



AIRCRAFT AND SPACE VEHICLES / SPACE SYSTEMS AND OPERATIONS

Operations and Support Systems Working Group (WG3)

ISO TC20 / SC14 - WG3

WG3 & WG7 Terms Multiple Defined in SC14 Standards

WG3/WG7 Joint Session – Spring 2020 Meeting

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Introduction

- Started from the SC14 data extracted May-20 from the Ukrainian database
- First focus limited to multiple defined terms in WG3/WG7 documents
- Alignment recommendations proposed. **WG3/WG7 members asked to provide feedback** before submission to SC14 Manager and other WG convenors

- **Controlled re-entry**
- **Customer**
- **Decay phase**
- **Disposal**
- **Disposal manoeuvre**
- **Failure**
- **Geostationary Earth orbit (GEO)**
- **Ground support equipment (GSE)**
- **Hazard analysis**
- **Integration site**
- **Interface**
- **Interface control document (ICD)**
- **Launch pad**
- **Launch vehicle, launcher**
- **Launch vehicle orbital stage**
- **Lift-off**
- **Meteoroid**
- **Orbit lifetime**
- **Orbital debris / Space debris**
- **Particle concentration**
- **Particle size**
- **Passivation**
- **Preventive maintenance**
- **Product**
- **Protected region**
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- **Root-cause**
- **Safety**
- **Safety factor**
- **Security**
- **Space object**
- **Space segment**
- **Spacecraft**
- **Subsystem**
- **Testability**



Term “**controlled re-entry**” (WG3, WG7)

Standard	Definition	Harmonisation proposal	10795(WG5)
16699 (WG3) ref. 16127	manoeuvring a space system in a controlled manner into a targeted re-entry with a welldefined impact footprint on the surface of the Earth to limit the possibility of human casualty Note 1 to entry: This generally means that the object will re-enter the Earth's atmosphere less than one orbit revolution from the time of initiation of the final deorbit manoeuvre.	see 24113 definition align 16699 (WG3)	type of re-entry (3.22) where the time of re-entry is sufficiently controlled so that the impact of any surviving debris on the surface of the Earth is confined to a designated area Note 1 to entry: The designated area is usually an uninhabited region such as an ocean
24113 (WG7)	type of re-entry where the time of re-entry is sufficiently controlled so that the impact of any surviving debris on the surface of the Earth is confined to a designated area Note 1 to entry: The designated area is usually an uninhabited region such as an ocean.	OK	



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Term “customer” (WG3, WG5)

Standard	Definition	Harmonisation proposal	10795(WG5)
26870 (WG3)	firm that awards the design specification or work task and finances the work	see ISO 10795 (WG5) (= ISO 9000) align 26870 (WG3), 20892 (WG5)	person or organization (3.163) that could or does receive a product (3.173) or a service that is intended for or required by this person or organization EXAMPLE Consumer, client, end-user, retailer, receiver of product or service from an internal process (3.171), beneficiary and purchaser (3.182). Note 1 to entry: A customer can be internal or external to the organization. [SOURCE: ISO 9000:2015, 3.2.4]
20892 (WG5)	<modernization> organization which owns or manages an LC and makes a contract with the main executor for launch complex modernization (3.1) or its components	see ISO 10795 (WG5) (= ISO 9000) align 26870 (WG3), 20892 (WG5)	



Term “decay phase” (WG3)

Standard	Definition	Harmonisation proposal	10795(WG5)
16164 (WG3)	period that begins at the end of life of a spacecraft, when it has been placed into its disposal orbit, and ends when the spacecraft has performed a re-entry Note 1 to entry; Only applies for spacecraft performing re-entry.	see 16699 align 16164 (WG3) This term should be added in 10795 (WG5) To be noted that “decay orbit” is already defined in 16697 (WG7)	
16699 (WG3)	decay phase period that begins at the end of the operational phase of a space system, when it has been placed into its decay orbit, and ends when the space system has performed a re-entry Note 1 to entry: This only applies for space systems performing re-entry	OK	



Term “disposal” (WG7)

Standard	Definition	Harmonisation proposal	10795(WG5)
24113 (WG7)	actions performed by a spacecraft (3.25) or launch vehicle orbital stage (3.13) to permanently reduce its chance of accidental break-up (3.2) and to achieve its required longterm clearance of the protected regions (3.21) Note 1 to entry: Actions can include removing stored energy and performing post-mission orbital manoeuvres.	OK This term should be added in 10795 (WG5)	
16126 (WG7)	actions performed by a spacecraft to permanently reduce its chance of accidental break-up, and to achieve its required long-term clearance of the protected regions	see new 24113 align 16126 (WG7)	



Term “disposal manoeuvre” (WG3, WG7)

Standard	Definition	Harmonisation proposal	10795(WG5)
24113 (WG7)	action of moving a spacecraft (3.25) or launch vehicle orbital stage (3.13) to a different orbit as part of its disposal (3.5)	OK?	
16164 (WG3)	action of moving a spacecraft to its disposal orbit	disposal is not necessarily changing the altitude only: could also be e.g. the resonance corridor in LEO...) see new 24113 align 16164 & 23339 (WG3) This term should be added in 10795 (WG5)	
23339 (WG3)	orbital manoeuvre that disposes of a spacecraft from the protected regions by either decreasing or increasing the altitude of the spacecraft		

Proposed definition:

action of altering the orbital characteristics of a spacecraft or a launch vehicle orbital stage as part of its disposal.

NOTE-1: for GEO, orbital manoeuvre is accomplished by either decreasing or increasing the altitude of the spacecraft to directly remove it from the GEO protected region.

NOTE-2: for LEO, the orbital manoeuvre could also create conditions which would ensure its vacating within the mandated timeframe (e.g. modifying eccentricity or introducing orbit resonances suitable for a decay orbit).



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Term “disposal” (WG3, WG5)

Standard	Definition	Harmonisation proposal	10795(WG5)
16159 (WG3)	termination of the ability of an item to perform the function for which it was designed	see 10795 (WG5) (=IEC 60050) align 16159 (WG3) and 14620-2 (WG5)	termination of the ability of an item (3.134) to perform a required function (3.110)



Term “**geostationary Earth orbit (GEO)**” (WG4, WG7)

Standard	Definition	Harmonisation proposal	10795(WG5)
24113 (WG7)	Earth orbit (3.8) having zero inclination, zero eccentricity, and an orbital period equal to the Earth's sidereal rotation period	OK This term should be added in 10795 (WG5)	
14200 (WG4)	Earth orbit having zero inclination and zero eccentricity; whose orbital period is equal to the Earth's sidereal rotation period [SOURCE: ISO 24113:2011, definition 3.8]	see new 24113 align 14200 (WG4)	



Term “ground support equipment (GSE)” (WG2, WG3, WG5, WG6)

Standard	Definition	Harmonisation proposal	10795(WG5)
14625 (WG3)	non-flight systems, equipment or devices necessary to support the operations of transporting, receiving, handling, assembly, inspection, test, checkout, servicing, launch and recovery of a space system at launch, landing or retrieval sites	OK? Review 14625 (WG3) and align 10795 accordingly.	[SOURCE: ISO 14625:2007, 3.1.5] 10795 (WG5) =14625 (WG3)
14624-6 (WG6)	equipment used in the processing and preparation of flight hardware	align 14624-6 (WG6), 17689 (WG2), 27025 (WG5)	
17689 (WG2)	units and systems necessary for the prelaunch operations and operations for launch of payload and launch vehicle (rocket fuelling systems, gas supply systems, thermostating systems, launch pad, units for LV installation on launch pad, ground support equipment control systems, etc.)		
27025 (WG5)	optical, mechanical, fluidic, electrical and software support equipment or systems used, for example, for calibration, measurements, testing, simulation, transportation and handling of space segments or of space segment elements		

Proposed definition:

Non-flight hardware and any related software used on the ground for transporting, receiving, handling, assembling, calibrating, measuring, simulating, inspecting, verifying, testing, checkout, servicing, maintaining, protecting, launching and/or recovering launch segments and space segments.



Term “**hazard analysis**” (WG3, WG5)

Standard	Definition	Harmonisation proposal	10795(WG5)
26870 (WG3)	document that identifies the hazards associated with the operation of a system or component, the likelihood and consequences of their occurrence, and the procedures for preventing their occurrence and mitigating their consequences	<p>see 10795 (WG5) (=14620-1 (WG5))</p> <p>align 26870 (WG3)</p> <p>Note: is the definition needed? Definition "hazard" might be sufficient...</p>	determination of potential sources of danger, causes (3.35), effects, hazard (3.120) level, and recommended resolution for those conditions found in either the hardware (3.119)/software (3.217) system (3.234), the person-machine relationship, or both, that can cause loss of personnel capability, loss of system, or loss of life/injury to the public



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Term “**integration site**” (WG2, WG3)

Standard	Definition	Harmonisation proposal	10795(WG5)
17400 (WG3)	equipment and facility designed for launch vehicle storage, assembly, testing, preparation, maintenance, servicing and preparation for transportation to the launch pad	used (aligned) in: 16159 (WG3), 24917 (WG2), 26870 (WG3) This term should be added in 10795 (WG5)	



Term “interface” (WG3, WG5)

Standard	Definition	Harmonisation proposal	10795(WG5)
15389 (WG3)	region of mating or boundary between separating or cooperating elements established by a governing characteristic EXAMPLES Ground-to-vehicle interface, physical interface, or responsibility interface.	TBD ECSS Definition: “boundary where two or more products meet and interact”	mechanical, thermal, electrical, or operational common boundary between two elements of a system (3.234)



Term “**interface control document (ICD)**” (1/2) (WG2, WG3, WG5, WG6)

Standard	Definition	Harmonisation proposal	10795(WG5)
15388 (WG6)	specification that describes the characteristics that must be controlled at the boundaries between systems, subsystems and other elements	OK? see 10795 (WG5) = 15388 (WG3)	specification (3.227) that describes the characteristics (3.41) that must be controlled at the boundaries between systems (3.234), subsystems (3.231) and other elements [SOURCE: ISO 15388:2012, 3.1.27]
16158 (WG3)	formal means of describing the inputs and outputs of a system, the interfaces among systems, or the protocols among physical or electronic elements of an entity	align 11892 (WG2), 16158 (WG3), 17689 (WG2), 24917 (WG2)	
17689 (WG2)	document which describes mechanical, hydraulic, pneumatic, thermal, electric and other parameters of interfaces between ground support equipment and launch vehicle, items of ground support equipment, ground support equipment and launch site objects (building constructions with technical systems), and which is used to control these parameters		



Term “**interface control document (ICD)**” (2/2) (WG2, WG3, WG6)

Standard	Definition	Harmonisation proposal	10795(WG5)
11892 (WG2) subsystems to spacecraft ICD	set of documents that defines and controls the electrical, thermal, and mechanical interface requirements between a subsystem and the spacecraft system (SC) NOTE Figure 1 illustrates the hierarchy of a space system and the ranges where various interface control documents are applicable.	Delete definition Refer to definition „ICD“	
24917 (WG2) ICD for GSE	document of launcher and fairing/payload which defines all physical, electrical and mechanical interfaces between the payload and the launch vehicle hardware and software, and interfaces between payload and support equipment and space site facilities, systems and hardware used for spacecraft launch preparation	Delete definition Refer to definition „ICD“	



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Term “**launch pad**” (WG2, WG3)

Standard	Definition	Harmonisation proposal	10795(WG5)
17400 (WG3)	equipment and facility designed to provide for the pre-launch and launch operations of spacecraft	used (aligned) in: 16159 (WG3), 24917 (WG2), 26870 (WG3)	
		This term should be added in 10795 (WG5)	



Term “launch vehicle” (WG1, WG2, WG5, WG7) (1/2) & “launcher”, “rocket unit”, “space LV”, “space rocket”

Standard	Definition	Harmonisation proposal	10795(WG5)
24113 (WG7) 26871 (WG1)	launch vehicle DEPRECATED: launcher system designed to transport one or more payloads into outer space	Review and align 10795 (WG5) accordingly The terms “launcher”, “rocket unit”, “space LV”, “space rocket” should be combined and relevant standards accordingly updated	launcher launch vehicle vehicle designed to transport payloads (3.165) to space [SOURCE: EN 16601-00-01:2015, 2.3.127, modified – NOTE 1 has been removed; the term “launch vehicle” has been added as an alternative.]
14622 (WG1)	one or more space flight vehicle stages capable of launching one or more space vehicles and placing them in orbit	See 24113 (WG7) align 10789 (WG5), 14622 (WG1), 17689 (WG2), 24917 (WG1), 26871 (WG1)	
17689 (WG2)	any vehicle constructed for the purpose of operating in outer space, or placing one or more payloads in outer space, as well as any suborbital rocket		

Proposed definition: Launch Vehicle (LV)
vehicle designed to transport payloads into space.
NOTE-1: The terms “launcher” and “rocket unit” are synonymous.
NOTE-2: The term “space rocket” is used in some countries such as Russia to refer to a launch vehicle equipped with its payload(s).



Term “**launch vehicle**” (WG1, WG2, WG5, WG7) (2/2) & “**launcher**”, “**rocket unit**”, “**space LV**”, “**space rocket**”

Standard	Definition	Harmonisation proposal	10795(WG5)
24917 (WG2) rocket unit	space launch vehicle stage including the upper stage vehicle, body, propulsion system, control systems or control system elements, rocket units separation aids and telemetry hardware	Refer to "launch vehicle" (proposed NOTES) See also 10795 (WG5) definition “launcher stage”	launcher launch vehicle vehicle designed to transport payloads (3.165) to space
24917 (WG2) space launch vehicle	component of the space rocket designed for payload injection in a pre-assigned trajectory or orbit	Refer to "launch vehicle" (proposed NOTES)	
24917 (WG2) space rocket	space launch vehicle plus space nose section integration	Refer to "launch vehicle" (proposed NOTES)	

Proposed definition: Launch Vehicle (LV)
vehicle designed to transport payloads into space.
NOTE-1: The terms “launcher” and “rocket unit” are synonymous.
NOTE-2: The term “space rocket” is used in some countries such as Russia to refer to a launch vehicle equipped with its payload(s).



Term “**launch vehicle orbital stage**” (WG4, WG7)

Standard	Definition	Harmonisation proposal	10795(WG5)
24113 (WG7)	complete element of a launch vehicle (3.12) that is designed to deliver a defined thrust during a dedicated phase of the launch vehicle’s operation and achieve orbit Note 1 to entry: Non-propulsive elements of a launch vehicle, such as jettisonable tanks, multiple payload structures or dispensers, are considered to be part of a launch vehicle orbital stage while they are attached.	see 24113 (WG7) This term should be added in 10795 (WG5)	
14200 (WG4)	stage of a launch vehicle that is designed to achieve orbit [SOURCE: ISO 24113:2011, definition 3.9]	see new 24113 align 14200 (WG4)	



Term “lift-off” (WG2, WG3)

Standard	Definition	Harmonisation proposal	10795(WG5)
15389 (WG3)	term designating the instant of flight at which the vehicle's contact is terminated with all areas of hold-down and/or support devices NOTE Lift-off is commonly called "first motion" of the vehicle.	see 15862 (WG2) align 15389 (WG3)	
15862 (WG2)	launch vehicle motion when the vehicle's contact is terminated with launch pad or other support devices NOTE This is commonly called “first motion” of the vehicle. Possible abnormal cut-off is also included.	This term should be added in 10795 (WG5)	



Term “**meteoroid**” (WG4, WG7)

Standard	Definition	Harmonisation proposal	10795(WG5)
11227 (WG7)	particles of natural origin, resulting from the disintegration and fragmentation of comets and asteroids, which orbit the sun	OK This term should be added in 10795 (WG5)	
14200 (WG4)	particles of natural origin that result from the disintegration and fragmentation of comets and asteroids which orbit round the sun	see 11227 (WG7) align 14200 (WG4)	



Term “orbit lifetime” (WG3, WG7)

Standard	Definition	Harmonisation proposal	10795(WG5)
24113 (WG7)	<p>elapsed time between an orbiting space object's (3.24) initial or reference position and its reentry (3.22)</p> <p>Note 1 to entry: Examples of "initial position" are the injection into orbit of a spacecraft (3.25) or launch vehicle orbital stage (3.13), or the instant when space debris (3.23) is generated.</p> <p>An example of a "reference position" is the orbit of a spacecraft or launch vehicle orbital stage at the end of mission (3.10).</p>	<p>OK</p> <p>This term should be added in 10795 (WG5)</p>	
27852 (WG3)	<p>elapsed time between the orbiting satellite's initial or reference position and orbit demise/reentry</p> <p>Note 1 to entry: An example of the orbiting spacecraft's reference position is the postmission orbit.</p> <p>Note 2 to entry: The orbit's decay is typically represented by the reduction in perigee and apogee altitudes (or radii) as shown in Figure 1.</p>	<p>see new 24113 align 27852 (WG3)</p>	



Term “orbital/space debris” (WG3, WG4, WG5, WG7)

Standard	Definition	Harmonisation proposal	10795(WG5)
24113 (WG7)	space debris / DEPRECATED: orbital debris objects of human origin in Earth orbit (3.8) or re-entering the atmosphere, including fragments and elements thereof, that no longer serve a useful purpose Note 1 to entry: Spacecraft (3.25) in reserve or standby modes awaiting possible reactivation are considered to serve a useful purpose.	OK. 10795 (WG5) is aligned.	space debris / DEPRECATED: orbital debris Same as 24113:2019 (WG7)
16126 (WG7)	orbital/space debris (preferred term) man-made objects, including fragments and elements thereof, in Earth orbit or re-entering the atmosphere, that are non-functional	see 24113 (WG7) and align 14200 (WG4), 16126 (WG7), 23339 (WG3),	
23339 (WG3)	orbital debris / space debris all man-made objects, including fragments and elements thereof, in Earth orbit or reentering the atmosphere, that are non-functional		
14200 (WG4)	(orbital debris) man-made objects, including fragments and elements thereof, in Earth’s orbit or reentering the atmosphere, that are non-functional		



Term “particle concentration” (WG3, WG6)

Standard	Definition	Harmonisation proposal	10795(WG5)
15860 (WG3)	number of separate aerosol particles of specified size in a unit of gas volume	Combine and align definitions 15860 (WG3) and 15388 (WG6)	
15388 (WG6)	⟨on surface⟩ number of particles per unit area ⟨by volume⟩ number of particles per unit volume of fluid	More generic definition proposed...	

This term should be added in 10795 (WG5)

Proposed definition: „particle concentration“
number of individual particles per unit of surface area (on surface) or per unit volume (by volume) of consideration.



Term “particle size” (WG3, WG6)

Standard	Definition	Harmonisation proposal	10795(WG5)
15860 (WG3)	particle maximum linear size measured by an optical microscope or particle equivalent size received with the help of automatic instruments	see 14952-1 (WG6) align 15860 (WG3)	
14952-1 (WG6)	<manual method> apparent maximum linear dimension of a particle in the plane of observation as observed with instruments such as optical, electron, or atomic force microscopes. <automatic method> equivalent diameter of a particle detected by automatic instrumentation NOTE The equivalent diameter is the diameter of a reference sphere having known properties and producing the same response in the sensing instrument as the particle being measured	OK. also used in 15368 (WG6) This term should be added in 10795 (WG5)	



Term “**passivation**” (WG3, WG6, WG7)

Standard	Definition	Harmonisation proposal	10795(WG5)
16127 (WG7)	elimination of all stored energy on a space system to reduce the chance of break-up Note 1 to entry: Typical passivation measures include venting or burning excess propellant, discharging batteries, and relieving pressure vessels.	OK. This term should be added in 10795 (WG5)	
14952-1 (WG6)	process by which a corrosive-resistant layer is bonded to a metal surface by submersing the surface in an acid solution	see 16127 (WG3) align 14952-1 (WG6), 16164 (WG3), 16699 (WG3)	
16164 (WG3)	act of permanently depleting or making safe all remaining on-board sources of stored energy in a controlled sequence		
16699 (WG3)	elimination of all stored energy on a space system to reduce the chance of break-up Note 1 to entry: Typical passivation measures for spacecraft include venting or burning excess propellant, discharging batteries, and relieving pressure vessels (see ISO 16127 for examples).		



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Term “preventive maintenance” (WG3)

Standard	Definition	Harmonisation proposal	10795(WG5)
26870 (WG3)	activities required to maintain an item in a satisfactory operating condition	Align with ECSS. see ECSS-Q-ST-30-09 definition	

Proposed definition: „preventive maintenance“
scheduled or on-condition maintenance actions performed on equipment
to reduce its probability of failure or degradation
NOTE Preventive maintenance is performed to keep the system at
designed reliability and safety levels before failure occurrence..



Term “product” (WG3, WG5)

Standard	Definition	Harmonisation proposal	10795(WG5)
14711 (WG3)	process, document, software tool, workstation, facility, procedure, or training aid that the operations organization develops to support their operation of the space system	<p>see 10795 (WG5) = ISO 9000</p> <p>align 14711 (WG3)</p>	<p>output of an organization (3.163) that can be produced without any transaction taking place between the organization and the customer (3.78)</p> <p>Note 1 to entry: Production of a product is achieved without any transaction necessarily taking place between provider and customer, but can often involve this service element upon its delivery to the customer.</p> <p>Note 2 to entry: The dominant element of a product is that it is generally tangible.</p> <p>Note 3 to entry: Hardware (3.119) is tangible and its amount is a countable characteristic (3.41) (e.g. tyres). Processed materials (3.148) are tangible and their amount is a continuous characteristic (e.g. fuel and soft drinks). Hardware and processed materials are often referred to as goods. Software (3.217) consists of information regardless of delivery medium (e.g. computer programme (3.177), mobile phone app, instruction manual, dictionary content, musical composition copyright, driver’s license).</p> <p>[SOURCE: ISO 9000:2015, 3.7.6].</p>



Term “protected region” (WG3, WG7)

Standard	Definition	Harmonisation proposal	10795(WG5)
24113 (WG7)	region in outer space that is protected with regard to the generation of space debris (3.23) to ensure its safe and sustainable use in the future	OK This term should be added in 10795 (WG5)	
16126 (WG3)	region in space that is protected with regard to the generation of space debris to ensure its safe and sustainable use in the future [SOURCE: ISO 24113:2011, 3.14]	see new 24113 align 16126 (WG3)	



Term “re-entry” (WG5, WG7)

Standard	Definition	Harmonisation proposal	10795(WG5)
24113 (WG7)	permanent return of a space object (3.24) into the Earth’s atmosphere Note 1 to entry: Several alternative definitions are available for the delineation of a boundary between the Earth’s atmosphere and outer space	10795 need to be aligned	return of a spacecraft (3.224) or other space object into the Earth’s atmosphere Note 1 to entry: Several alternative definitions are available for the boundary between the Earth’s atmosphere and outer space.
16126 (WG7)	process in which atmospheric drag cascades deceleration of a spacecraft (or any part thereof), leading to its destruction or return to Earth [SOURCE: ISO 24113:2011, 3.15, modified]	see 24113 (WG7) align 10795 (WG5) and 16126 (WG7)	



Term “**root-cause**” (WG3, WG5)

Standard	Definition	Harmonisation proposal	10795(WG5)
16159 (WG3)	primal condition, event or circumstance, or initiating cause, that is ultimately responsible for the occurrence of a failure	see 18238 (WG5) align 16159 (WG3)	
18238 (WG5)	original event, action, and/or condition resulting in an actual or potential undesirable condition, situation, nonconformity or failure Note 1 to entry: There are often several root causes for one problem	NOTE: term could be further aligned with "common-cause failure"	



Term “**safety**” (WG3, WG5)

Standard	Definition	Harmonisation proposal	10795(WG5)
14950 (WG3)	extent of on-board protection against failure and the provision of fail-safe modes of operation	see 10795 (WG5) align 14950 (WG3)	state where an acceptable level of risk (3.206) is not exceeded Note 1 to entry: Risk relates to: <ul style="list-style-type: none">– fatality,– injury or occupational illness,– damage to launcher (3.139) hardware (3.119) or launch site facilities,– damage to an element of an interfacing manned flight system (3.234),– the main functions (3.110) of a flight system itself,– pollution of the environment (3.92), atmosphere or outer space, and– damage to public or private property. [SOURCE: EN 16601-00-01:2015, 2.3.178]



Term “**safety factor**” (WG1, WG3)

Standard	Definition	Harmonisation proposal	10795(WG5)
14625 (WG3)	ratio of ultimate strength, breaking strength or yield strength to the material design limit stress	align definitions 14622 / 14625 / 14953	
14622 (WG1)	coefficient by which the limit load (or pressure) is multiplied so as to account for any inaccuracies in the ki statistical distribution of the load (or pressure) and strength value NOTE These inaccuracies are due to: - the limited number of observations or tests used to estimate these distributions; - calculation inaccuracies. EXAMPLE If F represents the estimated statistical distribution of loads (or pressures) and R the estimated stat distribution of strengths and that, relative to these estimated distributions, F1 is the limit load and R1 the allowable str (ultimate or yield strength), the corresponding safety factor is: $J=R1/F1$	Consider to add NOTES related to FOSU (ultimate design factor of safety) and FOSY (yield design safety factor)	
14953 (WG1)	coefficient by which a limit load is multiplied		



Term “security” (WG3, WG5)

Standard	Definition	Harmonisation proposal	10795(WG5)
14950 (WG3)	extent of on-board protection against unauthorized access to on-board telecommand functions, jamming of the telecommand channel, or corruption of the telecommand data, unauthorized access to telemetry data, or the corruption of these data	<p>align definitions 10795 / 14950</p> <p>Definition 14950 is too specific... e.g. transform 14950 in a note to be added to 10795?</p> <p>Definition ECSS seems to be more relevant compared to 10795): “state where an acceptable level of risk arising from malevolent action is not exceeded”</p>	protection from unauthorized access or uncontrolled losses or effect



Term “space object” (WG3, WG5, WG7)

Standard	Definition	Harmonisation proposal	10795(WG5)
24113 (WG7)	object of human origin which has reached outer space	Definition to be reviewed. Once revised, this term should be added in 10795 (WG5)	
14620-2 (WG5)	space vehicle of artificial earthly origin and any of its component parts, except space debris, if any	see 24113 (WG7) align 14620-2 (WG5) and 27852 (WG3)	
27852 (WG3)	man-made object in outer space		



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Term “**space segment**” (WG3, WG5)

Standard	Definition	Harmonisation proposal	10795(WG5)
14950 (WG3)	those elements of the overall mission system that are operated in outer space	see 10795 (WG5) align 14950 (WG3)	part of a space system (3.223), placed in space, to fulfil the space mission (3.220) objectives [SOURCE: EN 16601-00-01:2015, 2.3.193]



Term “**spacecraft**” (WG1, WG2, WG3, WG4, WG5, WG7) (1/2)

Standard	Definition	Harmonisation proposal	10795(WG5)
24113 (WG7)	system designed to perform a set of tasks or functions in outer space, excluding launch vehicle (3.12)	OK: 24113 (WG7) 10795 (WG5) need to be aligned.	manned or unmanned vehicle designed to orbit or travel in space Note 1 to entry: A spacecraft is a space segment element (3.222). [SOURCE: EN 16601-00-01:2015, 2.3.199]
14200 (WG4)	system designed to perform specific tasks or functions in space	align 10795 (WG5), 14200 (WG4), 14302 (WG1), 14950 (WG3), 15864 (WG2), 16126(WG7), 20188	
14302 (WG1)	space vehicle which includes launcher, orbiting platform and probe(s)	„satellite“ WG5), 23339 (WG3), 26871 (WG1), 26872 (WG3)	
14950 (WG3)	all subsystems (sometimes called the platform, the service module or the bus) plus any experiment or payload elements (sometimes called the payload module)		
15864 (WG2)	vehicle of an integrated set of subsystems and units capable of supporting an operational role in space		
16126 (WG7)	system designed to perform specific tasks or functions in space		



Term “spacecraft” (WG1, WG2, WG3, WG4, WG5, WG7) (2/2)

Standard	Definition	Harmonisation proposal	10795(WG5)
20188 (WG5) Commercial satellite	satellite used for private business Note 1 to entry: Non-commercial satellite is military satellite or civil satellite developed on behalf of government organization, space agency and/or research organization.	Refer to „spacecraft“ see 24113 (WG7) (the term "commercial" is not necessary to be defined. Oxford dictionary is sufficient)	
23339 (WG3)	system designed to perform specific tasks or functions in space NOTE A spacecraft that can no longer fulfil its intended mission is considered nonfunctional. Spacecraft in reserve or standby modes awaiting possible reactivation are considered functional.	align 10795 (WG5), 14200 (WG4), 14302 (WG1), 14950 (WG3), 15864 (WG2), 16126(WG7), 20188 „satellite“ WG5), 23339	
26871 (WG1)	satellite or other orbiting vehicle with self-propulsion	(WG3), 26871 (WG1), 26872 (WG3)	
26872 (WG3)	manufactured object or vehicle intended to orbit the Earth, the moon or another celestial body		
26872 (WG3)	system designed to perform a set of tasks or functions in outer space, excluding launch vehicles		



Term “**subsystem**” (WG1, WG2, WG3, WG5, WG6)

Standard	Definition	Harmonisation proposal	10795(WG5)
14392 (WG1)	<p>any electrical, electronic, or electromechanical device or integration of such devices intended to operate as an individual unit and performing a specific set of functions</p> <p>NOTE Generally, a piece of equipment is housed within a single enclosure, while a subsystem may consist of several interconnected units.</p>	<p>see 10795 (WG5)</p> <p>align 11892 (WG2), 14392 (WG1), 14950 (WG3), 14952-1 (WG6), 15864 (WG2)</p>	<p>set of interdependent elements constituted to achieve a given objective by performing a specified function (3.110), but that does not, on its own, satisfy the customer's (3.78) requirement (3.201)</p>
11892 (WG2)	<p>assembly or group of electrical, thermal and/or mechanical units which is dedicated to specific functions of a spacecraft system (SC)</p>		
14950 (WG3)	<p>any combination of units within the spacecraft platform that fulfils a well-defined and usually self-contained set of onboard functions</p>		
14952-1 (WG6)	<p>two or more assemblies (2.2) joined together to perform a definite function</p> <p>NOTE A subsystem should be capable of independent operation when interconnected into a system (2.30).</p>		
15864 (WG2)	<p>assembly of functionally related units</p>		



Term “testability” (WG1, WG3, WG5)

Standard	Definition	Harmonisation proposal	10795(WG5)
14950 (WG3)	capability and ease with which the functions of the spacecraft and its interfaces and compatibility with ground systems can be verified and validated NOTE In particular, this relates to functions that do not form part of the current operational chains (i.e. redundant functions).	OK term should be added in 10795 (WG5)	
18257 (WG1)	ability to perform function and performance testing of the circuit, position the failure of the circuit and select qualified circuit chip as soon as possible	see 14950 (WG3) align 18257 (WG1)	