture: Use Case Trace (UCTRACE) Version 3.4(PR) approved for Distribution A public release 15.S-1859. This information is produced from a script run against the System Use Case Model contained in the UCS Architecture Model AS6518-MODEL.eap configuration item. The System Use Case Model includes, at its lowest level of elaboration, use cases Level 2/3 (L2/L3) that describe specific scenarios of message exchanges between Actors and internal system Participants via ServiceInterfaces. These message exchanges provide a way to create detailed traces that answer the question: "What UCS service interfaces must my components implement to satisfy functional requirements represented by a given Level 2/3 UCS use case?" The AIR6519-UCTRACE spreadsheet contains trace information derived directly from the message sequences in the L2/L3 use cases.	20-Dec-16		information report	published	
	C3 datalink and communication							AIR6520 Unmanned Systems (UxS) Control Segment (UCS) Architecture: Version Description Document	Governance of the Unmanned Aircraft System (UAS) Control Segment (UCS) Architecture was transferred from the United States Office of the Secretary of Defense (OSD) to SAE International in April 2015. Consequently, a subset of the UCS Architecture Library Release 3.4(PR) has been published under SAE as the Unmanned Systems (UxS) Control Segment (UCS) Architecture, AS6512. This Version Description Document (VDD) describes the correspondence and differences between the two architecture libraries.	SAE AS-4UCS Unmanned Systems (UxS) Control Segment Architecture		Information Report	published	
	C3 datalink and communication							AIR6521 Unmanned Systems (UxS) Control Segment (UCS) Architecture: Data Distribution Service (DDS)	This platform specific Interface Control Document (ICD) provides an example mapping to the Object Management Group's (OMG) Data Distribution Service (DDS) infrastructure middleware. The mapping is based on the Unmanned Systems (UxS) Control Segment (UCS) Architecture: Model, AS6518. A series of non-normative implementation choices have been made that are specific to this ICD. These implementation choices may not be appropriate for different system implementations. The machine readable ICD and result of this mapping and implementation choices are provided with AIR6521. Use and understanding of this document assumes a working knowledge of the UCS Architecture, the model structure and its contents.	SAE AS-4UCS Unmanned Systems (UxS) Control Segment Architecture		information report	published	

	C3 datalink and communication							AS6512 Unmanned Systems (UxS) Control Segment (UCS) Architecture: Architecture Description	This document is the Architecture Description (AD) for the SAE Unmanned Systems (UxS) Control Segment (UCS) Architecture. This AD serves as the official designation of the UCS Architecture - SAE AS6512. The UCS Architecture is expressed by a library of SAE publications as referenced herein. The other publications in the UCS Architecture Library are: AS6513, AIR6514, AIR6515, AIR6516, AIR6517, AS6518, AIR6519, AIR6520, AIR6521, and AS6522.	SAE AS-4UCS Unmanned Systems (UxS) Control Segment Architecture		standard	published	
	C3 datalink and communication							AS6513 Unmanned Systems (UxS) Control Segment (UCS) Architecture: Conformance Specification	This document is the authoritative specification within the SAE Unmanned Systems (UxS) Control Segment (UCS) Architecture for establishing conformance requirements for UCS products. The UCS products addressed by this specification are UCS software components and UCS software configurations that provide one or more UCS services, and UCS systems that employ one or more UCS services. The conformance of UCS products is determined by assessing the conformance of the UCS product description to the UCS Architecture. The UCS product description includes test artifacts.	SAE AS-4UCS Unmanned Systems (UxS) Control Segment Architecture		standard	published	
	C3 datalink and communication							AS6518 Unmanned Systems (UxS) Control Segment (UCS) Architecture: UCS Architecture Model	This brief User Guide recaps the content of the AS6518 UCS Architectural Model described in detail in AS6512 UCS Architecture: Architecture Description. The purpose of the UCS Architecture Model is to provide the authoritative source for other models and products within the UCS Architecture as shown in the AS6512 UCS Architecture: Architecture Description. Preconditions for using the AS6518 EA Model include: -access to / experience with Enterprise Architect 10 or higher, Corporate Edition. -experience with the Unified Modeling Language (UML) -installation of the [included] UCS_MDG.xml add in for Sparx Enterprise Architect per instructions below	SAE AS-4UCS Unmanned Systems (UxS) Control Segment Architecture		standard	published	
	C3 datalink and communication							AS6522 Unmanned Systems (UxS) Control Segment (UCS) Architecture: Architecture Technical Governance	The UCS technical governance comprises a set of policies, processes, and standard definitions to establish consistency and quality in the development of architecture artifacts and documents. It provides guidance for the use of adopted industry standards and modeling conventions in the use of Unified Modeling Language (UML) and Service Oriented Architecture Modeling Language (SoaML), including where the UCS Architecture deviates from normal UML conventions. This document identifies the defining policies, guidelines, and standards of technical governance in the following subjects: Industry standards adopted by the AS-4UCS Technical Committee: These are the industry standards and specifications adopted by AS-4UCS in the generation and documentation of the architecture. - UCS Architecture Development: UCS specific policies on the development of the UCS Architecture. The AS-4UCS Technical Committee governance policies are intentionally minimal. The object is to provide direction specific to the intent and scope of developing architecture artifacts that follow a consistent set of specifications and industry best practices. Standards are referenced within policies. Standards may place constraints on policies that are implemented by processes. Each process is intended to guide the development of architecture artifacts. For example, a standard may dictate that a UML diagram be modeled in a particular methodology using only approved stereotypes from the SoaML UML profile. UCS technical governance applies to the following technical work products that are generated within the AS-4UCS Technical Committee. It is not applicable to third party developers, programs, or any other consumer of the UCS Architecture.	SAE AS-4UCS Unmanned Systems (UxS) Control Segment Architecture		standard	published	
	Navigation							WK58931 Evaluating AerialResponse RobotManeuvering: Maintain Position and Orientation	A suite of standard test methods has been developed to measure manueverability, endurance,communications, durability, logisitics,autonomy, and safety to guide purchasing decisions,support operator training and measure proficiency.	ASTM E54 Homeland Security Applications	Apr-18	standard	ongoing	Publication Delayed -Full Committee Meting Feb 28-Mar 2 2018 for adudication of comments
	Navigation							WK58932 Evaluating AerialResponse RobotManeuvering: Orbit a Point	A suite of standard test methods has been developed to measure manueverability, endurance,communications, durability, logisitics,autonomy, and safety to guide purchasing decisions,support operator training and measure proficiency.	ASTM E54 Homeland Security Applications	Apr-18	standard	ongoing	Publication Delayed -Full Committee Meting Feb 28-Mar 2 2018 for adudication of comments
	Navigation							WK58933 Evaluating AerialResponse RobotManeuvering: Avoid Static Obstacles	A suite of standard test methods has been developed to measure manueverability, endurance,communications, durability, logisitics,autonomy, and safety to guide purchasing decisions,support operator training and measure proficiency.	ASTM E54 Homeland Security Applications	Jun-18	standard	ongoing	
	Navigation							WK58934 Evaluating AerialResponse RobotManeuvering: Pass Through Openings	A suite of standard test methods has been developed to measure manueverability, endurance,communications, durability, logisitics,autonomy, and safety to guide purchasing decisions,support operator training and measure proficiency.	ASTM E54 Homeland Security Applications	Apr-18	standard	ongoing	Publication Delayed -Full Committee Meting Feb 28-Mar 2 2018 for adudication of comments
	Navigation							WK58935 Evaluating AerialResponse RobotManeuvering: Land Accurately (Vertical)	A suite of standards test methods has been developed to measure manueverability, endurance,communications, durability, logisitics,autonomy, and safety to guide purchasing decisions,support operator training and measure proficiency.	ASTM E54 Homeland Security Applications	Apr-18	standard	ongoing	Publication Delayed -Full Committee Meting Feb 28-Mar 2 2018 for adudication of comments
	C3 datalink and communication							WK58942 Evaluating AerialResponse RobotRadio Communication Range : Line of Sight	A suite of standards test methods has been developed to measure manueverability, endurance,communications, durability, logisitics,autonomy, and safety to guide purchasing decisions,support operator training and measure proficiency.	ASTM E54 Homeland Security Applications	Apr-18	standard	ongoing	Publication Delayed -Full Committee Meting Feb 28-Mar 2 2018 for adudication of comments
	C3 datalink and communication							WK58941 Evaluating AerialResponse RobotRadio Communications Range: Non Line of Sight	A suite of standards test methods has been developed to measure manueverability, endurance,communications, durability, logisitics,autonomy, and safety to guide purchasing decisions,support operator training and measure proficiency.	ASTM E54 Homeland Security Applications	Apr-18	standard	ongoing	Publication Delayed -Full Committee Meting Feb 28-Mar 2 2018 for adudication of comments
	C3 datalink and communication							STANAG 4660 - Interoperable Command and Control Datalink for Unmanned Systems	Common standard Line-Of-Sight command and control data link for the safe and reliable operation of unmanned systems within a joint, coalition and controlled airspace operating environment.	NATO NNAG/JCGUAS		standard	published	
	Navigation							SAE6856 Improving Navigation Solutions Using Raw Measurements from Global Navigation Satellite System (GNSS) Receivers	This recommended practice provides users with the technical requirements and methods for accessing, viewing, and processing raw GNSS receiver measurements for improved unmanned vehicle navigation solutions.	SMCPNT Position, Navigation, and Timing Committee	Mar-19	standard	ongoing	
	Navigation							SAE6857 Requirements for a Terrestrial Based Position, Navigation, and Timing (PNT) System to Improve Navigation Solutions and Ensure Critical Infrastructure Security	This recommended practice defines the technical requirements for a terrestrial-based PNT system to improve vehicle (e.g. unmanned, aerial, ground, maritime) positioning/navigation solutions and ensure critical infrastructure security, complementing GNSS technologies.	SMCPNT Position, Navigation, and Timing Committee	Mar-19	standard	ongoing	
	C3 datalink and communication							MASPS on C3 Spectrum Management for the 5030/5091 MHz band	Minimun Aviation Systems Performance Standard defining requirements for the management of the 5030/5091 MHz band fir use by C2 Link Services	EUROCAE WG-105	Dec-18	standard	ongoing	

	C3 datalink and communication							Guidance on Spectrum Access, Use and Management	Guidance material describing considerations for the use of spectrum for UAS purposes	EUROCAE WG-105	Mar-19	guidance	ongoing	
	Cyber security	EU 2019/945	**Part 3(8) and 4(12)** UAS in class C2 and C3 shall be equipped with a data link protected against unauthorised access to the command and control functions;	EASA	Jun-19	open	Regulation applicable							Opinion 05-2019: " Unless tethered, be equipped with a command and control link protected against unauthorised access to the command and control
	Cyber security							MASPS on RPAS C3 Security	Minimun Aviation Systems Performance Standard defining system level requirements for the application of Security measures to the UAS C3 Link	EUROCAE WG-105	Jun-19	standard	ongoing	
	C3 datalink and communication							Guidance on RPAS C3 security	Guidance material for the application of the MASPS listed above	EUROCAE WG-105	Dec-19	guidance	ongoing	
	C3 datalink and communication	EASA Decision	OSO#6 C3 link performance is appropriate for the operation	EASA	Oct-19	Specific	published							
	C3 datalink and communication	EASA Decision	OSO#16 Multi crew coordination. (Criterion #3 Communication devices)	EASA	Oct-19	Specific	published							
4	**Detect and Avoid**													
	Detect and avoid							MASPS	Minimum Aviation System Performance Standard (End-to-end Requirements at system level) for DAA of IFR Flights in class A-C airspace.	EUROCAE WG-105	Dec-18	standard	ongoing	
	Detect and avoid							MOPS	Minimum Operational Performance Standard (Requirements at equipment level) for DAA of IFR Flights in class A-C airspace.	EUROCAE WG-105	Dec-19	standard	ongoing	
	Detect and avoid							OSED	Operational Services and Environment Description for DAA for DAA in Class D-G airspaces under VFR/IFR	EUROCAE WG-105	Jan-19	standard	published	
	Detect and avoid							MASPS	Minimum Aviation System Performance Standard (End-to-end Requirements at system level) for DAA against conflicting traffic for RPAS operating under IFR and VFR in all airspace classes	EUROCAE WG-105	Dec-19	standard	ongoing	
	Detect and avoid							MOPS	Minimum Operational Performance Standard (Requirements at equipment level) for DAA against conflicting traffic for RPAS operating under IFR and VFR in all airspace classes	EUROCAE WG-105	Jun-20	standard	planned	
	Detect and avoid							OSED	OperationalServices and Environmental Description for DAA in very Low Level Operations	EUROCAE WG-105	Jun-19	standard	ongoing	under WG-105 peer review
	Detect and avoid							MOPS	Minimum Operational Performance Standard (Requirements at equipment level) for DAA at Very Low Level (VLL)	EUROCAE WG-105	Jun-20	standard	planned	
	Detect and avoid							STANREC 4811 Ed. 1/ AEP-. 101 Ed. A Ver.1 "UAS sense and avoid"	To detail comprehensive guidance and recommended practice for the development of Sense and Avoid systems, referencing and providing guidance regarding application of existing standards and best practice.	NATO FINAS	Feb-18	guide	published	
	Detect and avoid							WKXXXX						The work it is now being covered under WK 62668/62669
	Detect and avoid							WK62668 Specification for DAA Performance Requirements	Defines minimum performance standards Comprehensive DAA Standard under annex to define test methods AND minimum performance standards for DAA systems and sensors applicable to smaller UAS BLVOS operations for the protection of manned aircraft in lower altitude airspace	ASTM F38 Unmanned Aircraft Systems	Jun-19	standard	ongoing	Working Group formed under terms of reference
	Detect and avoid							WK62669 Test Method for DAA	Covering systems and sensors Comprehensive DAA Standard under annex to define test methods AND minimum performance standards for DAA systems and sensors applicable to smaller UAS BLVOS operations for the protection of manned aircraft in lower altitude airspace .	ASTM F38 Unmanned Aircraft Systems	Jun-19	standard	ongoing	Working Group formed under terms of reference. Number changed to WK62669 instead of WK62668
	Detect and avoid							WK60936 Specification for Acoustic-based Detect and Avoid for sUAS						Performance requirements to be covered unde WK62668
5	**RPAS Automation**													
	Development assurance (Software)							ASTM F3269 Standard Practice for Methods to Safely Bound Flight Behavior of Unmanned Aircraft Systems Containing Complex Functions	This standard practice defines design and test best practices that if followed would provide guidance to an applicant for providing evidence to the civil aviation authority (CAA) that the flight behavior of an unmanned aircraft system (UAS) containing complex function(s) is constrained through a run-time assurance (RTA) architecture to maintain an acceptable level of flight safety.	ASTM F38 Unmanned Aircraft Systems		standard	published	FAA Notice Of Availability (NOA) Pending approval of ASTM WK57659 as foundational document
	Automatic modes, takeoff, Landing, taxing							ASTM WK65056 revision to ASTM F3269 Standard Practice for Methods to Safely Bound Flight Behavior of Unmanned Aircraft Systems Containing Complex Functions	Goal is to develop the standard to a level of capability that defines run-time monitoring (RTA) attributes to a level that the FAA or CAA will agree that monitors developed to this standard are sufficient to allow the UAS to evolve the complex function with its associated avionics equipment and sensors without requiring vehicle recertification as the CONOPS evolve after initial certification. a. Provide additional guidance on Safety Monitor design best practices, to explicitly include guidance on partitioning, dissimilarity, and the option for multiple individual safety monitors comprising the Safety Monitor function, as well as defining safety monitor classes and key attributes. b. Provide additional use cases as Appendices. c. Provide additional information contrasting the F3269 approach with other architectural approaches (e.g., SAE ARP 4754A, RTCA DO-178C). d. Modify requirements to performance based to allow multiple implementation and implementation architectures e. Make additional updates as required.	ASTM F38 Unmanned Aircraft Systems	Spetember 2019	standard	ongoing	Draft Under Develment
	Automatic modes, takeoff, Landing, taxing							ED-252 OSED	Operational Services and Enironment Description for Automatic Take-Off and Landing.	EUROCAE WG-105		standard	published	
	Automatic modes, takeoff, Landing, taxing							MASPS	Minimum Aviation System Performance Standard (End-to-end Requirements at system level) for Automatic Take-Off and Landing	EUROCAE WG-105	Jun-20	standard	ongoing	
	Automatic modes, takeoff, Landing, taxing							ED-251 OSED	Operational Services and Enironment Description for Automatic Taxiing	EUROCAE WG-105		standard	published	
	Automatic modes, takeoff, Landing, taxing							MASPS	Minimum Aviation System Performance Standard (End-to-end Requirements at system level) for Automatic Taxiing	EUROCAE WG-105	Jun-20	standard	ongoing	
	Emergency recovery/terminations systems	EU 2019/945	**Parts 2(7), 3(7) and 4(5)** A UAS Class C1, C2 and C3 shall: in case of a loss of data link, have a reliable and predictable method for the UA to recover the data link or terminate the flight in a way that reduces the effect on third parties in the air or on the ground	EASA	Jun-19	open category and specific	Regulation applicable							Opinion 05-2019: in case of a loss of the command and control link, have a reliable and predictable method for the UA to recover the command and control link or terminate the flight in a way that reduces the effect on third parties in the air or on the ground;
	Emergency recovery/terminations systems							ED-253 OSED	Operational Services and Enironment Description for Automation and Emergency Recovery	EUROCAE WG-105	Dec-18	standard	published	Currently nder Council approval
	Emergency recovery/terminations systems							MASPS	Minimum Aviation System Performance Standard (End-to-end Requirements at system level) for automation and Emergency Recovery	EUROCAE WG-105	Jun-20	standard	planned	

6	Design & Airworthiness													
	Development assurance (Software)							ASTM F3151 Standard Specification for Verification of Avionics Systems1	This specification provides a process by which the intended function and compliance with safety objectives of avionics systems may be verified by system-level testing. Software and hardware development assurance are not in the scope of this specification and this specification should not be used if a development assurance process is required.	ASTM F39 Aircraft Systems		standard	published	This will be reference in AC for Special Class §21.17(b) To be uses where appropriate in lieu of DO 178. NEW DELIVERABLE
	UA Design and Airworthiness							AS6009A JAUS Mobility Service Set	This document defines a set of standard application layer interfaces called JAUS Mobility Services. JAUS Services provide the means for software entities in an unmanned system or system of unmanned systems to communicate and coordinate their activities. The Mobility Services represent the vehicle platform-independent capabilities commonly found across all domains and types of unmanned systems (referred to as UxVs). At present, over 15 services are defined in this document many of which were updated in this revision to support Unmanned Underwater Vehicles (UUVs).	SAE AS-4JAUS Joint Architecture for Unmanned Systems Committee		standard	published	
	UA Design and Airworthiness							AS5684B JAUS Service Interface Definition Language	The SAE Aerospace Information Report AIR5315 – Generic Open Architecture (GOA) defines "a framework to identify interface classes for applying open systems to the design of a specific hardware/software system." [sae] JAUS Service (Interface) Definition Language defines an XMI schema for the interface definition of services at the Class 4L, or Application Layer, and Class 3L, or System Services Layer, of the Generic Open Architecture stack (see Figure 1). The specification of JAUS services shall be defined according to the JAUS Service (Interface) Definition Language document.	SAE AS-4JAUS Joint Architecture for Unmanned Systems Committee		standard	published	
	UA Design and Airworthiness							AS6062 JAUS Mission Spooling Service Set	This document defines a set of standard application layer interfaces called JAUS Mission Spooling Services. JAUS Services provide the means for software entities in an unmanned system or system of unmanned systems to communicate and coordinate their activities. The Mission Spooling Services represent the platform-independent capabilities commonly found across all domains and types of unmanned systems. At present, 1 service is defined in this document (more services are planned for future versions of this document): • Mission Spooler: Stores mission plans, coordinates mission plans, and parcels out elements of the mission plan for execution The Mission Spooler service is described by a JAUS Service Definition (JSD) which specifies the message set and protocol required for compliance. The JSD is fully compliant with the JAUS Service Interface Definition Language [JSIDL].	SAE AS-4JAUS Joint Architecture for Unmanned Systems Committee		standard	published	
	UA Design and Airworthiness							AS6060 JAUS Environment Sensing Service Set	This document defines a set of standard application layer interfaces called JAUS Environment Sensing Services. JAUS Services provide the means for software entities in an unmanned system or system of unmanned systems to communicate and coordinate their activities. The Environment Sensing Services represent typical environment sensing capabilities commonly found across all domains and types of unmanned systems in a platform-independent manner. At present, five services are defined in this document: • Range Sensor: Determine the proximity of objects in the platform's environment • Visual Sensor: Provides common configuration and setup for different types of imaging systems • Digital Video: A type of Visual Sensor that manages digital video • Analog Video: A type of Visual Sensor that manages analog video • Still Image: A type of Visual Sensor that manages and encodes individual digital images Each service is described by a JAUS Service Definition (JSD) which specifies the message set and protocol required for compliance. Each JSD is fully compliant with the JAUS Service Interface Definition Language [AS5684].	SAE AS-4JAUS Joint Architecture for Unmanned Systems Committee		standard	published	
	HMI							AS6040 JAUS HMI Service Set	This document defines a set of standard application layer interfaces called JAUS HMI Services. JAUS Services provide the means for software entities in an unmanned system or system of unmanned systems to communicate and coordinate their activities. The HMI Services represent the platform-independent Human Machine Interface (HMI) capabilities commonly found across all domains and types of unmanned systems. Five services are defined in this document: • Drawing • Pointing Device • Keyboard • Digital Control • Analog Control Each service is described by a JAUS Service Definition (JSD) which specifies the message set and protocol required for compliance. Each JSD is fully compliant with the JAUS Service Interface Definition Language (JSIDL) [AS5684].	SAE AS-4JAUS Joint Architecture for Unmanned Systems Committee		standard	published	
	UA Design and Airworthiness							AS5710A JAUS Core Service Set	This document defines a set of standard application layer interfaces called JAUS Core Services. JAUS Services provide the means for software entities in an unmanned system or system of unmanned systems to communicate and coordinate their activities. The Core Services represent the infrastructure commonly found across all domains and types of unmanned systems. At present, eight services are defined in this document: • Transport Service: Abstracts the functionality of the underlying communication transport layer • Events Service: Establishes a publish/subscribe mechanism for automatic messaging • Access Control: Manages preemptable exclusive control for safety critical operations • Management: Defines component life-cycle management • Time: Allows clients to query and set the system time for the component • Liveness: Provides a means to maintain connection liveness between communicating components • Discovery: Governs automatic discovery of remote entities and their capabilities • List Manager: Encompasses behavior common to doubly linked lists Each service is described by a JAUS Service Definition (JSD) which specifies the message set and protocol required for compliance. Each JSD is fully compliant with the JAUS Service Interface Definition Language [JSIDL].	SAE AS-4JAUS Joint Architecture for Unmanned Systems Committee		standard	published	
	UA Design and Airworthiness							ARP6012A JAUS Compliance and Interoperability Policy	This document, the JAUS Compliance and Interoperability Policy (ARP6012), recommends an approach to documenting the complete interface of an unmanned system or component in regard to the application of the standard set. While non-SAE AS-4 JAUS documents are referenced in this ARP they are not within the scope of this document and should be viewed as examples only.	SAE AS-4JAUS Joint Architecture for Unmanned Systems Committee		recommended practice	published	
	UA Design and Airworthiness							AIR5645A JAUS Transport Considerations	This SAE Aerospace Information Report (AIR) discusses characteristics of data communications for the Joint Architecture for Unmanned Systems (JAUS). This document provides guidance on the aspects of transport media, unmanned systems and the characteristics of JAUS itself that are relevant to the definition of a JAUS transport specification.	SAE AS-4JAUS Joint Architecture for Unmanned Systems Committee		information report	published	
	UA Design and Airworthiness							AS5669A JAUS/SDP Transport Specification	This SAE Aerospace Standard (AS) specifies a data communications layer for the transport of messages defined by the Joint Architecture for Unmanned Systems (JAUS) or other Software Defined Protocols (SDP). This Transport Specification defines the formats and protocols used for communication between compliant entities for all supported link-layer protocols and media. Although JAUS is the SDP used as the example implemented throughout this document, AS5669 can be used for any SDP that meets the required capabilities. A Software Defined Protocol is defined as an application data interface for communicating between software elements. The SDP is agnostic of the underlying communications protocol and in fact communicates in much the same manner regardless if the communicating entities are collocated in the same memory space or separated by a satellite link.	SAE AS-4JAUS Joint Architecture for Unmanned Systems Committee		standard	published	
	UA Design and Airworthiness							AS6091 JAUS Unmanned Ground Vehicle Service Set	This document defines a set of standard application layer interfaces called JAUS Unmanned Ground Vehicle Services. JAUS Services provide the means for software entities in an unmanned system or system of unmanned systems to communicate and coordinate their activities. The Unmanned Ground Vehicle Services represent the platform-specific capabilities commonly found in UGVs, and augment the Mobilty Service Set [AS6009] which is platform-agnostic. At present ten (10) services are defined in this document.	SAE AS-4JAUS Joint Architecture for Unmanned Systems Committee		standard	published	
	UA Design and Airworthiness							AS6057A JAUS Manipulator Service Set	This document defines a set of standard application layer interfaces called JAUS Manipulator Services. JAUS Services provide the means for software entities in an unmanned system or system of unmanned systems to communicate and coordinate their activities. The Manipulator Services represent platform-independent capabilities commonly found across domains and types of unmanned systems. At present, twenty-five (25) services are defined in this document.	SAE AS-4JAUS Joint Architecture for Unmanned Systems Committee		standard	published	
	UA Design and Airworthiness							ARP6227 JAUS Messaging over the OMG Data Distribution Service (DDS)	This document defines a standard representation of JAUS AS5684A message data in DDS IDL defined by the Object Management Group (OMG CORBA 3.2 specification. This document does NOT address how JAUS transport considerations or JAUS service protocols are implemented on OMG DDS platforms.	SAE AS-4JAUS Joint Architecture for Unmanned Systems Committee		recommended practice	published	

	UA Design and Airworthiness							AIR5665B Architecture Framework for Unmanned Systems	This SAE Aerospace Information Report (AIR) describes the Architecture Framework for Unmanned Systems (AFUS). AFUS comprises a Conceptual View, a Capabilities View, and an Interoperability View. The Conceptual View provides definitions and background for key terms and concepts used in the unmanned systems domain. The Capabilities View uses terms and concepts from the Conceptual View to describe capabilities of unmanned systems and of other entities in the unmanned systems domain. The Interoperability View provides guidance on how to design and develop systems in a way that supports interoperability.	SAE AS-4JAUS Joint Architecture for Unmanned Systems Committee		information report	published	
	UA Design and Airworthiness							AIR5664A JAUS History and Domain Model	The purpose of this SAE Aerospace Information Report (AIR) is two-fold: to inform the reader of the extent of effort that went into the development of the Joint Architecture for Unmanned Systems (JAUS); and to capture for posterity the domain analysis that provides the underpinnings for the work by the AS-4 Committee (Unmanned Systems).	SAE AS-4JAUS Joint Architecture for Unmanned Systems Committee		information report	published	
	UA Design and Airworthiness							AS6062A JAUS Mission Spooling Service Set	This document defines a set of standard application layer interfaces called JAUS Mission Spooling Services. JAUS Services provide the means for software entities in an unmanned system or system of unmanned systems to communicate and coordinate their activities. The Mission Spooling Services represent the platform-independent capabilities commonly found across all domains and types of unmanned systems. At present, 1 service is defined in this document (more services are planned for future versions of this document): • Mission Spooler: Stores mission plans, coordinates mission plans, and parcels out elements of the mission plan for execution The Mission Spooler service is described by a JAUS Service Definition (JSD) which specifies the message set and protocol required for compliance. The JSD is fully compliant with the JAUS Service Interface Definition Language [JSIDL].	SAE AS-4JAUS Joint Architecture for Unmanned Systems Committee		standard	published	
	UA Design and Airworthiness							AS6111 JAUS Unmanned Maritime Vehicle Service Set	This document defines a message-passing interface for services representing the platform-specific capabilities common across unmanned maritime vehicles.	SAE AS-4JAUS Joint Architecture for Unmanned Systems Committee	Jun-19	standard	ongoing	
	UA Design and Airworthiness							AS6971 Test Protocol for UAS Reciprocating (Intermittent) Engines as Primary Thrust Mechanism	This standard is intended to provide a method (or methods) to obtain repeatable and consistent measurements to reflect true engine performance and durability in customer. Standardized methodology is needed to normalize engine performance to fairly rate engine operating variables and parameters. Operational protocols will be defined according to engine class and will be based on those developed for on-highway applications. Based on typical engine operation, a series of speed and load combinations and/or sequences will be determined. The scope will include dynamometer based testing and static propeller-based experiments. The industry consists of many platforms that use reciprocating engines as the main (or sole) provider of rotational energy to propeller. There also exists a significant move towards hybrid-based engine-battery systems that are expected to have different operational requirements. This standard will focus on those using the engine as the main thrust provider, but allowances will also be considered for hybrid designs. The scope will include power correction methodologies to provide a more accurate description of performance.	SAE E-39 Unmanned Aircraft Propulsion Committee	May-19	standard	ongoing	
	UA Design and Airworthiness							AS#### Ground support equipment (preheaters, starters, fuel pumps, fuel couplings, fuel mixing, fuel filters, preflight weight/balance, bore-sighting of payload, storage containers, alignment hardware, wheel chocks, "remove before flight" items, electronic and software links.		SAE E-39 Unmanned Aircraft Propulsion Committee	Jun-19	standard	planned	
	UA Design and Airworthiness							AS#### Propeller hubs		SAE E-39 Unmanned Aircraft Propulsion Committee	Jul-19	standard	planned	
	UA Design and Airworthiness							ARP#### Propeller Information Report		SAE E-39 Unmanned Aircraft Propulsion Committee	Aug-19	information report	ongoing	
	UA Design and Airworthiness							AIR6962 Ice Protection for Unmanned Aerial Vehicles	A review of icing materials that would be educational to a designer of a UAV ice protection system is provided. Additionally, the differences between unmanned and manned ice protection systems are explored along with a discussion on how these differences can be addressed.	SAE AC-9C Aircraft Icing Technology Committee	Dec-18	information report	ongoing	
	UA Design and Airworthiness							ARP94910 Aerospace - Vehicle Management Systems - Flight Control Design, Installation and Test of, Military Unmanned Aircraft, Specification Guide For	This document establishes recommended practices for the specification of general performance, design, test, development, and quality assurance requirements for the flight control related functions of the Vehicle Management Systems (VMS) of military Unmanned Aircraft (UA), the airborne element of Unmanned Aircraft Systems (UAS), as defined by ASTM F 2395-07. The document is written for military unmanned aircraft intended for use primarily in military operational areas. The document also provides a foundation for considerations applicable to safe flight in all classes of airspace.	SAE A-6 Aerospace Actuation, Control and Fluid Power Systems		recommended practice	published	
	UA Design and Airworthiness							ARP5724 Aerospace - Testing of Electromechanical Actuators, General Guidelines For	This document provides an overview of the tests, and issues related to testing, that are unique to Electromechanical Actuators (EMAs). The tests, and issues documented, are not necessarily all-inclusive. This document discusses both the tests applicable to EMAs and the test methodologies to accomplish the test objectives. EMAs may be used in a wide variety of applications such as utility, secondary flight controls and primary flight controls, in a wide variety of markets including manned and unmanned civil and military aircraft, small missile fin and thrust vector control applications up to high powered utility and flight controls. EMAs may also have either a rotary or a linear output, be servo controlled or use simple open loop point-to-point or other control topologies. As such this document covers a wide range of potential applications, the application of any given test requirement is determined by the application and the user. This document attempts to provide basic guidance on which tests should be considered for various applications. This document also lists tests that are not unique to EMAs, but are still applicable to EMAs. In these instances a discussion of such tests is not contained in this document, and as applicable, the reader may reference the appropriate documents as indicated in the text. While many EMA configurations include digital power drive electronics (PDE), the specific tests required for the electronic hardware, software, or firmware are outside the scope of this document.	A-6 Aerospace Actuation, Control and Fluid Power Systems		recommended practice	published	
	UA Design and Airworthiness							AIR744™ Aerospace Auxiliary Power Sources	This SAE Aerospace Information Report (AIR) is a review of the general characteristics of power sources that may be used to provide secondary, auxiliary, or emergency power for use in aircraft, space vehicles, missiles, remotely piloted vehicles, air cushion vehicles, surface effect ships, or other vehicles in which aerospace technology is used. The information contained herein is intended for use in the selection of the power source most appropriate to the needs of a particular vehicle or system. The information may also be used in the preparation of a power source specification. Considerations for use in making a trade study and an evaluation of the several power sources are included. More detailed information relating to specific power sources is available in other SAE Aerospace Information Reports or in Aerospace Recommended Practices.	A-6 Aerospace Actuation, Control and Fluid Power Systems		information report	published	
	UA Design and Airworthiness							AS50881F Wiring Aerospace Vehicle	This specification covers all aspects in electrical wire interconnection systems (EWIS) from the selection through installation of wiring and wiring devices and optical cabling and termination devices used in aerospace vehicles. Aerospace vehicles include manned and unmanned airplanes, helicopters, lighter-than-air vehicles, missiles and external pods.	SAE AE-8A Elec Wiring and Fiber Optic Interconnect Sys Install Committee		standard	published	
	UA Design and Airworthiness							AS50881G Wiring Aerospace Vehicle	This specification covers all aspects in electrical wire interconnection systems (EWIS) from the selection through installation of wiring and wiring devices and optical cabling and termination devices used in aerospace vehicles. Aerospace vehicles include manned and unmanned airplanes, helicopters, lighter-than-air vehicles, missiles and external pods.	SAE AE-8A Elec Wiring and Fiber Optic Interconnect Sys Install Committee	Dec-18	standard	ongoing	
	UA Design and Airworthiness							AS#### Artificial simulant standards for drone or FOD impact/ingestion	planned	SAE G-28 Simulants for Impact and Ingestion Testing	Dec-19	standard	planned	

D	Emergency recovery/terminations systems							ASTM WK59171 New Specification for SUAS parachutes	Develop a draft standard that defines the requirements for a parachute system that would allow an applicant/proponent to obtain approval to operate a small Unmanned Aircraft System (sUAS) directly over people.	ASTM F38 Unmanned Aircraft Systems	Mar-18	specification		
	Emergency recovery/terminations systems							F3322-18 Standard Specification for Small Unmanned Aircraft System (sUAS) Parachutes	This specification covers the design and manufacture requirements for deployable parachutes of small unmanned aircraft (sUA). This specification defines the design, fabrication, and test requirements of installable, deployable parachute recovery systems (PRS) that are designed to be integrated into a sUA to lessen the impact energy of the system should the sUA fail to sustain normal stable safe flight. Compliance with this specification is intended to support an applicant in obtaining permission from a civil aviation authority (CAA) to fly a sUA over people.	ASTM F38 Unmanned Aircraft Systems	Sept-18	specification	Published	
	UA Design and Airworthiness							F2490-05(2013) Standard Guide for Aircraft Electrical Load and Power Source Capacity Analysis	This guide covers how to prepare an electrical load analysis (ELA) to meet Federal Aviation Administration (FAA) requirements.	ASTM F39 Aircraft Systems		standard	published	Light Sport Aircraft guidance will be revised to apply to UAS.
	maintenance							F2799-14 Standard Practice for Maintenance of Aircraft Electrical Wiring Systems	Damaged wiring or equipment in an aircraft, regardless of how minor it may appear to be, cannot be tolerated. It is, therefore, important that maintenanc be accomplished using the best techniques and practices to minimize the possibility of failure.	ASTM F39 Aircraft Systems		standard	published	
	UA Design and Airworthiness							ASTM WK62670 New Specification for Large UAS Design and Construction	To develop an ASTM design and construction standard for larger mass fixed wing Unmanned Aerial Systems (UAS). Design and Construct Standards are currently in existence for Part 23 General Manned Aircraft as well as for Fixed Wing and VTOL Small UAS (sUAS). There currently exists a gap for Part 23 General Aircraft of the Large Fixed Wing Unmanned Variety. This ASTM standard will serve to fill that gap by including design and construct requirements, best practices, and proposed methods of compliance specific to Large UAS (up to 19,000 lbs).	ASTM F38 Unmanned Aircraft Systems	Jun-19	standard	under development	
	UA Design and Airworthiness							ASTM F2910-14 Standard Specification for Design and Construction of a Small Unmanned Aircraft System (sUAS)	This specification establishes the design, construction, and test requirements for a small unmanned aircraft system (sUAS). It is intended for all sUAS that are permitted to operate over a defined area and in airspace authorized by a nation's governing aviation authority (GAA). Unless otherwise specified by a nation's GAA, this specification applies only to UA that have a maximum takeoff gross weight of 55 lb/25 kg or less.	ASTM F38 Unmanned Aircraft Systems		standard	published	This will be reference in AC for Special Class §21.17(b)
	UA Design and Airworthiness							F3298-18 Standard Specification for Design, Construction, and Verification of Fixed-Wing Unmanned Aircraft Systems (UAS)	This specification covers the airworthiness requirements for the design of fixed-wing unmanned aircraft systems. This specification defines the baseline design, construction, and verification requirements for an unmanned aircraft system (UAS)	ASTM F38 Unmanned Aircraft Systems		standard	published	Will be revised to include VTOL aircraft under ASTM WK64619/ WK64619
	UA Design and Airworthiness							ASTM WK63678/ WK64619 Revision of F3298 - 18 Standard Specification for Design, Construction, and Verification of Fixed-Wing Unmanned Aircraft Systems (UAS)	The initial standard only addressed Fixed-Wing UAS. Response from the FAA required both vertical lift and fixed-wing in order to be accepted as a method of compliance for UAS airworthiness certification in the forthcoming advisory circular for 21-17(b). This required a rapid-action reorganization of the standard, inclusion of VTOL-specific items and a title change.	ASTM F38 Unmanned Aircraft Systems	19-Nov	standard	In progress	Ballot pending Sub-Committee approval
	Manufacturer organisation							ASTM F2911-14e1 Standard Practice for Production Acceptance of Small Unmanned Aircraft System (sUAS)	This standard defines the production acceptance requirements for a small unmanned aircraft system (sUAS). This standard is applicable to sUAS that comply with design, construction, and test requirements identified in Specification F2910. No sUAS may enter production until such compliance is demonstrated.	ASTM F38 Unmanned Aircraft Systems		standard	published	
	Manufacturer organisation							ASTM F3003-14 Standard Specification for Quality Assurance of a Small Unmanned Aircraft System (sUAS)	This standard definesthe quality assurance requirements for the design, manufacture, and production of a small unmanned aircraft system (sUAS).	ASTM F38 Unmanned Aircraft Systems		standard	published	
	Batteries/fuel cell power generating system							WKWK60937 Standard Specification for design of Fuel Cells for Use in Unmanned Aircraft Systems (UAS)	This standard will outline specification for the use of fuel cell power generatinhg systems for application in UAS.	ASTM F38 Unmanned Aircraft Systems	TBD	standard	ongoing	
	Development assurance (Software)							ASTM F3201-16 Standard Practice for Ensuring Dependability of Software Used in Unmanned Aircraft Systems (UAS)	This standard practice intends to ensure the dependability of UAS software. Dependability includes both the safety and security aspects of the software. This practice will focus on the following areas: (a) Organizational controls (for example, management, training) in place during software development. (b) Use of the software in the system, including its architecture and contribution to overall system safety and security. (c) Metrics and design analysis related to assessing the code. (d) Techniques and tools related to code review. (e) Quality assurance. (f) Testing of the software.	ASTM F38 Unmanned Aircraft Systems		standard	published	
	UA Design and Airworthiness							ASTM WK16285 New Specification for Design and Performance of an Unmanned Aircraft System-Class 1320 (550# Gross Weight to 1320# Gross Weight)	The specification covers airworthiness requirements for an acceptable powered fixed wing aircraft UAS.	ASTM F38 Unmanned Aircraft Systems	TBD	standard	ongoing	This work item will be continued using guidelines from ASTM F37 Light Sport Aircraft Committee
D	UA Design and Airworthiness							ASTM WK60352 Design, Construct, and Test of VTOL	This specification establishes the design, construction, and test requirements for a VTOL unmanned aircraft system (sUAS). It is intended for all UAS that are permitted to operate over a defined area and in airspace authorized by a nation's governing aviation authority (GAA). Unless otherwise specified by a nation's GAA,	ASTM F38 Unmanned Aircraft Systems	Aug-18	standard		
D	UA Design and Airworthiness							ASTM WK57659 Design, Construction and Verification of Fixed Wing UAS	This specification establishes the design, construction, and test requirements for a fixed wing unmanned aircraft system (sUAS). It is intended for all UAS that are permitted to operate over a defined area and in airspace authorized by a nation's governing aviation authority (GAA). Unless otherwise specified by a nation's GAA,	ASTM F38 Unmanned Aircraft Systems		standard		
	maintenance							ASTM F2909-14 Standard Practice for Maintenance and Continued Airworthiness of Small Unmanned Aircraft Systems (sUAS)	This standard is written for all sUAS that are permitted to operate over a defined area and in airspace authorized by a nation's governing aviation authority (GAA). It is assumed that a visual observer(s) will provide for the sense and avoid requirement to avoid collisions with other aircraft and that the maximum range and altitude at which the sUAS can be flown will be specified by the nation's GAA. Unless otherwise specified by a nation's GAA this standard applies only to UA that have a maximum take off gross weight of 25 kg (55 lb) or less. The sUAS shall be maintained for continued airworthiness to meet sUAS limitations and performance capabilities required by the nation's GAA.	ASTM F38 Unmanned Aircraft Systems		standard	published	Updated revision underway under WK WK63991
M	UA Design and Airworthiness							prEN4709-1 Aerospace series - Unmanned Aircraft Systems (UAS) - Product and Verification Requirements	This European standard will provide means of compliance to cover Part 1 to 5 of the delegated act annex. This includes compliance with product requirements for all UAS authorized to operate in the 'open' category (class C0, C1, C2, C3 and C4 UAS). This document does not cover "Specific" or "Certified" category of UAS. Compliance with this document assists in complying with CE marking technical requirements and covers, but is not limited to, physical and mechanical properties, flammability, electrical properties, functional safety, software, readability of the instructions and manual etc. Additional hazards that occur from the characteristics of third party payloads are excluded.	ASD-STAN D5WG8	Jun-20	preEN / European standard	ongoing	
								Guidelines	Applicability of safe design standards for UAS in Specific Operations category	EUROCAE WG-105	Sep 2019	Guidance	ongoing	

	Ground control station							MASPS	Minimum Aviation System Performance Standard (End-to-end Requirements at system level) for the Remote Pilot Station interface to Air Traffic Control (ATC).	EUROCAE WG-105	Jun-19	standard	ongoing	
								Guiidelines	Guidelines on the use of multi-GNSS for UAS	EUROCAE WG-105	Dec-19	standard	ongoing	
								Guiidelines	Guidelines on the Automatic protection of the flight envelope from human errors for UAS of multi-GNSS for UAS	EUROCAE WG-105	Dec-19	standard	ongoing	
	Emergency recovery/terminations systems	Opinion 05-2019	**Part 16(6) and 16(7)** UAS in class C5 and C6 shall provide the remote pilot with means to continuously monitor the quality of the command and control link and receive an alert when it is likely that the link is going to be lost or degraded to the extent of compromising the safe conduct of the operation, and another alert when the link is lost.	EASA	Jun-20	Specific	Opinon published							
	UA Design and Airworthiness	EU 2019/945	**Part 1(3)** UAS in Class C0 shall have a maximum attainable height above the take-off point limited to 120 m;	EASA	Jun-19	open	Regulation applicable							
	UA Design and Airworthiness	EU 2019/945	**Parts 2(3), 3(2) and 4(2)** UAS in Class C1, C2 and C3 shall have a maximum attainable height above the take-off point limited to 120 m or be equipped with a system that limits the height above the surface or above the take-off point to 120 m or to a value selectable by the remote pilot. If the value is selectable, clear information about the height of the UA above the surface or take-off point during flight shall be provided to the remote pilot.	EASA	Jun-19	open	Regulation applicable							
	UA Design and Airworthiness	EU 2019/945	**Parts 1(7) and 2(17)** UAS in Class C0 and C1 shall, if equipped with a follow-me mode and when this function is on, be in a range not exceeding 50 m from the remote pilot, and make it possible for the remote pilot to regain control of the UA;	EASA	Jun-19	open	Regulation applicable							
	Manufacturer organisation							ISO 21384-2 - Requirements for ensuring the safety and quality of the design and manufacture of UAS	Requirements for ensuring the quality and safety of the design and manufacture UAS. It includes information regarding the UA, any associated remote control station(s), the C2 links, any other required data links and any other system elements as may be required.	ISO TC20/SC16/WG2	May-20	standard	ongoing	
	UA Design and Airworthiness							STANAG 4671 "UAV System Airworthiness Requirements (USAR)". (Fix wing UAV, MTOW>1 50Kg).	Set of technical airworthiness requirements intended primarily for the airworthiness certification of fixed-wing military UAS with a maximum take-off weight between 150 and 20,000 kg that intend to regularly operate in non segregated airspace	NATO FINAS			published	
	UA Design and Airworthiness							STANAG 4702 "Rotary Wing Unmanned Aerial Systems Airworthiness Requirements" (Rotorcraft UAV, 150Kg<MTOW< 3125Kg	set of technical airworthiness requirements intended for the airworthiness certification of rotary-wing military UAV Systems with a maximum take-off weight between 150 and 3175 kg that intend to regularly operate in non-segregated airspace	NATO FINAS			published	
	UA Design and Airworthiness							STANAG 4703 "Light Unmanned Aircraft Systems Airworthiness Requirements". (Fix wing UAV, 150Kg<MTOW).	Minimum set of technical airworthiness requirements intended for the airworthiness certification of fixed-wing Light UAS with a maximum take-off weight not greater than 150 kg and an impact energy1 greater than 66 J (49 ft-lb) that intend to regularly operate in non-segregated airspace	NATO FINAS			published	
	UA Design and Airworthiness							STANAG 4746 "Unmanned Aerial Vehicle System Airworthiness Requirements for Light Vertical Take Off and Landing Aircraft"	Set of technical airworthiness requirements intended for the airworthiness certification	NATO FINAS	2018		ongoing	
	UA Design and Airworthiness	EU 2019/945	**Parts 1(5), 3(6) and 4(6)** UAS in Class C0, C1 and C2 shall be designed and constructed in such a way as to minimise injury to people during operation, sharp edges shall be avoided, unless technically unavoidable under good design and manufacturing practice. If equipped with propellers, it shall be designed in such a way as to limit any injury that may be inflicted by the propeller blades;	EASA	Jun-19	open	Regulation applicable							
	UA Design and Airworthiness	EU 2019/945	**Parts 2(15), 3(17) and 4(13)** A UAS Class C1, C2 and C 3 shall provide the remote pilot with clear warning when the battery of the UA or its control station reaches a low level so that the remote pilot has sufficient time to safely land the UA;	EASA	Jun-19	open	Regulation applicable							
	UA Design and Airworthiness	EU 2019/945	**Parts 2(5) and 3(4)** UAS in class C1 and C2 shall have the requisite mechanical strength, including any necessary safety factor, and, where appropriate, stability to withstand any stress to which it is subjected to during use without any breakage or deformation that might interfere with its safe flight;	EASA	Jun-19	open	Regulation applicable							
	UA Design and Airworthiness	EU 2019/945	**Parts 2(16), 3(18) and 4(14)** UAS in Class C1, C2 amd C3 shall be equipped with lights for the purpose of: (a) the controllability of the UA, (b) the conspicuity of the UA at night, the design of the lights shall allow a person on the ground, to distinguish the UA from a manned aircraft;	EASA	Jun-19	open	Regulation applicable							Opinion 05-2019 extend the requirement also to specific category when operated in VLL: be equipped: (a) with lights for the purpose of controllability of the UA; and (b) with at least one green flashing light for the purpose
	UA Design and Airworthiness							ARP6336 Lighting Applications for Unmanned Aircraft Systems (UAS)	This SAE Aerospace Recommended Practice (ARP) provides technical recommendations for the application, design and development of lighting for Unmanned Aircraft (UA). The recommendations set forth in this document are to aid in the design of UA lighting for the type or size of aircraft and the operation in the National Aerospace System for which the aircraft is intended.	SAE A-20 Aircraft Lighting Committee	Dec-18	Recommended Practice	ongoing	ongoing
	UA Design and Airworthiness	EU 2019/945	**Part 2(1)** UAS in class C1 shall be made of materials and have performance and physical characteristics such as to ensure that in the event of an impact at terminal velocity with a human head, the energy transmitted to the human head is less than 80 J, or, as an alternative, shall have an MTOM of less than 900 g, including payload;	EASA	Jun-19	open	Regulation applicable							
	UA Design and Airworthiness	EU 2019/945	**Parts 1(6) and 2(10)** UAS in class C0 and C1 shall be powered by electricity and have a nominal voltage not exceeding 24 V direct current (DC) or the equivalent alternating current (AC) voltage; its accessible parts shall not exceed 24 V DC or the equivalent AC voltage; internal voltages shall not exceed 24 V DC or the equivalent AC voltage unless it is ensured that the voltage and current combination generated does not lead to any risk or harmful electric shock even when the UAS is damaged;	EASA	Jun-19	open	Regulation applicable							
	UA Design and Airworthiness							WK58939 Evaluating AerialResponse RobotEnergy/Power: Endurance Range and Duration	A suite of standards test methods has been developed to measure manueverability, endurance,communications, durability, logisitics,autonomy, and safety to guide purchasing decisions,support operator training and measure proficiency.	ASTM E54 Homeland Security Applications	TBD	standard	ongoing	E54 Full Committee adjudication February 26 to March 2, 2018
	UA Design and Airworthiness	EU 2019/945	**Parts 3(12) and 4(7)** UAS in class C2 and C3 shall be powered by electricity and have a nominal voltage not exceeding 48 V DC or the equivalent AC voltage; its accessible parts shall not exceed 48 V DC or the equivalent AC voltage; internal voltages shall not exceed 48 V DC or the equivalent AC voltage unless it is ensured that the voltage and current combination generated does not lead to any risk or harmful electric shock even when the UAS is damaged;	EASA	Jun-19	open	Regulation applicable							

	UA Design and Airworthiness							WK58940 Evaluating AerialResponse RobotEnergyPower: Endurance Dwell Time	A suite of standards test methods has been developed to measure manueverability, endurance,communications, durability, logisitics,autonomy, and safety to guide purchasing decisions,support operator training and measure proficiency.	ASTM E54 Homeland Security Applications	TBD	standard	ongoing	E54 Full Committee adjudication February 26 to March 2, 2018 ongoing. Delayed till Apr -18
	UA Design and Airworthiness							WK58943 Evaluating AerialResponse RobotSafety: Lights and Sounds	A suite of standards test methods has been developed to measure manueverability, endurance,communications, durability, logisitics,autonomy, and safety to guide purchasing decisions,support operator training and measure proficiency.	ASTM E54 Homeland Security Applications	TBD	standard	ongoing	E54 Full Committee adjudication February 26 to March 2, 2018 ongoing. Delayed till Apr -18
	UA Design and Airworthiness							F2639-15 Standard Practice for Design, Alteration, and Certification of Aircraft Electrical Wiring Systems	This practice covers design configuration procedures for aircraft electrical wiring systems.	ASTM F39 Aircraft Systems		standard	published	
	UA Design and Airworthiness							F2696-14 Standard Practice for Inspection of Aircraft Electrical Wiring Systems	This practice covers basic inspection procedures for electrical wiring interconnect systems for aircraft electrical wiring systems.	ASTM F39 Aircraft Systems		standard	published	
	Batteries/fuel cell power generating system							ASTM F3005-14a Standard Specification for Batteries for Use in Small Unmanned Aircraft Systems (sUAS)	This standard defines the requirements for batteries used in small Unmanned Aircraft Systems (sUAS Small Unmanned Aircraft System	ASTM F38 Unmanned Aircraft Systems		standard	published	Currently being reviewed for updates FAA Notice Of Availability (NOA) Pending approval of ASTM WK57659 as foundational document
	UA Design and Airworthiness							F2490-05(2013) Standard Guide for Aircraft Electrical Load and Power Source Capacity Analysis	This guide covers how to prepare an electrical load analysis (ELA) to meet Federal Aviation Administration (FAA) requirements.	ASTM F39 Aircraft Systems		standard	published	
	UA Design and Airworthiness	EU 2019/945	**Part 5(3)** UAS in class C4 shall not be capable of automatic control modes except for flight stabilisation assistance with no direct effect on the trajectory and lost link assistance provided that a pre-determined fixed position of the flight controls in case of lost link is available;	EASA	Jun-19	open	Regulation applicable							
	UA Design and Airworthiness	Opinion 05-2019	Part 17(6) UAS in class C4 shall provide means to programme the UA trajectory;	EASA	Jun-20	Specific	Opinon published							
	UA Design and Airworthiness	EU 2019/945	**Part 3(9)** UAS in class C2 shall unless it is a fixed-wing UA, be equipped with a low-speed mode selectable by the remote pilot and limiting the maximum cruising speed to no more than 3 m/s.	EASA	Jun-19	open	Regulation applicable							
	UA Design and Airworthiness	Opinion 05-2019	**Part 16(4)** UAS in class C5 shall be equipped with a low-speed mode selectable by the remote pilot and limiting the ground speed to not more than 5 m/s	EASA	Jun-20	Specific	Opinon published							
	UA Design and Airworthiness	Opinion 05-2019	**Part 16(5) and 17(5)** UAS in class C5 and C6 shall be provide means for the remote pilot to terminate the flight of the UA, which shall: (a) be reliable, predictable and independent from the automatic flight control and guidance system; this applies also to the activation of this means; (b) force the descent of the UA and prevent its powered horizonta	EASA	Jun-20	Specific	Opinon published							
	UA Design and Airworthiness	EU 2019/945	**Parts 3(5) and 4(4)** UAS in class C2 and C3 shall in the case of a tethered UA, have a tensile length of the tether that is less than 50 m and a mechanical strength that is no less than: (a) for heavier-than-air aircraft, 10 times the weight of the aerodyne at maximum mass; (b) for lighter-than-air aircraft, 4 times the force exerted by the combination of the maximum static thrust and the aerodynamic force of the maximum allowed wind speed in flight;	EASA	Jun-19	open	Regulation applicable							
	UA Design and Airworthiness	EU 2019/945	**Parts 2(14), 3(16) and 4(11)** UAS in class C1, C2 and C3 shall, if the UA has a function that limits its access to certain airspace areas or volumes, this function shall operate in such a manner that it interacts smoothly with the flight control system of the UA without adversely affecting flight safety; in addition, clear information shall be provided to the remote pilot when this function prevents the UA from entering these airspace areas or volumes;	EASA	Jun-19	open	Regulation applicable							
	UA Design and Airworthiness	EU 2019/945	**Parts 1(2) and 2(2)** UAS in class C0 and C1 shall have a maximum speed in level flight of 19 m/s;	EASA	Jun-19	open	Regulation applicable							
	UA Design and Airworthiness	Opinion 05-2019	**Part 17(1)** UAS in class C6 shal have a maximum ground speed in level flight of not more than 50 m/s;	EASA	Jun-20	Specific	Opinon published							
	UA Design and Airworthiness	EASA Decision	OSO#4 UAS developed to authority recognized design standards (e.g. industry standards)	EASA	Oct-19	Specific	published							
	UA Design and Airworthiness	EASA Decision	OSO#5 UAS is designed considering system safety and reliability	EASA	Oct-19	Specific	published							
	UA Design and Airworthiness	EASA Decision	OSO#10 Safe recovery from technical issue /	EASA	Oct-19	Specific	published							
	UA Design and Airworthiness	EASA Decision	OSO#12 The UAS is designed to manage the deterioration of external systems supporting UAS operation	EASA	Oct-19	Specific	published							
	UA Design and Airworthiness	EASA Decision	OSO#18 Automatic protection of the flight envelope from human errors	EASA	Oct-19	Specific	published							
	UA Design and Airworthiness	EASA Decision	OSO#19 Safe recovery from Human Error (Criterion #3 UAS design)	EASA	Oct-19	Specific	published							
	HMI	EASA Decision	OSO #20 - A Human Factors evaluation has been performed and the HMI found appropriate for the mission	EASA	Oct-19	Specific	published							
	HMI	Opinion 05-2019	**Part 16(3) and 17(3)** UAS Class C5 and C6 during flight shall provide the remote pilot with clear and concise information on the height of the UA above the surface or take-off point;	EASA	Jun-20	Specific	Opinon published							
	HMI	EU 2019/945	**Part 1(4) and 2(4)** UAS in class C0 and C1 shall be safely controllable with regards to stability, manoeuvrability and data link performance, by a remote pilot following the manufacturer's instructions, as necessary under all anticipated operating conditions including following the failure of one or, if appropriate, more systems	EASA	Jun-19	open	Regulation applicable							Opinion 05-2019:: be safely controllable with regard to stability, manoeuvrability and the command and control link performance, by a remote pilot following the

	HMI	EU 2019/945	**Part 5(2)** UAS in class C4 shall be safely controllable and manoeuvrable by a remote pilot following the manufacturer's instructions, as necessary under all anticipated operating conditions including following the failure of one or, if appropriate, more systems;	EASA	Jun-19	open	Regulation applicable							
	HMI	EU 2019/945	**Part 3(3) and 4(3)** UAS in class C2 and C3 shall be safely controllable with regards to stability, manoeuvrability and data link performance, by a remote pilot with adequate competency as defined in Implementing Regulation (EU) [20190517-120] and following the manufacturer's instructions, as necessary under all anticipated	EASA	Jun-19	open	Regulation applicable							Opinion 05-2019: be safely controllable with regard to stability, manoeuvrability and the command and control link performance, by a remote pilot with adequate
	UA Design and Airworthiness	EASA Decision	OSO #24 - UAS designed and qualified for adverse environmental conditions (e.g. adequate sensors, DO-160 qualification)	EASA	Oct-19	Specific	published							
	UA Design and Airworthiness	EASA Decision	OSO#24 UAS designed and qualified for adverse environmental conditions (e.g. adequate sensors, DO-160 qualification)	EASA	Oct-19	Specific	published							
	UA Design and Airworthiness	EASA Decision	M#2 Effects of ground impact are reduced. A category: Measures reducing the effect of the UAS impact dynamics (e.g. emergency parachute).	EASA	Oct-19	Specific	published							
	UA Design and Airworthiness	Opinion 05-2019	**Part 16** A class C5 UAS may consist in a class C3 UAS fitted with an accessories kit that ensures the conversion of the UAS into a class C5 UAS. In this case, the class C5 label is affixed on the accessories kit. An accessories kit may only ensure conversion of a class C3 UAS that complies with (1) and provides the necessary interfaces to the accessories. The accessories kit shall not include changes to the software of the class C3 UAS. The accessories kit shall be designed, and each accessory shall be	EASA	Jun-20	Specific	Opinon published							
	UA Design and Airworthiness	EASA Decision	M#3 Technical containment in place and effective (e.g. tether)	EASA	Oct-19	Specific	published							
A								ASTM WK67357 New Specification for Light Unmanned Aircraft System Manufacturers Quality Assurance System	This specification establishes the minimum requirements for a quality assurance system for manufacturers of Light Unmanned Aircraft Systems or Light Unmanned Aircraft System kits, or both.	ASTM F38 Unmanned Aircraft Systems	Mar-19	specification	ongoing	
A								ASTM WK 63407 Standard Specification for Required Product Information to be Provided with a Small Unmanned Aircraft System	This specification covers the minimum requirements for information that shall be provided by the sUAS OEM or seller of a new small unmanned aircraft, small unmanned aircraft kit, engines, propellers, or accessories (that is, radio, automated flight control system, remote pilot station, GPS, and so forth) as a part of the initial sale or transfer to the first end user. This specification does not apply to the sale or transfer of used small unmanned aircraft, engines, propellers, or accessories. This specification applies to	ASTM F38 Unmanned Aircraft Systems	Oct-19	standard	ongoing	currently under ballot
7	**Operations**													
	Operations							AS6062 - Mission Spooling Service Set	This document defines a set of standard application layer interfaces called JAUS Mission Spooling Services. JAUS Services provide the means for software entities in an unmanned system or system of unmanned systems to communicate and coordinate their activities. The Mission Spooling Services represent the platform-independent capabilities commonly found across all domains and types of unmanned systems. At present, 1 service is defined in this document (more services are planned for future versions of this document): a Mission Spooler. Stores mission plans, coordinates	SAE AS-4JAUS Joint Architecture for Unmanned Systems Committee		standard	published	published
M	Qualified entitites							ASTM F3364-19 Standard Practice for Independent Audit Program for Unmanned Aircraft Operators	Minimum requirements, responsibilities, qualifications for entities conducting internal audits against ASTM standards on Unmanned Aircraft Systems	ASTM F38 Unmanned Aircraft Systems		standard	published	
M	Qualified entitites							F3365-19 Standard Practice for Compliance Audits to ASTM Standards on Unmanned Aircraft Systems	--How to conduct a third party audit program for those who execute audits to meet the consensus set of minimum requirements and qualifications.	ASTM F38 Unmanned Aircraft Systems		standard	published	
	Qualified entitites							ASTM WK62744 General Operations Manual for Professional Operator of Light Unmanned Aircraft Systems (UAS)	Best practices to support professional entities receiving operator certification by a CAA, and provide practice for self- or third-party audit of operators of UAS.	ASTM F38 Unmanned Aircraft Systems	TBD	Best practice	ongoing	Draft
	Manuals							ASTM F2908-16 Standard Specification for Aircraft Flight Manual (AFM) for a Small Unmanned Aircraft System (sUAS)	This specification provides the minimum requirements for an Aircraft Flight Manual (AFM) for an unmanned aircraft system (UAS) designed, manufactured, and operated in the small UAS (sUAS) category as defined by a Civil Aviation Authority (CAA). Depending on the size and complexity of the sUAS, an AFM may also contain the instruction for maintenance and continuing airworthiness for owner / operator authorized maintenance.	ASTM F38 Unmanned Aircraft Systems		standard	published	published
	Automatic modes, takeoff, Landing, taxing							WK58931 Evaluating AerialResponse RobotManeuvering: Maintain Position and Orientation	The purpose of this test method is to specify the apparatuses, procedures, and performance metrics necessary to quantitatively evaluate the system capability to accurately maintain position and orientation (pose) in open space relative to an object of interest. This test method applies to aerial systems operated remotely from a standoff distance appropriate for the intended mission. The system includes a remote operator in control of all functionality and any assistive features or autonomous behaviors that	ASTM E54 Homeland Security Applications	TBD	standard	ongoing	E54 Full Committee adjudication February 26 to March 2, 2018. Delayed till Apr-18
	Automatic modes, takeoff, Landing, taxing							WK58932 Evaluating AerialResponse RobotManeuvering: Orbit a Point	The purpose of this test method is to specify the apparatuses, procedures, and performance metrics necessary to quantitatively evaluate the system capability to accurately orbit an object of interest . Results should be considered within the context of related test methods in the Maneuvering suite when comprehensively evaluating robotic system capabilities. This test method applies to aerial systems operated remotely from a standoff distance appropriate for the intended mission. The system includes a remote operato	ASTM E54 Homeland Security Applications	TBD	standard	ongoing	
	Detect and avoid							WK58933 Evaluating AerialResponse RobotManeuvering: Avoid Static Obstacles	The purpose of this test method is to specify the apparatuses, procedures, and performance metrics necessary to quantitatively evaluate the system capability to avoid static obstacles.	ASTM E54 Homeland Security Applications	TBD	standard	ongoing	E54 Full Committee adjudication February 26 to March 2, 2018. Delayed till Apr-18
	Detect and avoid							WK58934 Evaluating AerialResponse RobotManeuvering: Pass Through Openings	The purpose of this test method is to specify the apparatuses, procedures, and performance metrics necessary to quantitatively evaluate the system capability to pass through openings of various sizes and orientations.	ASTM E54 Homeland Security Applications	TBD	standard	ongoing	E54 Full Committee adjudication February 26 to March 2, 2018. Delayed till Apr-18

	Automatic modes, takeoff, Landing, taxing							WK58935 Evaluating AerialResponse RobotManeuvering: Land Accurately (Vertical)	The purpose of this test method is to specify the apparatuses, procedures, and performance metrics necessary to quantitatively evaluate the system capability to accurately land vertically within a defined area.	ASTM E54 Homeland Security Applications	TBD	standard	ongoing	E54 Full Committee adjudication February 26 to March 2, 2018. Delayed till Apr-18
	UAS-ATM							Specifications for the Use of Military Unmanned Aerial Vehicles (UAV) as Operational Air Traffic (OAT) outside segregated airspace specification, v 1.0, 2007	This specification addresses aspects of military UAV ATM, dealing briefly with extant regulations that impact upon the UAV specifications and then explaining the nature of UAV airspace requirements. It also summarises a number of national UAV ATM regulations, albeit none were suitable for adaptation into EUROCONTROL specifications	EUROCONTROL		specification	published	
	UAS-ATM							Air Traffic Management Guidelines for Global Hawk in European Airspace, v 1.0, 2010	These Guidelines establish a set of minimum ATM requirements for Global Hawk (GH) / Euro Hawk (EH) flight in European airspace, with the primary purpose of enabling GH/EH operators to use them as the basis for negotiating access to national airspace within Europe. The Guidelines envisage the isolation of GH/EH from other airspace users by requiring it to climb-out and recover in segregated airspace and to fly IFR/OAT in the cruise in non-segregated airspace at high altitudes that are above those occupied by manned aviation.	EUROCONTROL		guidance material	published	
M	Local E-identification							prEN4709-2 Aerospace series - Unmanned Aircraft Systems (UAS) - Security Requirements	This European standard will provide means of compliance to cover Part 6 and the relevant requirements from part 2 to 4 of the delegated act. DIRECT REMOTE IDENTIFICATION shall comply with the following: Ensure, in real time during the whole duration of the flight of the UA to which it is attached, the direct periodic broadcast, using an open and documented transmission protocol, of the following data in a way that they can be received directly by existing mobile devices within the broadcasting range : (a) the UAS operator registration number; (b) the physical serial number of the add-on compliant with standard ANSI/CTA-2063; (c) the geographical position of the UA, its height above the take-off point and associated date and time	ASD-STAN D5WG8	Jun-20	preEN / European standard	ongoing	
	Standard scenarios							ASTM F3196-18 Standard Practice for Seeking Approval for Extended Visual Line of Sight (EVLOS) or Beyond Visual Line of Sight (BVLOS) Small Unmanned Aircraft	Compliance with this practice is recommended as one means of seeking approval from a civil aviation authority (CAA) to operate a small unmanned aircraft system (sUAS) to fly extended visual line of sight (EVLOS) or beyond visual line of sight (BVLOS), or both. Any regulatory application of this practice to sUAS and other unmanned aircraft systems (UASs) is at the discretion of the appropriate CAA.	ASTM F38 Unmanned Aircraft Systems		standard	published	Body of standard revised and published incorporating Oathfinder results, appendix is pending. To be revised and ammended to include use case scenarios; package
D	Standard scenarios							ASTM WK60746 Standard Practice for Seeking Approval for Extended Visual Line of Sight (EVLOS) or Beyond Visual Line of Sight (BVLOS) Small Unmanned Aircraft System (sUAS)	The main purpose of this revision is to add an Appendix A that provides research findings from the FAA EVLOS Pathfinder program than can be used in developing proposed risk mitigation strategies for sUAS EVLOS operations. This revision also provides a reference to Unmanned Systems Canada Best Practices for BVLOS Operations for use in developing proposed risk mitigation strategies for both EVLOS and BVLOS operations.	ASTM F38 Unmanned Aircraft Systems	Jun-18	standard	published	Completed
M	Standard scenarios							ASTM WK 62344 BVLOS Package Delivery as an Appendix to F3196-17	Appendix to to ASTM F3196-17. The main purpose of this revision is to add an Appendix that can be used in developing proposed risk mitigation strategies for package delivery sUAS BVLOS operationsy	ASTM F38 Unmanned Aircraft Systems	Jun-19	standard	ongoing	Working group formed and continues
	Operations							ASTM F2849-16 Standard Practice for Handling of Unmanned Aircraft Systems at Divert Airfields		ASTM F38 Unmanned Aircraft Systems		practice	published	
	Operations							ISO 21384-3 - Requirements for safe civil RPAS/UAS operations and applies to all types, categories, classes, sizes and	Requirements for safe commercial UAS operations and applies to all types, categories, classes, sizes and modes of operation of UAS.	ISO	Dec-18	standard	ongoing	
	UAS-ATM							ARP#### Access to controlled airspace		SAE G-30 UAS Operator Qualifications Committee	May-19	recommended practice	planned	
	Standard scenarios							ARP#### Flight beyond visual line of sight		SAE G-30 UAS Operator Qualifications Committee	May-19	recommended practice	planned	
	Standard scenarios							ARP#### Night operations		SAE G-30 UAS Operator Qualifications Committee	May-19	recommended practice	planned	
	Standard scenarios							ARP#### Aerial photography		SAE G-30 UAS Operator Qualifications Committee	Jun-19	recommended practice	planned	
	Standard scenarios							ARP#### Power line inspection		SAE G-30 UAS Operator Qualifications Committee	Jul-19	recommended practice	planned	
	Standard scenarios							ARP#### Precision agriculture		SAE G-30 UAS Operator Qualifications Committee	Aug-19	recommended practice	planned	
	Standard scenarios							ARP#### Bridge inspection		SAE G-30 UAS Operator Qualifications Committee	Sep-19	recommended practice	planned	
	Standard scenarios							ARP#### Train right-of-way's		SAE G-30 UAS Operator Qualifications Committee	Oct-19	recommended practice	planned	
	Standard scenarios							ARP#### Flare stack inspections		SAE G-30 UAS Operator Qualifications Committee	Nov-19	recommended practice	planned	
	Standard scenarios							WK58243 New Guide for Visual Inspection of Building Facade using Drone	This standard consists of guidelines for utilizing drones with cameras to document facade conditions with video and still photography. The purpose of this standard is to establish procedures and methodologies for conducting visual inspections of building facades via drone, and documenting such inspections.	ASTM E06 Performance of Buildings	Jan-18	guide	ongoing	

	Navigation							WK58677 Evaluating AerialResponse RobotSensing: Visual Image Acuity	The purpose of this test method is to specify the apparatuses, procedures, and performance metrics necessary to quantitatively evaluate the visual (electro-optical) image acuity of the system as viewed through a control station. This test method applies to aerial systems operated remotely from a standoff distance appropriate for the intended mission. The system includes a remote operator in control of all functionality and any assistive features or subsystems, but does not measure the effectiveness or efficiency of the	ASTM E54 Homeland Security Applications	Apr-18	standard	ongoing	E54 Full Committee adjudication February 26 to March 2, 2018. Delayed till Apr-18
	Ground control station							WK58925 Evaluating AerialResponse RobotSensing: Visual Color Acuity	The purpose of this test method is to specify the apparatuses, procedures, and performance metrics necessary to quantitatively evaluate the visual (electro-optical) color acuity of the system as viewed through a control station.	ASTM E54 Homeland Security Applications	Apr-18	standard	ongoing	E54 Full Committee adjudication February 26 to March 2, 2018. Delayed till Apr-18
	Ground control station							WK58926 Evaluating AerialResponse RobotSensing: Visual Dynamic Range	The purpose of this test method is to specify the apparatuses, procedures, and performance metrics necessary to quantitatively evaluate the visual (electro-optical) dynamic range of the system as viewed through a control station.	ASTM E54 Homeland Security Applications	Apr-18	standard	ongoing	E54 Full Committee adjudication February 26 to March 2, 2018. Delayed till Apr-18
	C3 datalink and communication							WK58927 Evaluating AerialResponse RobotSensing: Audio Speech Acuity	The purpose of this test method is to specify the apparatuses, procedures, and performance metrics necessary to quantitatively evaluate the audio speech acuity of the system as heard bi-directionally between a control station and aerial robot in flight.	ASTM E54 Homeland Security Applications	Apr-18	standard	ongoing	E54 Full Committee adjudication February 26 to March 2, 2018. Delayed till Apr-18
	Ground control station							WK58928 Evaluating AerialResponse RobotSensing: Thermal Image Acuity	The purpose of this test method is to specify the apparatuses, procedures, and performance metrics necessary to quantitatively evaluate the thermal image acuity of the system as viewed through a control station. This test method applies to aerial systems operated remotely from a standoff distance appropriate for the intended mission	ASTM E54 Homeland Security Applications	Apr-18	standard	ongoing	E54 Full Committee adjudication February 26 to March 2, 2018. Delayed till Apr-18
	Ground control station							WK58929 Evaluating AerialResponse RobotSensing: Thermal Dynamic Range	The purpose of this test method is to specify the apparatuses, procedures, and performance metrics necessary to quantitatively evaluate the thermal dynamic range of the system as viewed through a control station.	ASTM E54 Homeland Security Applications	Apr-18	standard	ongoing	E54 Full Committee adjudication February 26 to March 2, 2018. Delayed till Apr-18
	Ground control station							WK58930 Evaluating AerialResponse RobotSensing: Latency of Video, Audio, and Control	The purpose of this test method is to specify the apparatuses, procedures, and performance metrics necessary to quantitatively evaluate the latency of video, audio, and control sub-systems as viewed through a control station.	ASTM E54 Homeland Security Applications	Apr-18	standard	ongoing	E54 Full Committee adjudication February 26 to March 2, 2018. Delayed till Apr-18
	Detect and avoid							WK58936 Evaluating AerialResponse RobotSituational Awareness: Identify Objects (Point and Zoom Cameras)	The purpose of this test method is to specify the apparatuses, procedures, and performance metrics necessary to quantitatively evaluate the system capability to identify objects of interest in the environment using cameras (electro-optical and thermal) from defined altitudes in open space.	ASTM E54 Homeland Security Applications	Apr-18	standard	ongoing	E54 Full Committee adjudication February 26 to March 2, 2018. Delayed till Apr-18
	Standard scenarios							WK58937 Evaluating AerialResponse RobotSituational Awareness: Inspect Static Objects	The purpose of this test method is to specify the apparatuses, procedures, and performance metrics necessary to quantitatively evaluate the system capability to inspect objects of interest in close proximity .	ASTM E54 Homeland Security Applications	Apr-18	standard	ongoing	E54 Full Committee adjudication February 26 to March 2, 2018. Delayed till Apr-18
	Standard scenarios							WK58938 Evaluating AerialResponse RobotSituational Awareness: Map Wide Areas (Stitched Images)	The purpose of this test method is to specify the apparatuses, procedures, and performance metrics necessary to quantitatively evaluate the system capability to accurately map wide areas with objects of interest in the environment .	ASTM E54 Homeland Security Applications	Apr-18	standard	ongoing	E54 Full Committee adjudication February 26 to March 2, 2018. Delayed till Apr-18
	Standard scenarios							ASTM WK52858 Small Unmanned Aircraft Systems (sUAS) for Land Search and Rescue	This classification defines small unmanned aircraft system (sUAS) land search and rescue resources in terms of their capabilities. It provides a means by which resource managers and sUAS pilots/operators can convey to emergency management the tasks for which their systems are capable of performing.	ASTM F32 Search and Rescue	TBD	standard	ongoing	
	Standard scenarios							ASTM WK54226 sUAS Operations in Search and Rescue Operations	This guide establishes a framework within which sUAS search and rescue (SAR) operations shall be conducted as part of the National Incident Management System (NIMS)/Incident Command System (ICS). 1.2 The requirements of this guide shall apply to individuals, agencies, and organizations that respond to SAR operations, including those not regulated by government mandates.	ASTM F32 Search and Rescue	TBD	standard	ongoing	
	Standard scenarios							ASTM WK65042 New Specification for Operation over People	Recent research conducted on risk, safety, design, operations and impact to inform development of standard with supporting documentation from Pathfinder studies. Using results of the Pathfinder Program, impact testing and mitigations such as deployable sUAS parachutes to be incorporated into standard.	ASTM F38 Unmanned Aircraft Systems	Mar-19	specification	ongoing	Final draft for ballot in October 2018, adjudicating comments
	UA Design and Airworthiness							ASTM WK56338 Safety of Unmanned Aircraft Systems for Flying Over People	Develop a draft standard for product marking of UAS weighing 250 grams or less. Develop draft standard for Category 2, 3, and 4 UAS that: (1) Establishes a test method(s) to measure typical or likely impact energy of the small unmanned aircraft when the aircraft is operating in the most probable failure mode(s) to determine whether it meets the FAA specified impact energy threshold. Testing may be subject to manufacturer defined operating limitations, if any. The impact energy threshold used in the standards may account for the energy dissipation caused by the physical	ASTM F38 Unmanned Aircraft Systems	TBD	standard	ongoing	Adjudicating ballot comments
	Risk Assessment							ASTM F3178-16 Standard Practice for Operational Risk Assessment of Small Unmanned Aircraft Systems (sUAS)	Preparation of an ORA in accordance with this practice is intended to reduce, the risk of an operation in which system complexity is minimal, the operation is conducted in a lower risk environment, and the likelihood for harm to people or property, though present, is reduced to an acceptable level. As mission complexity increases, the operational environment may become less risk tolerant.A.	ASTM F38 Unmanned Aircraft Systems		standard	published	This will be reference in AC for Special Class §21.17(b)
	Manuals							ASTM WK60938 New Practice for General Operations Manual for Professional Operator of Light Unmanned Aircraft Systems (UAS)	This standard defines the requirements for General Operations Manual for Professional Operator of Light Unmanned Aircraft Systems (UAS). The standard addresses the requirements and/or best practices for documentation and organization of a professional operator (i.e., for compensation and hire).	ASTM F38 Unmanned Aircraft Systems	Sep-18	specification	ongoing	Draft Complete - will be balloted Jun 2018
	Take off/ Landing zones							ASTM WK59317 Vertiport Design	To support the design of civil vertiports and vertistops for the landing and takeoff of VTOL aircraft boarding and discharging passengers or cargo. The proliferation of electric-powered VTOL should be carefully considered in the development of this document.The standard must be scalable to address aircraft ranging in size and kinetic energy, including unmanned and optionally piloted aircraft	ASTM F38 Unmanned Aircraft Systems	TBD	specification	ongoing	New draft in work
	UAS-ATM							STANAG 7234 Remotely Piloted Aircraft Systems (RPAS) Airspace Integration (AI) - AATMP-51		NATO FINAS	2018	standard	ongoing	Under development
	C3 datalink and communication							STANAG 7232 Unmanned Aerial Systems Tactics Techniques and Procedures - ATP-3.3.8.2 Edition A	Provide standardized tactics, techniques, and procedures 217 for the planning, command and control (C2), and employment of unmanned aircraft systems 218 (UAS) in NATO operations	NATO MCASB/JCGUAS OS	2018	standard		
A								WK62744 General Operations Manual for Professional Operator of Light Unmanned Aircraft Systems	This standard defines the requirements for General Operations Manual for Professional Operator of Light Unmanned Aircraft Systems (UAS). The standard addresses the requirements and/or best practices for documentation and organization of a professional operator (i.e., for	ASTM F38 Unmanned Aircraft Systems	Mar-19	standard	ongoing	Under development

A								WK69335 Framework for Using ASTM Standards for UAS	This guide provides some major themes and examples for consideration related to compliance which are not necessarily captured in any single standard pertinent to UAS. The outline of this document is intended to loosely reflect the process that an organization would go through in order to reach and maintain production of UAS that is demonstrably compliant with the applicable Consensus-based standards. The guide describes the current standards and identifies gap areas to support unmanned aircraft operations for commercial purposes. A CAA may, at their discretion, use this guide to aid the development of regulations. A commercial operator may, at their discretion, use this guide to aid their applications for regulatory approval; for example, when submitting a safety case as part of a Specific Operations Risk Assessment (SORA)	ASTM F38 Unmanned Aircraft Systems	Mar-19	guide	ongoing	
M								prEN4709-4 Aerospace series - Unmanned Aircraft Systems (UAS) - Security requirements	This European standard will provide means of compliance to cover lighting related requirements for part 2 to 4 of the delegated act. The purpose is to be able to verify that an UA is equipped with lights which: •ensure controllability of the UA •ensure conspicuity of the aircraft at night, the design of the light shall allow a person on the ground to distinguish a UA from a manned aircraft The standards will address: •Definition of types, technical requirements and technical parameters of UA	ASD-STAN D5WG8	Jun-20	preEN / European standard	ongoing	
8	**FCL**													
	Remore pilot competence	EU 2019/947	**UAS.OPEN.20(4)** be performed by a remote pilot: (a) familiarised with the user's manual provided by the manufacturer of the UAS; (b) in the case of an unmanned aircraft class C1, as defined in Part 2 of the Annex to Delegated Regulation (EU) [20190306-0231] who has completed an online training course followed by	EASA	Jun-19	open and specific	Regulation applicable from 1 July 2020							
								ISO 23665 - Unmanned aircraft systems -- Training for personnel involved in UAS operations	The purpose of this international standard is that the persons who work for UAS operation receive appropriate education and obtain required knowledge and skill. Persons or educational organizations qualified according to this standard will be internationally regarded. It will enhance international operation of UAS, personal exchange and international trade.	ISO/TC 20/SC 16/WG 3	01/01/2022	Standard	ongoing	
	Remore pilot competence							ARP5707 - Pilot Training Recommendations for Unmanned Aircraft Systems (UAS) Civil Operations	This document provides an approach to the development of training topics for pilots of Unmanned Aircraft Systems (UAS) for use by operators, manufacturers, and regulators. The identification of training topics is based initially on Practical Test Standard (PTS) topics for manned aircraft pilots. The topics identified could be used for the construction of a PTS for UAS commercial pilot operations and a PTS for a UAS pilot instrument rating. The UAS commercial pilot rating would contain restrictions on the types of	SAE G-30 UAS Operator Qualifications Committee & G-10U Unmanned Aerospace Vehicle Committee		recommended practice	published	
	Remore pilot competence							ARP#### Common operator qualifications		SAE G-30 UAS Operator Qualifications Committee	May-19	recommended practice	planned	
	Remore pilot competence	EU 2019/947	**UAS.OPEN.030(2)** be performed by a remote pilot who is familiar with the user's manual provided by the manufacturer of the UAS and holds a certificate of remote pilot competency issued by the competent authority or by an entity recognised by the competent authority of the Member State of registration of the UAS operator. This certificate shall be obtained after complying with all of the following conditions and in the order indicated: (a) completing an online training course and passed the online theoretical knowledge examination as referred to in point (4)(b) of	EASA	Jun-19	open and specific	Regulation applicable from 1 July 2020							
	maintenance							ASTM WK60659 UAS Maintenance Technician Qualification	Will outline qulaifications required for skilled UAS maintenance technicians with broad understanding of supporting the continued airworthiness of UAS platforms and their subsystems.	ASTM F38 Unmanned Aircraft Systems	Jun-18	standard	ongoing	Undergoing revisions prior to ballot
	Remore pilot competence							WK61764 Training for Public Safety Remote Pilot of UAS Endorsement	To develop a standard that defines the requirements for Training for Public Safety Remote Pilot of Unmanned Aircraft Systems (UAS) Endorsement. The guide describes the knowledge, skills, and abilities required to operate unmanned aircraft for public safety purposes. A CAA may, at their discretion, use this guide to aid the development of regulations. An approved ASTM guide that describes required education, training, and continuing professional development for those performing as professional	ASTM F38 Unmanned Aircraft Systems	TBD	standard	ongoing	
	Remore pilot competence							ASTM F3266 Standard Guide for Training for Remote Pilot in Command of Unmanned Aircraft Systems (UAS) Endorsement	Establish criteria for Training and Certification of sUAS Pilots, Instructors, and School Houses. This practice defines the knowledge, skills, and abilities sUAS pilots require for the conduct training and flight operations for Small Unmanned Aircraft Sytems (sUAS) in the NAS. The Training and Certification of sUAS Pilots, Instructors, and School Houses include areas to cover pilot qualifications, training and proficiency, instructor certification, and sUAS flight training facility operations. This document sets forth standards to meet the requirements to establish quality training and certification programs, and failitate aviation safety.	ASTM F38 Unmanned Aircraft Systems	Apr-18	standard	published	
								ASTM WK61763 Training for Remote Pilot Instructor (RPI) of Unmanned Aircraft Systems (UAS) Endorsement	To develop an ASTM standard that defines the requirements for Training for Remote Pilot Instructor (RPI) of Unmanned Aircraft Systems (UAS) Endorsement. The guide describes the knowledge, skills, and abilities required to safety instruct remote pilots to operate unmanned aircraft for commercial purposes. A CAA may, at their discretion, use this guide to aid the development of regulations	ASTM F38 Unmanned Aircraft Systems	Jul-19	standard	ongoing	
								ASTM WK62733 Training and the Development of Training Manuals for the Unmanned Aircraft Systems (UAS) Operator	1.1 This specification defines the requirements for training and the development of training manuals for the unmanned aircraft systems (UAS) operator. 1.2 This specification addresses the requirements or best practices or both for documentation and organization of a professional operator (that is, for compensation and hire). 1.3 This specification supports professional entities that will receive operator certification by a civil aviation authority (CAA) and provide standards of practice for self- or third-party audit of operators of UAS. 1.4 The case study used to develop this specification focused on operators of light UAS (below 1320 lb/600 kg as	ASTM F38 Unmanned Aircraft Systems	Sep-19	standard	ongoing	
	Remore pilot competence							ASTM F3330-18 Standard Specification for Training and the Development of Training Manuals for the UAS Operator	This specification defines the requirements for training and the development of training manuals for the unmanned aircraft systems (UAS) operator.	ASTM F38 Unmanned Aircraft Systems	Nov-19	standard	publihed	
D	Remore pilot competence							Standard Specification for Training and the Development of Training Manuals for the UAS Unmanned Aircraft System						It has been published as F3266 in line 235
	Remore pilot competence							ARP5707 Pilot Training Recommendations for Unmanned Aircraft Systems (UAS) Civil Operations	1.2 The specification addresses the requirements or best practices, or both, for documentation and organization of a professional operator (that is, for compensation and hire) for the purposes of internal training programs and for programs offered to the general public.	G-30 UAS Operator Qualifications Committee & G-10U Unmanned Aerospace Vehicle Committee		recommended practice	published	
	Remore pilot competence							STANAG 7192 Ed: 1 Principles Underpinning Medical Standards for Operators of Unmanned Aerial Systems (UAS) - AAMedP-1.25, Edition A	Highlight the medical factors involved in the medical aspects of Flight Crew Licensing to enable individual nations to further their own medical standards for safe UAS operation.	NATO		standard	published	

	Remore pilot competence	EASA Decision	OSO #09 - Remote crew trained and current and able to control the abnormal and emergency situations (i.e. Technical issue with the UAS)	EASA	Oct-19	Specific	published							
	Remore pilot competence	EASA Decision	OSO #15 - Remote crew trained and current and able to control the abnormal and emergency situations (i.e. Human Error)	EASA	Oct-19	Specific	published							
	Remore pilot competence	EASA Decision	OSO #22 - The remote crew is trained to identify critical environmental conditions and to avoid them	EASA	Oct-19	Specific	published							
	Remore pilot competence	EASA Decision	OSO#16 Multi crew coordination. (Criterion #2 Training)	EASA	Oct-19	Specific	published							
	Remore pilot competence	EASA Decision	OSO#17 Remote crew is fit for the operation	EASA	Oct-19	Specific	published							
	Remore pilot competence	EASA Decision	OSO#19 Safe recovery from Human Error (Criterion #2 Training)	EASA	Oct-19	Specific	published							
	Remore pilot competence	EASA Decision	OSO#23 Environmental conditions for safe operations defined, measurable and adhered to (Criterion #1 Procedures)	EASA	Oct-19	Specific	published							
	Remore pilot competence	EASA Decision	M#1 An Emergency Response Plan (ERP) is in place, operator validated and effective (Criterion #2 Remote Crew Competences)	EASA	Oct-19	Specific	published							
A								WK62741 Training UAS Visual Observers	The purpose of this guide is to address the basic fundamental subject knowledge, task performance, and task knowledge activities and functions for visual observers of unmanned aircraft systems operations.	ASTM F38 Unmanned Aircraft Systems	Mar-19	guidance material	ongoing	
9	**Environment**													
	Noise&Environment	EU 2019/945	**Parts 2(8) and 3(10)** UAS in class C1 and C2 shall have, unless it is a fixed-wing UA, a guaranteed A-weighted sound power level LWA determined as per Part 13 not exceeding the levels established in Part 15	EASA	Jun-19	open	Regulation applicable							
10	**Autonomous operations**													
	Autonomous operations							AS6386 JAUS Autonomous Behaviors Service Set	This document, the JAUS Automated Behaviors and Diagnostics Service Set, defines a message-passing interface for services commonly found in mobile unmanned systems. These services represent the platform-independent capabilities common across all domains. Additional capabilities are specified in the JAUS Core Service Set (AS5710) and are frequently referenced herein.	SAE AS-4JAUS Joint Architecture for Unmanned Systems Committee	May-19	standard	ongoing	
	Autonomous operations							ASTM Aviation Autonomy Roadmap	Task group to matix autonomy technologies and standards between manned and unamnned aircraft.	ASTM	TBD	standards and practices	ongoing	Task Group Formed
	Development assurance (Software)							ASTM F3269 Standard Practice for Methods to Safely Bound Flight Behavior of Unmanned Aircraft Systems Containing Complex Functions	This standard practice defines design and test best practices that if followed would provide guidance to an applicant for providing evidence to the civil aviation authority (CAA) that the flight behavior of an unmanned aircraft system (UAS) containing complex function(s) is constrained through a run-time assurance (RTA) architecture to maintain an acceptable level of flight safety.	ASTM F38 Unmanned Aircraft Systems		standard	published	
M	Autonomous operations							AS8024 JAUS Autonomous Behaviors Service Set	This document, the JAUS Automated Behaviors and Diagnostics Service Set, defines a message-passing interface for services commonly found in mobile unmanned systems. These services represent the platform-independent capabilities common across all domains. Additional capabilities are specified in the JAUS Core Service Set (AS5710) and are frequently referenced herein.	SAE AS-4JAUS Joint Architecture for Unmanned Systems Committee	May-19	standard	ongoing	The title will change to "JAUS Autonomous Capabilities Service Set"
	Noise&Environment	EU 2019/945	**Parts 2(9) and 3(11)** UAS in class C1 and C2 shall have, unless it is a fixed-wing UA, the indication of the guaranteed A-weighted sound power level affixed on the UA and/or its packaging as per Part 14;	EASA	Jun-19	open	Regulation applicable							
	Noise&Environment	EU 2019/945	**Part 4(6)** UAS in class C3 shall have, unless it is a fixed-wing UA, the indication of the guaranteed A-weighted sound power level LWA determined as per Part 13 affixed on the UA and/or its packaging as per Part 14;	EASA	Jun-19	open	Regulation applicable							