Alliance for European Autonomous Access to Space

From EU Soil to Outer Space: Regulation as an enabler for Spaceports

AEAAS REPORT ON REGULATORY PRACTICES, KPIs, STANDARDS AND GUIDELINES – ANALYSIS AND DISTILLATION

September 2026

Down selecting the practices, KPIs, standards and guidelines for progression to future Project analysis

Deliverable D3

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VOLUME 1: Introduction

1.1. Introduction

This Report is part of the deliverable portfolio of the Alliance for European Autonomous Access to Space ("AEAAS" or "Consortium"), an initiative directed at enhancing the European Union's autonomy and competitiveness in access to space through fit-for-purpose regulatory practices (the "Project"). It describes the first analytical review of the outputs from Deliverable D2 (*AEAAS Report on Worldwide Regulatory Practices, Trends and Challenges of Regulating Spaceports*) and defines the input data for further analysis during the Project's subsequent work packages, building up to the final deliverable: a proposal for a common regulatory framework for the European Union.

Deliverable D2 (available here) provided a set of regulatory practices, standards and guidelines, drawn from examination of global regulatory regimes. This Report, and its supporting task, are essentially the analytical bridge between the D2 Report and the next Project phase. It refines the expansive data to enable more honed and focused analysis during the next and future work packages. In the case of the practices, a "sifting" process has been used to focus on credible and influencing practices, remove duplication and conduct an initial gap analysis. The product of this work is a refined set of "candidate best practices" for progression to future tasks, where they will be assessed against a set of KPIs, which are also developed in this Report. The analysis of the standards and practices is subtly different. All the D2 identified standards and guidelines will be progressed to the next stage of analysis, but those that have a clear and direct alignment with the KPIs are highlighted in this report. Additionally, several modern and/or specialised standards and guidelines that fill operational gaps are also identified.

The report is broken down into Volumes, each dealing with a specific subject matter. The first Volume is this introduction. Volume 2 deals with the practices, outlining the methodology used to sift and down-select the practices for progression to the next phases of analysis, concluding with the full list of candidate best practices. The third Volume focused on the Outcome KPIs including discussion of the KPI motivations, descriptions and rubrics, and how they are aligned to the seven Pillars (detailed in section 3.1.1). Volume 4 covers the analysis of the standards and guidelines drawn from the D2 output, supplementing the list with modern and/or specialised standards and guidelines to ensure the list that progresses is contemporary, finishing with a comprehensive table of the selected standards and guidance for progression. Finally, Volume 5 reflects on the findings of the Task and how they will be processed in Tasks 9.1 and 10.1 in preparation for Deliverable D4.

VOLUME 2: Practice analysis, sift and down selection

2.1. Sifting Methodology and Audit Traceability

The D2 Report produced a consolidated list of 266 international regulatory practices, for consideration by Work Package 3. The first step in the WP3 process was to "sift" the D2 practices output against some high-level criteria to provide an auditable down-selection of "candidate practices" for progression to the next analytical tasks. This analytical step is shown in **Error! Reference source not found.**. The purpose of this w as to filter out practices that would never be perceived as good practice, from the regulatory and/or operator perspectives, despite the fact that they may be in use somewhere in the world.

The Candidate Practice down-selection process utilized an MS Excel® based 'Sift Tool'. Every D2 output practice was assessed and scored against several high-level evaluation criteria (in line with the Requirments of Task 8), intended to test the practice for its legislative/regulatory value and /or ease of operator utilisation. The sift questions were:

- Is the practice:
  - Simple to legislate for, pan-EU?
  - Easy to articulate as a pan-EU regulation?
  - Easy to implement, pan-EU?
  - Portable across borders?
  - Simple to engage with and interpret?
  - Cost-effective for the operator?
  - Giving the operator certainty?
  - Aligned to a One Stop Shop approach?

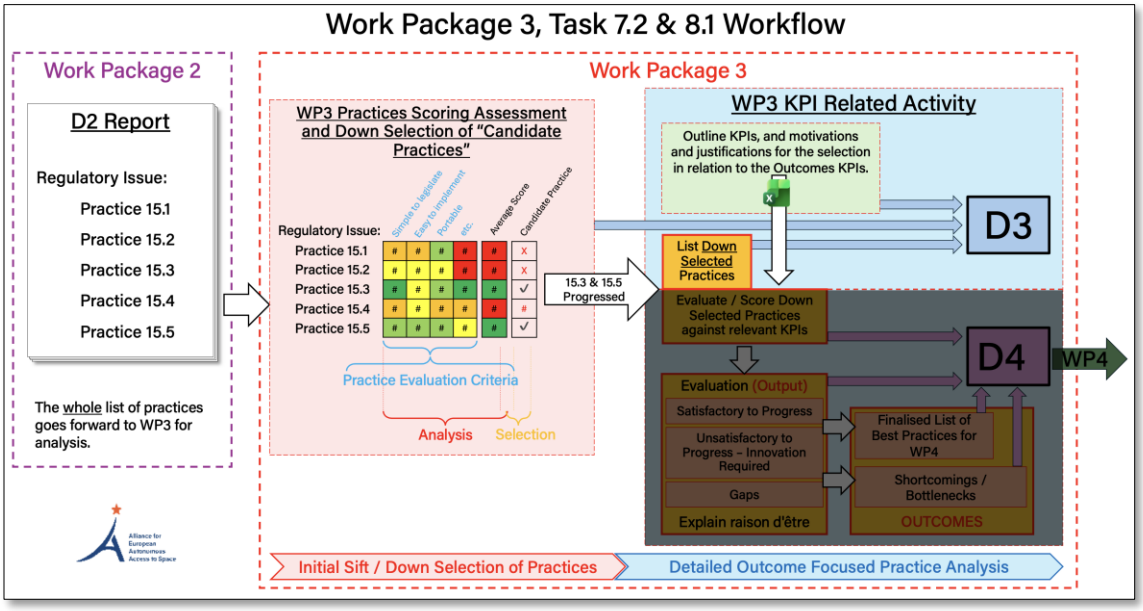


Figure 1. The WP3 process highlighting the "sift" analysis step

A supplementary innovation question was also provided to ensure that the reviewers could *force* through a poorly scoring but important practice:

- Poor practice but worth progressing with required innovation?

To Guide the evaluators, the following scoring metrics we applied (Figure 2):

Grading Guide:		1	2	3	4	5
EU Autonomy – Is the practice:						
C1	Simple to legislate for, pan-EU?	Extremely difficult, too costly and/or take too long to exploit for EU.	Poor practice – could be made fit for EU with significant effort.	Neither simple nor difficult.	Good practice – would require modest effort to develop legislation for the EU.	Excellent practice - simple, cost-effective and swift to develop legislation for the EU.
C2	Easy to articulate as a pan-EU regulation?	Extremely difficult to articulate, too costly and/or take too long to exploit for EU.	Poor practice – could be made fit for EU with significant effort.	Neither easy nor difficult.	Good practice – would require modest effort to articulate and EU equivalent.	Excellent practice - easy, cost-effective and swift to articulate an EU equivalent.
C3	Easy to implement, pan-EU?	Extremely difficult to implement, too costly and/or take too long to exploit for EU.	Poor practice – could be made fit for EU with significant effort.	Neither easy nor difficult.	Good practice – would require modest effort to implement successfully across the EU.	Excellent practice - easy, cost-effective and swift to implement an EU equivalent.
C4	Portable across borders?	Unlikely to ever be accepted as portable for EU.	Poor practice – could be made fit for EU with significant effort.	Neutral.	Good practice – would require modest effort to implement successfully across the EU.	Excellent practice - would be accepted as portable, as is, for the EU.
Competitiveness (Operator Useability) – Is the practice:						
C5	Simple to engage with and interpret?	Difficult for operators to understand and use.	Poor practice – takes time and effort to understand making it uncompetitive – could be made fit for EU with significant effort.	Neutral	Good practice – would require modest effort to make it easily useable across the EU.	Excellent practice – easy for operators to use, as is, for the EU.
C6	Cost-effective for the operator?	Too costly and/or take too long, incurring business costs.	Poor practice – high cost or time related cost – could be made fit for EU with significant effort.	Neutral	Good practice – would require modest effort to make it cost-effective across the EU.	Excellent practice – a cost-effective approach, as is, for the EU.
C7	Giving the operator certainty?	Ambiguous, or short/medium-term uncertainty, elevating risk and making business and operational planning difficult.	Poor practice – short/medium term certainty clarity but long-term uncertainty – could be made fit for EU with significant effort.	Neutral	Good practice – would require modest effort to make it work across the EU.	Excellent practice – a cost-effective approach, as is, for the EU.
C8	Aligned to a *One Stop Shop* approach?	Unlikely to ever be OSS compliant.	Would require significant effort to make it OSS compliant.	Neither aligned nor unfit	Good practice – could be made OSS compliant with modest effort.	Excellent practice – fully OSS aligned, as is, for the EU.
Common Sense Check – Is the practice:						6
C9	Poor practice but worth progressing with required innovation?					Yes

Figure 2. Potential candidate practices sift metrics.

To ensure objectivity, the two lead evaluators (from Impulso and Reflect) independently scored every practice against the eight standardized evaluation criteria on a 1–5 scale. These eight scores were then averaged. Any practice with an average score = or >3.5 was initially graded green, while any practice scoring < 3.5 was graded red. An example of this part of the process is shown below (**Error! Reference source not found.**) for one evaluator, with Practice 2.6 receiving a green score and Practice 2.7 receiving a red.

AEAAS WP3 Practice Sift Tool

WP2 Practice Set - 1.1 - 11.2

		Simple to legislate for, pan-EU?	Easy to articulate as a pan-EU regulation?	Easy to implement, pan-EU?	Portable across borders?	Simple to engage with and interpret?	Cost-effective for the operator?	Giving the operator certainty?	Aligned to a One Stop Shop approach?	Interim Score	Poor practice but worth progressing with required innovation?	FINAL SCORE
		1-5	1-5	1-5	1-5	1-5	1-5	1-5	1-5		Enter Y	
Practice 2.6	The expected time required for obtaining issuance of a license/permit is between 9 months and 12 months	3	4	3	3	5	3	5	3	3.6		3.6
Practice 2.7	The expected time required for obtaining issuance of a license/permit is over 12 months	4	4	5	5	2	2	2	3	3.4		3.4

Figure 3. One evaluator's scoring of Practices 2.6 and 2.7.

The two sets of independently generated scores were then compared and where the results agreed (which was the case for >85% of the practices), the respective practice was either down selected or rejected for progression.

For the remaining ~15% of practices, and to achieve a 100% consensual output, the remaining 39 practices were reconciled using a two-part synthesis:

1. **Blended Averaging for Near-Consensus Items**: For practices with minor score variances (Delta ≤ 0.6), scores were mathematically combined using the Blended Score formula:

$$\text{Blended Score} = (\text{Score}_{PG} + \text{Score}_{MR})/2$$

If the resulting blended score was ≥ 3.5, the practice was included.

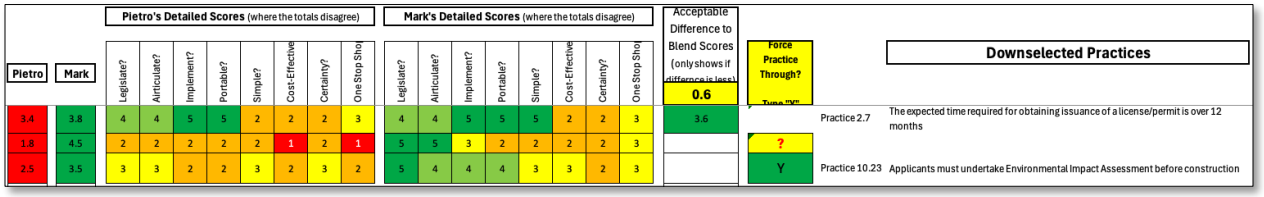
2. **"Operator Friction" Filter:** Disagreements with wider variances (Delta > 0.6) were reviewed in joint reconciliation sessions using an "Operator Friction" filter, which penalized practices imposing open-ended delays, multi-agency bottlenecks, or un-capped administrative discretion.

Innovation Flag. Where a practice represented an innovative concept that overcomes current administrative gaps despite a low raw criteria average (Interim Score < 3.5), evaluators applied an Innovation Flag **("Y")**, recalculating its value using the Innovation Formula:

$$\text{Final Score} = (6 + \text{Interim Score})/2$$

This effectively 'forced' the practice through for progression, even if it had the lowest possible score.

The extract from the Sift Tool below (**Error! Reference source not found.**) shows a line for each of the p rocesses discussed above. The first scoring line shows the delta was ≤0.6, so the scores were averaged and the final figure was >3.5 so the practice was down selected. The second line had a comparative score delta of >0.6, so the "Operator Friction" Filter was applied; in this case the practice was not down selected. The last line also had a score delta of >0.6, and in this case would potentially fail the operator friction test. However, it was considered important to progress and was therefore given an Innovation Flag.



		Pietro's Detailed Scores (where the totals disagree)								Mark's Detailed Scores (where the totals disagree)								Acceptable Difference to Blend Scores (only shows if difference is less)	Force Practice Through?	Downselected Practices	
Pietro	Mark	Legislate?	Articulate?	Implement?	Portable?	Simple?	Cost-Effective	Certainty?	One Stop Sho	Legislate?	Articulate?	Implement?	Portable?	Simple?	Cost-Effective	Certainty?	One Stop Sho	0.6			
3.4	3.8	4	4	5	5	2	2	2	3	4	4	5	5	5	2	2	3	3.6		Practice 2.7	The expected time required for obtaining issuance of a license/permit is over 12 months
1.8	4.5	2	2	2	2	2	1	2	1	5	5	3	2	2	2	2	3		?		
2.5	3.5	3	3	2	2	3	2	3	2	5	4	4	4	3	3	2	3		Y	Practice 10.23	Applicants must undertake Environmental Impact Assessment before construction

Figure 4. Examples of the scoring reconciliation methodology.

2.2. Practice Sift Process and Reconciliation Analysis

As discussed above, the AEAAS Team reviewed the 266 practices and sifted out those that lacked relevance or were repeated. The AEAAS 'Sift Tool' was used to assist with assessment and scoring of every one of the D2 practices, also providing an auditable record of the assessments and decisions.

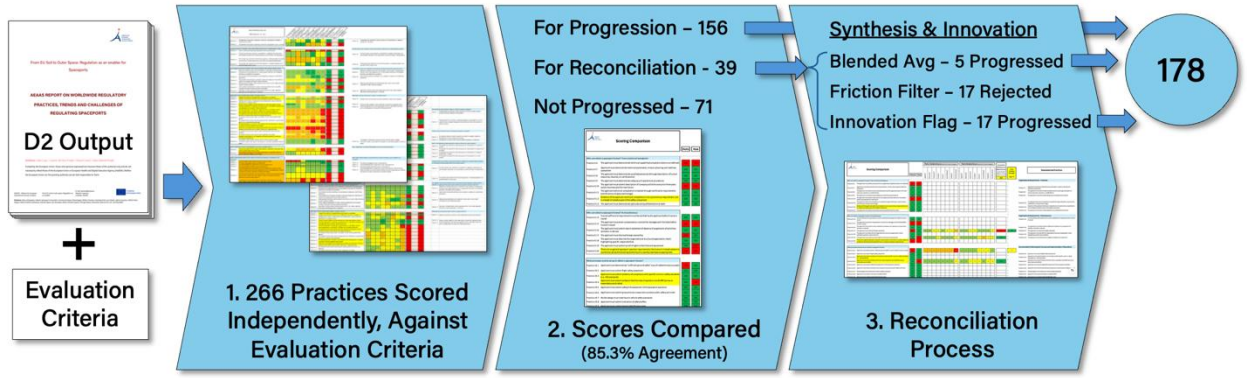


Figure 5. Schematic showing the progress of the practices through the sift process.

As shown in Figure 5, Step 1 was to independently review each of the 266 (D2 output) practices and score them against the evaluation criteria (this evaluation was undertaken by Pietro Guerrieri[1] from Impulso Space and Mark Roberts[2] from Reflect Solutions). The evaluators' scores were then compared in Step 2 and where there was agreement (either for or against the practice), the practice was marked for progression for future analysis or halted. Where the scores disagreed, the practice was subjected to the Step 3 reconciliation process to ensure consensus on the final practice down selection.

As described above, there were 3 sub-steps in the reconciliation process. First, where the scores were close, they were blended and the resultant score was accepted. Second, the larger score differences were discussed individually and where the practice was considered onerous for either regulation or operator, the practice was rejected. Finally, practices that were perceived as worthy of progression, but would need some innovation to make them viable were flagged for innovation. The sift tool output was 178 of the original 266 practices being marked for progression to the next stages of analysis.

The evaluation process gave the evaluators an intimate knowledge of the practices and they took the opportunity to take a holistic view of the objectively down selected practice set, looking for repetition and/or potential gaps. It was agreed that eight practices (Practices 7.2, 7.4, 10.50, 10.53, 10.54, 10.55, 10.56, and 10.57) were essentially duplicates, so these were removed.

Similarly, although gap analysis is strictly part of the next task activities, the evaluators identified and added five new innovated practices (covering Life Cycle Analysis, supply chain security, training regimes, and Critical National Infrastructure physical security), resulting in a finalized down selected catalogue of **179 Candidate Best Practices** (Listed in section 2.4).

They also re-reviewed the rejected practices with the perspective that a practice should be progressed because it would add value to the process. The results of these further steps are shown in Figure 6.

[1] Pietro Guerrieri is CEO of Impulso.Space and co-leader of AEAAS WP3, bringing over 35 years of executive experience in space operations, satellite launch services, regulatory licensing, and commercial spaceport infrastructure development.

[2] Mark Roberts has nearly 30 years of experience in the space sector, initially in space policy and operations, and latterly in regulatory advice and launch, including spaceports.

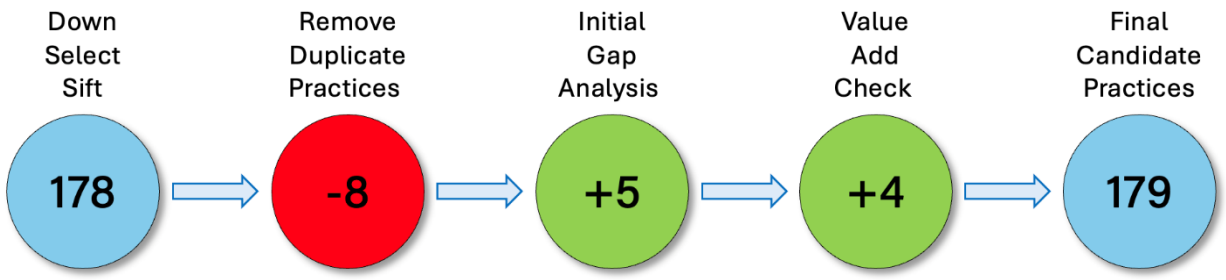


Figure 6. Schematic showing the final practice analysis.

This refined dataset of 179 practices represents the locked inventory progressing to deeper evaluation and gap analysis for Deliverable D4 (Tasks 9.1 & 10.1).

A full list of the D2 practices and the down selection action is at Annex A.

2.3. Limitations in the data or methodology

The process was designed to be as objective as possible, ahead of more subjective analysis at the next stage. It was clear that there could be different interpretations of the practice descriptions, mainly associated with the emphasis in the language. An example of this is Practice 7.2 - "The national space agency issues a binding opinion" - where the evaluators saw "space agency" as the emphasis and others took "binding opinion" as the key part of the practice. This was resolved during the document review process and consensus found.

Another limitation in the source data was that it was de facto historic in nature and did not, therefore, capture some modern or emerging regulatory approaches as completely as required. As explained above, this issue was mitigated by conducting a high-level gap analysis, resulting in the inclusion of several practices that had not been identified in D2.

Inevitably, while considering and scoring the individual practices, subjectivity formed part of the evaluator's thinking, which is a limitation of the sifting methodology. This was mitigated by undertaking completely independent assessment and then discussing differences to achieve a consensual position.

2.4. Final Down-Selected Candidate Best Practice List (179)

Following the dual-reviewer sifting process and reconciliation methodology detailed in this Volume 2, the initial inventory of 266 practices compiled under Work Package 2 was filtered down to **179 Candidate Best Practices**.

The complete list of Candidate Practices for progression to the next analytical stages is shown below. The five innovated practices, added after the initial gap analysis, are shaded in grey. The original practice numbers have been retained to ensure the process remains auditable.

Practice No	Description
Administrative Permission	
Practice 1.1	Private operators are required to obtain autonomous license to operate spaceport through a dedicated spaceport licensing regime
Practice 1.3	Private operators are not subject to dedicated spaceport licensing regimes, but must obtain a license to operate a spaceport through applications which are assessed on a case-by-case basis
Timing Considerations	
Practice 2.2	No statutory maximum time for issuance of the license to operate a spaceport is prescribed, but soft law indicates the timeframe
Practice 2.3	The deadline for issuance of the license to operate a spaceport is set statutorily
Practice 2.4	The expected time required for obtaining issuance of a license/permit is lower than 6 months
Practice 2.5	The expected time required for obtaining issuance of a license/permit is between 6 and 9 months
Practice 2.6	The expected time required for obtaining issuance of a license/permit is between 9 months and 12 months
Practice 2.7	The expected time required for obtaining issuance of a license/permit is over 12 months
One-Stop-Shop Mechanisms	
Practice 3.2	A formal one-stop shop mechanism is provided for in regulation (information and documentation required for such authorizations may be submitted in the application)
Practice 3.4	The one-stop shop mechanism for the licensing process is mandatory (operator must proceed through one-stop shop)
Prior Qualification Mechanisms	

Practice 4.1	Mechanisms enabling submission of information in the context of a pre-application procedure which waives (re)submission of pre-qualified information for the effective application are available (not mandatory)
Practice 4.2	Launch facility conformity certification can be obtained in advance to simplify future applications
Practice 4.4	Safety approvals/certificates may be obtained to avoid need to submit safety information for each individual operation
Practice 4.6	Application of criteria ulterior licensing procedures that, if met, create a regulatory presumption that the application is compliant
Procedural Steps	
Practice 5.2	Operator may choose to submit to a prior qualification process (not mandatory)
Practice 5.4	Process includes a stage for a formal application for obtaining a spaceport license
Practice 5.5	The formal application for obtaining a spaceport licence is submitted to the body which ultimately grants the licence (the "Granting Authority")
Practice 5.14	The spaceport license process contains modular licensing schemes, whereby information related to each aspect of the spaceport is submitted separately to streamline review
Need to Obtain Opinions, Pre-approvals or Otherwise Consultations	
Practice 7.3	The member/department of government issues a binding opinion
Practice 7.5	The member/department of government issues binding opinion; national security, health and safety, and environmental authorities issue non-binding opinions; maritime and telecommunications authorities are heard when relevant
Practice 7.12	No one issues opinions with binding effects; the Space Agency and Defence member of government are heard when relevant
Practice 7.13	No one issues opinions with binding effects; the national security authority, defence member of government and foreign affairs member of government issue non-binding opinions
Practice 7.14	No one issues opinions with binding effects; telecommunications authority, environmental authority, infrastructure member of government and national security authority issue non-binding opinions
Practice 7.15	Defence member of government, internal affairs member of government, intelligence services, health member of government and environmental agency issue non-binding opinions; aviation authority is heard when relevant
Exemptions and Light Regimes	
Practice 8.4	Whenever the launch is directly conducted by the operator of the spaceport (dual service provision) the launch will be subject to simplified licensing procedure

Practice 8.5	Tests, experimental operations, prototypes and similar operations are excluded from typical commercial spaceport licensing regimes
Practice 8.6	Requirements to obtain certification acting as easement / replacement of administrative reviews for approvals (reduction of time for issuance from application up to three quarters)
Practice 8.9	Amateur unmanned rocket operations do not require a site operator license
Practice 8.10	Incremental review approach (modular submission process)
Practice 8.11	Easements for experienced operators using proven vehicles from established sites
Organisational Requirements - Legal/Financial	
Practice 9.1	The applicant must be fit and proper (proven, e.g., through submission of resumes of decision-making bodies and criminal records)
Practice 9.2	The applicant must demonstrate financial capacity, responsibility and adequate financial arrangements (e.g., through submission of sources of financing, IRS filings, expected revenues and financial return)
Practice 9.5	The strictness of legal and financial fitness requirements is proportional to the risks and size of the company (otherwise undefined).
Organisational Requirements - Technical	
Practice 9.7	Applicant must demonstrate technical parameters, mission planning and readiness assessment
Practice 9.8	The applicant must demonstrate qualified personnel (through description of human resources, resumes, or certifications)
Practice 9.9	The applicant must demonstrate adequacy of operational procedures
Practice 9.11	The applicant technical competence is implied through certification requirements (certifications of space technology)
Practice 9.12	Evidence of the applicant technical competence is not autonomous requirement, but is instead included as part of the safety component
Practice 9.13	The applicant must demonstrate aptitude and qualified technical team
Organisational Requirements - Miscellaneous	
Practice 9.14	Insurance/financial requirements must be satisfied by the applicant before license is issued
Practice 9.16	The applicant must submit sworn statement of absence of suspensions of activities, domestic or abroad
Practice 9.17	The applicant must disclose foreign ownership
Practice 9.18	The applicant must describe the organizational structure (organization chart) highlighting specific responsibilities

Practice 9.19	The applicant must submit proof of rights to facilities and equipment
Documentation Evidencing the Concept and Implementation of Operations	
Practice 10.2	Applicant must submit flight safety assessment
Practice 10.3	Applicant must submit evidence of compliance with specific norms or safety standards (i.e., ISO standards)
Practice 10.4	Applicant must submit evidence that the risks of operation are ALARP (as low as reasonably practicable)
Practice 10.5	Applicant must submit safety/risk assessment of the spaceport operation
Practice 10.6	Applicant must submit precautionary measures to protect public safety and order
Practice 10.7	Rocket design must meet launch vehicle safety standards
Practice 10.8	Applicant must submit indication of safety buffers
Practice 10.9	Applicant must submit hazard identification plan
Practice 10.10	Applicant must submit report demonstrating compliance with safety standards
Practice 10.11	Applicant must submit plan for safety audits
Practice 10.12	Applicant must submit safety management plan and key personnel
Practice 10.14	An explicit requirement exists to protect state secrets/commercial secrets
Practice 10.15	Applicant must submit security risk assessment
Practice 10.16	Applicant must submit security plan/programme
Practice 10.17	Applicants must submit cybersecurity measures planned
Practice 10.18	Applicants are responsible for planning and ensuring control of public access to the facilities
Practice 10.19	Applicants must have a video surveillance system installed and submit a map of its location during the application
Practice 10.20	Applicant must submit proposed methods of archiving confidential and secure documents and data
Practice 10.21	Applicant must demonstrate sufficient physical security of the center's facilities and operations (including against natural phenomena and man-made disasters)
Practice 10.22	Applicants must submit an environmental protection plan during application
Practice 10.23	Applicants must undertake Environmental Impact Assessment before construction
Practice 10.25	Applicants must demonstrate compliance with COPUOS, or other, debris mitigation guidelines

Practice 10.27	Applicants must submit of evidence of environmental safety in space, including measures for clean-up in case of environmental accident
Practice 10.29	Submission of waste management procedures and location/storage and handling of hazardous substance storage
Practice 10.30	Statutory waivers to bypass duplicative multi-agency environmental reviews/licenses
Practice 10.31	Applicants must submit emergency plan / response procedures as standard licence condition
Practice 10.32	Applicants must submit Incident Report template
Practice 10.33	Applicant must demonstrate technical compatibility with launch site infrastructure
Practice 10.34	Applicant must submit a quality management system
Practice 10.35	Applicant must demonstrate suitable vehicle interface (through certification)
Practice 10.36	Applicants must anticipate measures for orderly termination of activities
Practice 10.37	Applicants must submit launch plan showing flight path and flight termination measures
Practice 10.38	Applicant must demonstrate protection against lightning and submit a plan for handling explosive siting requirements
Practice 10.39	Applicants must report on the maximum expected launch frequency by vehicle type per launch point and activity schedule
Practice 10.40	Applicants must submit an operations and maintenance manual for the centre and its obsolescence plan
Practice 10.43	Applicants must obtain a spectrum authorization prior to initiating their spaceport activity
Practice 10.44	Applicants must demonstrate compliance with COSPAR Planetary Protection Policy for missions to other celestial bodies
Practice 10.45	Applicants must submit the terms and conditions they intend to apply for the provision of infrastructure and services to launch / mission control operators
Practice 10.46	If applicable, applicants must submit systems and processes implemented for mission control
Practice 10.47	Applicants must submit space operations communication plan, including notification of the launch and/or reentry schedule
Practice 10.48	Applicant must submit description of the types of vehicles that can be launched and/or returned to the spaceport
Practice 10.49	Applicant must demonstrate that at least one type of launch vehicle can be safely flown from each proposed launch point

Practice 10.58	Applicants must submit evidence of their LCA (Life Cycle Analysis) processes
Practice 10.59	Applicants must submit evidence of their supply chain security protocols
Practice 10.60	Applicants must submit their training regime, to ensure the spaceport personnel are suitably qualified
Adjustable Requirements, on a Case-by-Case Basis	
Practice 11.2	No, the granting authority may not impose additional requirements.
Licence Transfers	
Practice 12.2	Licence transfer is permitted subject to prior approval by the competent authority, and the transferee is required to demonstrate compliance with the applicable licensing requirements
Cross-border Market Access Mechanisms - Equivalence	
Practice 13.2	Foreign authorisation may be recognised based on equivalent assessment criteria
Practice 13.3	Foreign certification of a technical element may be accepted where the foreign certification system is deemed equivalent
Practice 13.4	Foreign authorisation may justify simplified procedures or exemption from domestic licensing requirements
Practice 13.6	Treaty-based bilateral agreement allowing for the recognition of foreign authorisation
Cross-border Market Access Mechanisms - Mutual Recognition	
Practice 14.1	Automatic mutual recognition of foreign authorisations pursuant to an international agreement
Practice 14.3	Domestic competent authorities are authorised by statute to consider foreign licenses / authorizations and/or certifications (although waiver is not automatic)
Practice 14.4	Operators licensed by foreign authorities may benefit from waiver or streamlined processes if they are able to bring evidence of equivalence of the foreign requirements to applicable international obligations
Licence Duration, Term and Termination	
Practice 15.1	The spaceport operator licence expires at the end of a fixed licence term
Practice 15.3	The spaceport operator licence lapses if the authorised activity does not commence within a specified period
Practice 15.4	The spaceport operator licence does not automatically expire and may be granted for an indefinite period
Practice 15.5	The spaceport operator licence may be revoked for breach of licence conditions or applicable legal requirements

Practice 15.6	Prior notice and a right to be heard are required before revocation of the spaceport operator licence
Practice 15.8	Voluntary surrender / renunciation of the spaceport operator licence is expressly permitted
Practice 15.10	Change of control may trigger reassessment of the licensee's eligibility for spaceport operator
Fees	
Practice 16.1	No fees are required for applying for a spaceport licence, for issuance of the licence, or for renewal
Practice 16.2	Specific fees in connection with spaceport license are prescribed by law or regulation
Practice 16.3	Fees in connection with spaceport license are due at the time of application
Practice 16.4	Fees in connection with spaceport license are due upon issuance of license
Practice 16.5	Fees in connection with spaceport license are due annually
Practice 16.6	Fees in connection with spaceport license are due for renewal of license
Safety, Environmental and Technical Standards	
Practice 17.1	Operators must organise and participate in mandatory joint exercises with local administrative emergency management services
Practice 17.4	Operators must undertake safety drills at facilities regularly
Practice 17.5	Operators must coordinate emergency plans with local government, fire and disaster authorities
Practice 17.6	Operators must coordinate with emergency authorities during launches
Practice 17.7	A government representative at the scene oversees guiding the safety protocols of the spaceport
Practice 17.8	Operators must preserve all records related to mishaps or occurrences having an impact on safety
Practice 17.9	Operators must implement procedures to ensure compliance with hazardous substance control, and propellant handling
Practice 17.10	Handling of toxic and acutely hazardous propellants is regulated through safety plans in launch service agreements and payload user manual
Practice 17.12	Certification of safety critical equipment is required
Practice 17.13	Operators are required to comply with physical security and/or Critical National Infrastructure security standards
Responsibility for Compliance	

Practice 18.1	The licensed operator is responsible for facility safety, environmental compliance, security, coordination with authorities, license conditions and activities requirements
Practice 18.2	The land access and planning compliance rest with the landowner or leaseholder
Practice 18.3	The property safety lies with landowner/leaseholder
Practice 18.4	The site owner is not separately liable under space legislation but is subject to general liability
Practice 18.5	The responsibility for handling propellant lies with site operator
Practice 18.7	Where multiple entities are involved allocation of responsibilities is determined by licence conditions
Liability	
Practice 19.1	The state has right of recourse against operator for damages incurred under international law
Practice 19.2	The State's right of recourse is capped, either by statute or through a licence (the State assumes liability beyond the cap of recourse)
Practice 19.4	Government bodies are responsible for accident clean-up
Practice 19.5	Scope of liability and limits are specified by statute
Insurance	
Practice 20.1	Insurance covering third-party liability is required for the operation or use of spaceports / performance of the relevant space activities
Practice 20.2	Insurance covering the lives and health of cosmonauts and employees of space infrastructure is required
Practice 20.3	Insurance for damages caused on government property is required for the operation or use of spaceports / performance of the relevant space activities
Practice 20.6	Insurance requirements for the operation or use of spaceports / performance of the relevant space activities may be satisfied through an alternative financial guarantee for certain operations
Practice 20.7	The State must be a named beneficiary under the insurance scheme
Practice 21.1	Insurance required for the operation of a spaceport must cover maximum probable loss to third parties
Practice 21.3	Insurance coverage requirements are fixed amounts per type of operation envisaged in the spaceport
Practice 21.5	Lowest amount of insurance coverage identified in connection with spaceport activity was 2.000.000 EUR (two million euros) in damages

Practice 21.6	Middle range amount of insurance coverage identified in connection with spaceport activity was 70.000.000 EUR (seventy million euros) in damages
Standardisation and Interoperability Requirements	
Practice 22.1	Operators are only subject to compliance with space management, product assurance, engineering technology, operation service, space application and space science standards
Practice 22.2	Regulation contains standards that de facto reference IADC/ECSS/ISO/COPUOS guidelines
Practice 22.3	IADC/ECSS/ISO/COPUOS guidelines are specifically incorporated in regulation
Operational Requirements - Types of Launch	
Practice 23.1	The spaceport operator license specifies permitted types of launch (e.g. vertical/horizontal or by weight class)
Practice 23.2	The spaceport operator licence does not limit types of launch
Operational Requirements - Rights	
Practice 24.1	The spaceport operator is entitled to install the infrastructure and operate the spaceport
Practice 24.2	The spaceport operator is only entitled to operate the spaceport
Practice 24.4	The spaceport operator is granted with access rights (when infrastructure is owned or operated by public entities)
Practice 24.5	The spaceport operator is entitled to transfer the licence (as an explicit right, although subject to authorisation)
Operational Requirements - Duties	
Practice 25.1	The spaceport operator is obliged to update the Granting Authority on an ongoing basis
Practice 25.2	The spaceport operator is obliged to follow incident and accident reporting procedures
Practice 25.3	The spaceport operator is obliged to cooperate with investigations by competent authorities
Practice 25.5	The spaceport operator is obliged to provide or enable access by competent authorities to facilities, documents and information
Practice 25.6	The spaceport operator is obliged to facilitate compliance monitoring
Practice 25.7	The spaceport operator is obliged to submit an annual report to the authorities
Practice 25.8	The spaceport operator is obliged to retain records of activities for entire duration of the licence and a determined number of years post-licence term

Practice 25.9	The spaceport operator is obliged to implement cybersecurity measures for spaceport
Practice 25.10	The spaceport operator is obliged to register with the cybersecurity authority
Practice 25.11	The spaceport operator is obliged to maintain a Critical Infrastructure Risk Management Programme (CIRMP) covering cyber, personnel, supply chain and physical hazards for relevant spaceport systems
Operational Requirements - Reporting Incidents	
Practice 26.1	Accidents and malfunctions must be notified within 24 hours
Practice 26.2	Cyber incidents must be reported within 12 hours (critical incidents) or 72 hours (other incidents)
Practice 26.3	Events affecting the validity or continuance of the authorisation must be communicated within 30 days
Practice 26.4	Mitigation details must be submitted within 7 working days
Practice 26.5	Changes in Management and Control or shareholding must be notified within 48 hours
Practice 26.6	Applicant must submit plan for monitoring and sustainability reporting
Practice 26.7	Applicant must demonstrate how it will implement processes to notify competent authorities, within 72 hours, of any event likely to give rise to an insurance claim or of any other occurrence with a severe impact on safety or on operations
Practice 26.8	Licensee must control public access, schedule operations to prevent mishaps, implement mishap plans, comply with explosive siting and lightning protection
Practice 26.9	Physical security breaches must be reported within 12 hours (critical incidents) or 72 hours (other incidents)
Infrastructure and Land Use	
Practice 27.2	Defined aspects of site suitability, such as launch trajectory or orbital access, population density, proximity to infrastructure, flight corridor analysis, risk analysis, explosive siting are assessed during application
Practice 27.3	Type-specific site safety standards are required for compliance certification
Practice 27.4	The applicants must submit map of the facilities envisaged for the spaceport
Practice 27.5	The applicants must submit description of transportation, power, and communications networks, including redundancies envisaged for the spaceport
Practice 27.7	The applicants must submit dedicated construction plan (if applicable) for the spaceport
Practice 27.8	The site compatibility with suborbital operations, including airspace, infrastructure, and supply chain is assessed

Export Controls and Customs	
Practice 28.2	Government approval is required for the export of launch vehicle components, satellite parts and related dual-use technology
Practice 28.3	Launch vehicles are categorized as 'weapons equipment' (in several jurisdictions this is specifically per the MTCR regime)
Practice 28.5	Foreign trade act controls export of strategic goods including space technology, satellite components, and missile-related items
Practice 28.6	General monitoring, with the possibility of the government imposing conditions on, or blocking, transactions and exports of dual-use goods for national security reasons
Practice 29.3	No space technology specific FDI caps apply

VOLUME 3: Establishing and defining the outcome KPIs

3.1. Establishing the Key Performance Indicators (KPIs)

Methodological Framing of the Scoring Scale:

To evaluate regulatory practices objectively, the AEAAS WP3 assessment framework utilizes a 1–5 scoring scale anchored across the Seven Strategic Pillars. It is important to note that a score of 5 represents maximum alignment with the project's target operational enablers (such as administrative velocity, commercial predictability, market access, and technical harmonization). In real-world regulatory design, achieving a "5" in one dimension inevitably involves policy trade-offs, institutional balancing, or resource considerations across other operational areas. The quantitative 1–5 scale in Deliverable D3 establishes the baseline performance metric, while the qualitative trade-offs, institutional frictions, and implementation nuances are systematically analyzed during the Task 10.1 Gap Analysis in Deliverable D4.

3.1.1. Introduction to the 7 Strategic Pillars

To evaluate the regulatory frameworks, practices, and operational standards governing spaceports across European jurisdictions, the AEAAS WP3 assessment framework is anchored in **Seven Strategic Pillars** established by the AEAAS Project, which underpin the project's outcomes, as agreed with the EU.

These seven pillars reflect the overarching policy, legal, technical, and economic objectives necessary to foster a competitive, safe, and autonomous launch ecosystem in Europe:

1. **Pillar 1: Facilitated Access to Spaceports**
   Focuses on streamlining administrative permissions, reducing licensing review lead times, capping operator compliance costs, and minimizing regulatory discretion to ensure fast, predictable market access.
2. **Pillar 2: EU Sovereignty and Dual-Use Activity**
   Addresses civil-military infrastructure interoperability, dual-use clearance mechanisms, transparency in Foreign Direct Investment (FDI) screening, and foreign ownership rules to safeguard European strategic autonomy.
3. **Pillar 3: Interoperability among Spaceports and Vehicles**
   Promotes technical harmonization (ISO/ECSS alignment), cross-border portability of launch vehicles and spaceport certifications, and non-discriminatory, multi-operator access to shared infrastructure.
4. **Pillar 4: Safety and Security of Infrastructure**
   Evaluates risk-proportional safety frameworks (ALARP), physical critical infrastructure safeguards, cybersecurity integrity, inter-agency emergency preparedness, and rapid incident reporting velocity.
5. **Pillar 5: International Cooperation and Responsibility**
   Ensures alignment with UN Space Treaties, statutory Third-Party Liability (TPL) capping (Maximum Probable Loss), state recourse backstops, and clear inter-operator cross-waivers.
6. **Pillar 6: Sustainability of Operations and Materials**

Focuses on space debris mitigation guidelines, environmental impact assessment (EIA) streamlining, and hazardous material/propellant lifecycle handling.

7. **Pillar 7: Intellectual Property Protection**
   Guarantees the protection of commercial secrets, proprietary flight data, and industrial IP during multi-agency regulatory submissions.

3.1.2. Detailed Motivations, Descriptions, and Rubrics for the 23 Refined Outcome KPIs

Below are the detailed descriptions, strategic motivations, and selected scoring anchors (scores 1, 3, and 5) for the 23 Refined Outcome KPIs, organized across the Seven Pillars. These rubrics measure the degree to which a regulatory practice functions as an optimal operational enabler, while recognizing that individual score balances must be evaluated holistically within the broader national legal context. The full 1–5 scoring rubrics are provided in Annex B.

PILLAR 1: FACILITATED ACCESS TO SPACEPORTS

KPI 1.1: Administrative Velocity & One-Stop-Shop Integration

- **Description:** Measures the degree to which spaceport licensing and operational approvals are centralized through a single window / lead agency versus requiring separate, uncoordinated applications across multiple authorities.
- **Motivation:** Multi-agency approval processes create administrative paralysis and redundant filings. A true One-Stop-Shop drastically shortens launch campaign lead times.
- **Scoring Rubric (1–5):**
  - 1: Fully fragmented process requiring independent applications to 5+ uncoordinated agencies without statutory coordination.
  - 3: Centralized lead agency exists, but operators must still secure parallel non-binding/binding approvals independently from key authorities (e.g., aviation, environment).
  - 5: Fully integrated One-Stop-Shop; single point of application, consolidated statutory review, and single decision issuance.

KPI 1.2: Statutory Review Clocks & Timeline Predictability

- **Description:** Assesses whether licensing review periods are governed by legally binding statutory maximum timelines rather than open-ended target windows or soft-law guidance.
- **Motivation:** Launch operators require timeline certainty to commit capital, reserve range slots, and sign customer manifest agreements.
- **Scoring Rubric (1–5):**
  - 1: No statutory timeline or soft-law target specified; review period is entirely open-ended (often >12 months).
  - 3: Indicative or soft-law timeline specified (e.g., target 6–9 months), but subject to un-capped extension stops.
  - 5: Legally binding statutory maximum review clock of ≤90 days with strict limitations on regulatory review pauses.



KPI 1.3: Fee Proportionality & Operator Compliance Cost Stack

- **Description:** Evaluates the fee structure for spaceport operator and launch site licenses, assessing whether fees are fixed/proportional to risk or open-ended based on full regulatory cost recovery.
- **Motivation:** Excessive or unpredictable administrative fees inflate the operator compliance cost stack and penalize emerging commercial spaceport business models.
- **Scoring Rubric (1–5):**
  - 1: Exorbitant or open-ended full cost-recovery fee structure with mandatory annual recurring fee burdens.
  - 3: Moderate fixed fees, but additional variable costs imposed for external expert reviews without prior capping.
  - 5: Zero-fee structure or low, transparent, fixed administrative fee schedule proportional to facility class.

KPI 1.4: Legal Certainty & Administrative Discretion

- **Description:** Evaluates the clarity of statutory eligibility criteria versus the degree of un-capped administrative discretion granted to regulatory authorities to alter or add license conditions.
- **Motivation:** Arbitrary or case-by-case regulatory discretion introduces severe legal risk and commercial uncertainty for spaceport investors. However, strictly bounded and transparent discretion, when framed around objective safety goals like ALARP, provides regulators with necessary flexibility to accommodate novel vehicle architectures and foster innovation without creating administrative paralysis.
- **Scoring Rubric (1–5):**
  - 1: Un-capped statutory authority for regulators to impose arbitrary, case-by-case conditions or revoke approvals at any time without formal appeal.
  - 3: Defined criteria exist, but broad catch-all clauses allow regulatory updates during active operations.
  - 5: Strictly bounded regulatory discretion; clear statutory criteria, robust right-to-be-heard protections, and formal appeal mechanisms.

KPI 1.5: Proportionality of Fitness & Pre-Qualification Frameworks

- **Description:** Assesses the availability of modular, risk-based pre-qualification and operator fitness schemes prior to full spaceport license application, ensuring pre-qualified elements waive duplicative review during formal licensing.
- **Motivation:** Modular pre-qualification allows operators to validate corporate, financial, and technical fitness early, reducing sunk capital risks before committing to site-specific infrastructure investments. To prevent administrative duplication or unnecessary resource sinking, such frameworks must remain voluntary, risk-proportional, and directly integrated into the final licensing process.
- **Scoring Rubric (1–5):**
  - 1: No pre-qualification available; full, costly application file required upfront with zero preliminary feedback.

- 3: Optional pre-application consultations available, but non-binding and without formal qualification status.
- 5: Statutory modular pre-qualification framework enabling formal early-stage approval of operator fitness and facility concepts.

PILLAR 2: EU SOVEREIGNTY AND DUAL-USE ACTIVITY

KPI 2.1: Civil-Military Infrastructure Interoperability & Dual-Use Clearance

- **Description:** Evaluates mechanisms facilitating the shared or joint use of civil and military range infrastructure, airspace, and dual-use clearance protocols.
- **Motivation:** European sovereign launch capability relies on flexible integration between commercial spaceport operations and defense/military range assets.
- **Scoring Rubric (1–5):**
  - 1: Total separation or ad hoc, restrictive military vetoes over commercial access to range assets and airspace.
  - 3: Case-by-case bilateral agreements required between civil operators and defense authorities without standardized clearance SLAs.
  - 5: Standardized, statutory civil-military interoperability framework with pre-agreed dual-use clearance protocols.

KPI 2.2: Foreign Direct Investment (FDI) & Foreign Ownership Screening Transparency

- **Description:** Measures the transparency, speed, and objective criteria applied during Foreign Direct Investment (FDI) screening and foreign ownership disclosures for spaceport infrastructure.
- **Motivation:** Clear FDI screening protects national security while allowing commercial spaceports to attract global equity capital.
- **Scoring Rubric (1–5):**
  - 1: Opaque, open-ended FDI blocking rights or rigid ownership caps that restrict non-domestic capital.
  - 3: Standard FDI review required, but timelines and criteria are subject to broad national interest interpretations.
  - 5: Transparent, fast-track FDI screening with clear statutory thresholds and safe-harbor exemptions for EU/EEA entities, EFTA member states, and strategic partner nations under bilateral security agreements.

KPI 2.3: Supply Chain Continuity & Subsystem Protection

- **Description:** Measures regulations safeguarding critical spaceport subsystems and component supply chains against strategic geopolitical disruptions.
- **Motivation:** Spaceports require resilient access to specialized ground equipment, propellants, and tracking technologies.
- **Scoring Rubric (1–5):**
  - 1: No regulatory recognition of spaceport supply chain criticality; vulnerable to sudden export or trade freezes.

- 3: General strategic sector classification without specific fast-track import/export protections for ground infrastructure.
- 5: Dedicated statutory protection and streamlined trade clearance for certified spaceport critical subsystems and components.

PILLAR 3: INTEROPERABILITY AMONG SPACEPORTS AND VEHICLES

KPI 3.1: Standardization & Harmonized Norms (ISO / ECSS Alignment)

- **Description:** Evaluates the incorporation of international and European consensus technical standards (e.g., ISO, ECSS) into spaceport regulatory requirements as voluntary compliance verification baselines.
- **Motivation:** Direct reference to established standards eliminates bespoke national design requirements and ensures vehicle-to-spaceport technical compatibility. To protect operator competitiveness and maintain regulatory proportionality, standardization baselines focus on range safety, environmental interfaces, and ground compatibility, leaving mission assurance and vehicle reliability to commercial market discretion.
- **Scoring Rubric (1–5):**
  - 1: Bespoke, jurisdiction-specific technical standards that conflict with international norms.
  - 3: Voluntary encouragement of ISO/ECSS guidelines, but local authorities still enforce custom compliance checks.
  - 5: Statutory de facto or de jure recognition of ISO/ECSS standards as compliance verification baselines.

KPI 3.2: Foreign Certification Recognition & Cross-Border Portability

- **Description:** Assesses legal frameworks enabling mutual recognition or simplified acceptance of technical certifications granted by recognized foreign space authorities.
- **Motivation:** Cross-border portability avoids duplicate safety and vehicle qualification campaigns when operators launch from different European spaceports. Achieving full mutual recognition often follows a hybrid pathway, progressing from soft-law guidelines and agency MOUs toward formal statutory or regulatory equivalence frameworks, ensuring immediate operational flexibility while building toward long-term legal harmonization.
- **Scoring Rubric (1–5):**
  - 1: Complete refusal to recognize foreign technical assessments; full local re-certification mandated.
  - 3: Case-by-case discretionary acceptance of foreign certifications via bilateral agency MOUs.
  - 5: Statutory or binding regulatory equivalence frameworks enabling automatic or fast-tracked recognition of certified foreign launchers and subsystems.

KPI 3.3: Non-Discriminatory Access & Multi-Operator Shared Infrastructure

- **Description:** Measures legal requirements ensuring spaceport operators provide fair, open, and non-discriminatory access to shared launch infrastructure (e.g., propellant farms, range tracking, safety zones).
- **Motivation:** Multi-tenant spaceports lower capital barriers for new micro-launcher operators and prevent monopolistic infrastructure lock-out.
- **Scoring Rubric (1–5):**
    - 1: Exclusive single-tenant licensing regimes that allow primary operators to block competitor access.
    - 3: General commercial fairness principles required, but without enforced open-access rules or tariff oversight.
    - 5: Statutory non-discriminatory access mandates for public/shared spaceport infrastructure with transparent access rules.

PILLAR 4: SAFETY AND SECURITY OF INFRASTRUCTURE

KPI 4.1: Safety Case Flexibility & ALARP Risk Frameworks

- **Description:** Measures the adoption of objective-based safety frameworks (e.g., ALARP - As Low As Reasonably Practicable) versus rigid prescriptive safety mandates, providing an objective compliance pathway alongside standardized ISO/ECSS norms.
- **Motivation:** Flexible, objective-based safety cases accommodate novel launcher architectures, whereas rigid rules force costly design modifications. Rather than conflicting with technical standardization (KPI 3.1), an ALARP framework complements standardized norms by establishing a clear, objective pathway for innovative technologies that fall outside established ISO/ECSS baselines.
- **Scoring Rubric (1–5):**
    - 1: Rigid prescriptive safety rules requiring exact physical designs regardless of vehicle risk profile.
    - 3: Mixed framework; objective safety goals allowed, but backed by heavy prescriptive default conditions.
    - 5: Fully objective, risk-proportional ALARP safety case framework tailored to specific operator flight profiles.

KPI 4.2: Physical Security & Critical Infrastructure Safeguards

- **Description:** Assesses requirements for physical security, access control, and Critical National Infrastructure (CNI) protection at spaceport facilities based on risk-proportional Threat, Vulnerability, and Risk Assessments (TVRA).
- **Motivation:** Robust physical security protects high-value launch assets, dangerous propellants, and range operations from unlawful interference. Anchoring physical security in threat-proportional TVRA methodologies ensures facilities remain secure without imposing disproportionate operational barriers, high cost burdens, or unnecessary friction on operators and customers during launch campaigns.

- **Scoring Rubric (1–5):**
    - 1: Undefined or absent physical security standards, leaving facilities exposed to operational disruption.
    - 3: Standard industrial security required, but lacks spaceport-specific critical infrastructure protection mandates.
    - 5: Integrated risk-based physical security and CNI protection standards with clear access control protocols.

KPI 4.3: Cybersecurity Integrity & CIRMP Compliance

- **Description:** Measures requirements for tailored, risk-proportional cybersecurity resilience, critical infrastructure risk management plans (CIRMP), and telemetry/command link protection across operational technology (OT) and IT networks.
- **Motivation:** Modern digitalized spaceports are vulnerable to cyber intrusions that could compromise launch safety or proprietary operational data. Aligning with European cyber frameworks (such as NIS 2) ensures that cybersecurity requirements remain strictly proportional to facility size and operational criticality, focusing safeguards on flight-critical OT systems while avoiding unnecessary administrative burdens for commercial operators.
- **Scoring Rubric (1–5):**
    - 1: Zero cybersecurity standards specified in spaceport licensing requirements.
    - 3: Generic IT security guidelines recommended without mandatory verification or incident reporting.
    - 5: Mandatory, tailored cybersecurity risk management standards (CIRMP/NIS2 alignment) covering OT and IT networks.

KPI 4.4: Inter-Agency Emergency Preparedness & Drills

- **Description:** Measures the statutory framework governing joint emergency response plans, mandatory drills, and coordination between spaceports and local first responders (fire, medical, civil protection).
- **Motivation:** Rapid, pre-coordinated emergency response minimizes loss of life and property damage during catastrophic launch or static-fire failures.
- **Scoring Rubric (1–5):**
    - 1: No requirement for coordinated emergency planning or joint exercises.
    - 3: Submission of an emergency response plan is mandatory, with joint drills scheduled on an ad hoc or baseline basis.
    - 5: Statutory mandate for designed-in emergency preparedness, integrated multi-agency emergency plans backed by risk-proportional periodic joint exercises and drills.

KPI 4.5: Accident Reporting Velocity & Incident Investigation

- **Description:** Measures the clarity, timelines, and legal protections associated with reporting operational mishaps and conducting no-fault safety investigations.

- **Motivation:** Rapid, standardized mishap reporting enables immediate hazard containment and industry-wide safety learning without premature penalization.
- **Scoring Rubric (1–5):**
    - 1: Unclear reporting timelines and punitive investigation processes that discourage transparent disclosure.
    - 3: Fixed reporting deadlines exist (e.g., within 24–48 hours), but investigation protocols lack clear separation between safety and liability.
    - 5: Rapid mandatory mishap reporting clocks (e.g., <12 hours for critical incidents) integrated with structured, no-fault safety investigation protocols.

PILLAR 5: INTERNATIONAL COOPERATION AND RESPONSIBILITY

KPI 5.1: Statutory Liability Capping (MPL) & State Backstop

- **Description:** Evaluates whether Third-Party Liability (TPL) insurance requirements are capped at a Maximum Probable Loss (MPL) limit backed by a state or supranatural indemnification guarantee.
- **Motivation:** Uncapped or exorbitant TPL requirements render commercial spaceport operations uninsurable on the international market. While a legally binding state backstop above the MPL cap is critical for commercial predictability, sovereign budget disparities across Member States underscore the strategic importance of investigating pan-European risk-pooling mechanisms or tiered liability caps to ensure equitable access to spaceport development regardless of national treasury size.
- **Scoring Rubric (1–5):**
    - 1: Unlimited operator liability with zero state backstop or indemnification mechanism.
    - 3: Fixed insurance financial limit required, but state backstop above the limit is discretionary or non-binding.
    - 5: Statutory MPL calculation methodology capping operator insurance, backed by a legally binding state liability backstop above the cap.

KPI 5.2: UN Treaty Alignment & Spacecraft Registration

- **Description:** Assesses legal mechanisms ensuring compliance with UN Space Treaties (1967 OST, 1972 Liability, 1975 Registration) and efficient national registry operations.
- **Motivation:** Proper treaty implementation protects state international responsibility while providing launch operators with transparent orbital registration pathways.
- **Scoring Rubric (1–5):**
    - 1: Absence of national space legislation or obsolete framework failing to implement UN Space Treaty obligations or establish an orbital registry.
    - 3: Basic national space law and registry exist, but lack streamlined processes for cross-border payload authorization or clear jurisdictional allocation under UN conventions.
    - 5: Comprehensive statutory alignment with UN Space Treaties, featuring fast-track digital spacecraft registration, clear jurisdictional rules for foreign payloads, and streamlined authorization frameworks.

KPI 5.3: Inter-Operator Cross-Waivers & State Recourse Capping

- **Description:** Evaluates statutory mandates requiring reciprocal waivers of liability (cross-waivers) among spaceport operators, launch providers, and contractors, as well as statutory caps or waivers on State recourse for damage to government property.
- **Motivation:** Mandatory statutory cross-waivers eliminate complex, inter-party litigation and insurance pyramiding following launch mishaps, stabilizing industry insurance costs. While liability allocation is often treated as a commercial negotiation in general industry, establishing a statutory cross-waiver regime provides essential market certainty, protects smaller operators from unequal bargaining positions, and establishes a uniform risk-sharing baseline across the launch ecosystem.
- **Scoring Rubric (1–5):**
    - 1: No statutory cross-waiver or state recourse caps; parties must negotiate complex bilateral indemnities and remain fully exposed to state claim.
    - 3: Standard contractual cross-waivers encouraged, but state recourse rights against operators for government property damage remain un-capped or discretionary.
    - 5: Statutory mandate requiring all spaceport users and contractors to execute mutual liability waivers, backed by clear statutory capping or waiving of State recourse rights.

PILLAR 6: SUSTAINABILITY OF OPERATIONS AND MATERIALS

KPI 6.1: Space Debris Mitigation & In-Orbit Guidelines Compliance

- **Description:** Assesses requirements for spaceport and launch licensing to enforce international debris mitigation guidelines (e.g., COPUOS, IADC, ISO 24113).
- **Motivation:** Ensuring orbital sustainability begins with strict pre-launch verification of upper-stage passivation and de-orbit capability.
- **Scoring Rubric (1–5):**
    - 1: No evaluation of space debris mitigation during launch authorization.
    - 3: General obligation to minimize debris without referencing specific technical guidelines or passivation verification.
    - 5: Mandatory compliance with recognized debris mitigation norms (passivation, 25-year/5-year rule) verified prior to launch.

KPI 6.2: Environmental Impact Assessment (EIA) Streamlining

- **Description:** Evaluates legal mechanisms designed to streamline Environmental Impact Assessments (EIAs) for spaceports while maintaining high environmental standards.
- **Motivation:** Traditional infrastructure EIAs can take years; statutory waivers for tier-2 modifications or specialized spaceport EIA fast-tracks prevent excessive development delays.
- **Scoring Rubric (1–5):**
    - 1: Full, multi-year bespoke EIA required for every operational change or vehicle addition without tiering.
    - 3: Standard environmental review required, with limited administrative exemptions for minor modifications.

- 5: Tiered EIA framework allowing programmatic spaceport environmental approvals and statutory fast-tracks or potential exclusion of an EIA for pre-assessed launch envelopes.

KPI 6.3: Hazardous Material & Propellant Lifecycle Flexibility

- **Description:** Measures regulations governing the handling, storage, transport, and environmental compliance of traditional and green spaceport propellants through streamlined, integrated permitting frameworks.
- **Motivation:** Propellant licensing must balance community safety with operational flexibility, particularly for high-cadence commercial fuelling operations. Rather than replacing standard industrial hazardous chemical regulations (such as SEVESO III or ADR), optimal spaceport frameworks integrate these established safety baselines into a single, coordinated licensing window, avoiding fragmented local permits while providing accelerated pathways for lower-toxicity green propellants.
- **Scoring Rubric (1–5):**
  - 1: Blanket bans or severe restrictions on chemical storage that prevent efficient commercial propellant loading.
  - 3: Standard industrial hazardous chemical regulations apply, requiring separate permits from local authorities.
  - 5: Integrated spaceport propellant licensing embedded within established industrial safety baselines (e.g., SEVESO III), enabling consolidated bulk storage permits and fast-track authorizations for green propellants.

PILLAR 7: INTELLECTUAL PROPERTY PROTECTION

KPI 7.1: Commercial Secrets & Proprietary Data Protection

- **Description:** Assesses statutory obligations and administrative procedures protecting proprietary launcher data, flight software, and trade secrets submitted during regulatory reviews.
- **Motivation:** Launch providers face substantial exposure when submitting detailed CAD designs, flight algorithms, and propulsion data to public authorities. Without explicit statutory trade secret protection, technical submissions risk exposure through public administrative disclosure requests or third-party expert reviews. Robust statutory IP firewalls are essential to protect commercial competitive advantages and satisfy international export control requirements (e.g., ITAR/EAR).
- **Scoring Rubric (1–5):**
  - 1: No statutory trade secret protections in space legislation; submittals subject to broad public disclosure requests.
  - 3: Standard civil service confidentiality applies, but lacks specific technical data handling protocols.
  - 5: Dedicated statutory IP and trade secret safeguards in space legislation with clear non-disclosure mandates and secure data archiving rules.

3.2. KPI Summary Overview

The following table provides a summarised description of the **23 Refined Outcome Key Performance Indicators (KPIs)** established under this WP3.

The KPIs are structured across the **Seven Strategic Pillars** and for each indicator the **core measurement objective** and the **target optimal score** are defined. More detail on the KPIs, including the definitions for scores 1-5, can be found in Annex B.

Master KPI Summary Table

Pillar	KPI Reference	Indicator Name	Core Measurement Objective	Target Optimal Score (5/5)
Pillar 1	**KPI 1.1**	Administrative Velocity & One-Stop-Shop Integration	Degree of licensing centralization & single-window lead agency oversight	Fully integrated One-Stop-Shop portal & lead agency
	KPI 1.2	Statutory Review Clocks & Timeline Predictability	Presence of legally binding statutory maximum decision timelines	Binding statutory decision clock ≤ 90 days
	KPI 1.3	Fee Proportionality & Operator Compliance Cost Stack	Administrative fee structure & recurring compliance burden	Zero-fee or low, transparent, fixed fee schedule
	KPI 1.4	Legal Certainty & Administrative Discretion	Bounded regulatory discretion & clarity of statutory eligibility criteria	Bounded discretion with statutory appeal rights
	KPI 1.5	Proportionality of Fitness & Pre-Qualification Frameworks	Availability of modular, early-stage operator fitness schemes	Statutory modular pre-qualification framework
Pillar 2	**KPI 2.1**	Civil-Military Infrastructure Interoperability & Dual-Use Clearance	Shared use of civil-military range assets & dual-use clearance protocols	Standardized statutory civil-military interoperability
	KPI 2.2	FDI & Foreign Ownership Screening Transparency	Speed, transparency, and objective thresholds in FDI reviews	Fast-track FDI screening with clear safe harbours
	KPI 2.3	Supply Chain Continuity & Subsystem Protection	Regulatory safeguards protecting critical spaceport equipment supply chains	Statutory fast-track trade clearance for critical subsystems
Pillar 3	**KPI 3.1**	Standardization & Harmonized Norms (ISO / ECSS Alignment)	Direct statutory reference to international technical standards	Statutory presumption of conformity for ISO/ECSS
	KPI 3.2	Foreign Certification Recognition & Cross-Border Portability	Mutual recognition & portability of foreign safety cases & qualifications	Automatic / fast-track mutual equivalence recognition

Pillar	KPI Reference	Indicator Name	Core Measurement Objective	Target Optimal Score (5/5)
	KPI 3.3	Non-Discriminatory Access & Multi-Operator Shared Infrastructure	Open-access mandates & explosive quantity-distance (Q-D) rules	Non-discriminatory multi-user pad access & Q-D rules
Pillar 4	**KPI 4.1**	Safety Case Flexibility & ALARP Risk Frameworks	Objective risk-proportional safety frameworks vs. rigid mandates	Objective, risk-proportional ALARP safety framework
	KPI 4.2	Physical Security & Critical Infrastructure Safeguards	Threat-based (TVRA) physical site security & access control	Integrated TVRA threat-proportional security zoning
	KPI 4.3	Cybersecurity Integrity & CIRMP Compliance	Spaceport cyber resilience, TT&C link encryption, & CIRMP standards	Mandatory space-cyber standards (NIS 2 / CIRMP)
	KPI 4.4	Inter-Agency Emergency Preparedness & Drills	Joint emergency response plans & mandatory multi-agency drills	Statutory multi-agency emergency plans & joint drills
	KPI 4.5	Accident Reporting Velocity & Incident Investigation	Mishap reporting clocks & no-fault safety investigation protocols	Rapid reporting clocks (< 12 hours) & no-fault safety reviews
Pillar 5	**KPI 5.1**	Statutory Liability Capping (MPL) & State Backstop	Statutory Third-Party Liability (TPL) caps & state indemnification	Maximum Probable Loss (MPL) cap + state backstop
	KPI 5.2	UN Treaty Alignment & Spacecraft Registration	Compliance with UN Space Treaties & digital registry operations	Automated, digital post-launch registration (< 30 days)
	KPI 5.3	Inter-Operator Cross-Waivers & State Recourse Capping	Statutory mandates for reciprocal waivers of liability	Mandatory statutory inter-operator cross-waivers
Pillar 6	**KPI 6.1**	Space Debris Mitigation & In-Orbit Guidelines Compliance	Enforcement of orbital debris rules (passivation, 25-year deorbiting)	Mandatory compliance with ISO 24113 / IADC norms

Pillar	KPI Reference	Indicator Name	Core Measurement Objective	Target Optimal Score (5/5)
	KPI 6.2	Environmental Impact Assessment (EIA) Streamlining	Risk-proportional, tiered Environmental Impact Assessments	Programmatic spaceport EIAs & fast-track delta reviews
	KPI 6.3	Hazardous Material & Propellant Lifecycle Flexibility	Regulations governing storage, transit, & green propellant fast-tracks	Integrated propellant storage & green engine fast-tracks
Pillar 7	**KPI 7.1**	Commercial Secrets & Proprietary Data Protection	Statutory trade secret safeguards during multi-agency submittals	Strict statutory IP isolation & secure data vaulting

VOLUME 4: Standards and guidelines

4.1. Baseline WP2 Standards and Guidelines Hand-Off

Deliverable D2 provided a set of 52 standards and guidelines, drawn from the review of global jurisdictions. As before, this dataset served as the raw input for the WP3 analytical process. A table (known as the *D2 Harmonised Table for Standards and Guidelines*) is at Annex C.

Unlike the honing intent of the practice analysis, the purpose of the standards and guidelines (and codes of practice) work at this stage was to ensure the output is a list that is as comprehensive as possible. This removes any potential for data loss and is especially important when considering these standards as potential candidates for technical standards (e.g., ISO, ECSS) and soft-law guidelines (e.g., COPUOS, IADC) that may have a role as part of a common regulatory approach for spaceports. Rather than relying on bespoke, jurisdiction-specific national requirements, this work prioritises International and European standards that (could) provide a legal "presumption of conformity" framework or establish standardised baselines for commercial spaceports.

There are two parts to this analysis. First, the standards and guidelines are considered in the context of the KPIs to identify those that *prima facie* have a direct, primary alignment with the KPIs. Second, a wide scan is conducted for relevant modern and/or specialised standards and guidelines that may not have emerged from the existing regulatory regimes examined by WP2. Doing this ensures that contemporary guidance is not excluded, and current gaps are considered (e.g., spaceport cybersecurity, sustainability, energetic materials).

Broadly, the standards and guidelines can be categorised into one of three operational tiers, shown below:

1. **Tier 1: Safety and Risk Norms**: Technical baselines governing safety, explosive site-plan buffers, and hazardous operations. Their binding effect depends on incorporation into applicable legislation, licence conditions, adopted codes, or contracts.
2. **Tier 2: Interoperability and Quality Norms**: Technical interface standards (e.g., fluid couplings, telemetry protocols, ISO Quality Management Systems) enabling multi-vehicle spaceport compatibility.
3. **Tier 3: Environmental and Sustainability Norms**: International guidelines governing sustainability, space debris mitigation, upper-stage passivation, and environmental contamination controls.

In order to provide some distinction between the purposes of the standards and guidelines, and enable focused consideration as the Project progresses, they have been collated into four operational domains:

1. Safety and Hazard Risk Analysis Standards.
2. Interoperability and Ground Interface Standards.
3. Critical Infrastructure and Cybersecurity Guidelines.
4. Space Debris, Sustainability and Environmental Guidelines.

4.2. Standards and Guidelines for Future Evaluation

The following standards, guidelines and codes have been selected for consideration as technical standards and/or soft-law instruments to potentially support or enable the new regulatory approach being developed. They have been drawn from both the output of the previous D2 mapping and a targeted scan of modern and/or specialised international standards. Where direct alignment with specific KPIs requires further qualitative evaluation, these selected standards will be synthesized in the subsequent **D4 Gap Analysis** and **D5 Strategic Roadmap**. Non-European national agency standards (such as NASA technical engineering specifications) fall outside the baseline scope of this project, though ISO/ECSS equivalents addressing similar technical domains are included.

Please note that the reference (column 1) uses the numbers from the source D2 table (reproduced at Annex C) for consistency throughout the Project; new standards are numbered 53 and above.

Selected Standards and Guidelines					
Ref	Standard	Issuing Authority	Document Focus	AEAAS Relevance	Primary KPI(s)
Safety & Hazard Risk Analysis Standards (Tier 1)					
Scope & Function:		Consensus engineering norms governing dependability, functional range safety, hazard identification, explosive quantity-distance (Q-D) siting, and fault-tree risk modelling.			
2	ECSS-M-ST-40C Rev.1	ECSS (European Cooperation for Space Standardization)	Configuration and Information Management	Safety Standards and Technical Specifications	KPI 4.1 (Safety Case Flexibility)
5	ECSS-E-ST-10C Rev.1	ECSS	System Engineering	Safety Standards and Technical Specifications	KPI 4.1 (Safety Case Flexibility)
6	ECSS-E-ST-10-06C	ECSS	Technical Requirements Specification	Safety Standards and Technical Specifications	KPI 4.1 (Safety Case Flexibility)
7	ECSS-E-ST-10-02C Rev.1	ECSS	Verification	Safety Standards and Technical Specifications	KPI 4.1 (Safety Case Flexibility)
8	ECSS-E-ST-10-03C Rev.1	ECSS	Testing	Safety Standards and Technical Specifications	KPI 4.1 (Safety Case Flexibility)

9	ECSS-E-ST-10-04C Rev.1	ECSS	Space Environment	Safety Standards and Technical Specifications	KPI 4.1 (Safety Case Flexibility)
10	ECSS-E-ST-10-24C Rev.1	ECSS	Interface Management	Safety Standards and Technical Specifications	KPI 4.1 (Safety Case Flexibility) KPI 4.4 (Inter-Agency Emergency Preparedness)
17	ECSS-E-ST-70C	ECSS	Ground Systems and Operations	Safety Standards and Technical Specifications	KPI 4.1 (Safety Case Flexibility)
19	ECSS-Q-ST-10C Rev.1	ECSS	Product Assurance Management	Safety Standards and Technical Specifications	KPI 4.1 (Safety Case Flexibility)
20	ECSS-Q-ST-10-09C Rev.1	ECSS	Nonconformance Control System	Safety Standards and Technical Specifications	KPI 4.1 (Safety Case Flexibility)
21	ECSS-Q-ST-20C Rev.2	ECSS	Quality Assurance	Safety Standards and Technical Specifications	KPI 4.1 (Safety Case Flexibility)
22	ECSS-Q-ST-20-07C	ECSS	Quality and Safety Assurance for Space Test Centres	Safety Standards and Technical Specifications Hazard Analysis and Risk Assessment	KPI 4.1 (Safety Case Flexibility) KPI 4.4 (Inter-Agency Emergency Preparedness)
23	ECSS-Q-ST-30C Rev.1	ECSS	Dependability	Safety Standards and Technical Specifications Hazard Analysis and Risk Assessment	KPI 4.1 (Safety Case Flexibility)
24	ECSS-Q-ST-40C Rev.1	ECSS	Safety	Safety Standards and Technical Specifications Hazard Analysis and Risk Assessment	KPI 4.1 (Safety Case Flexibility)
25	ECSS-Q-ST-40-02C	ECSS	Hazard Analysis	Hazard Analysis and Risk Assessment	KPI 4.1 (Safety Case Flexibility)
30	ISO 14620-1:2026	International Organization for Standardization (ISO)	Space systems — Safety requirements — Part 1: System safety	Safety Standards and Technical Specifications Hazard Analysis and Risk Assessment	KPI 4.1 (Safety Case Flexibility)

31	ISO 14620-2:2019	ISO	Space systems — Safety requirements — Part 2: Launch site operations	Safety Standards and Technical Specifications Hazard Analysis and Risk Assessment	KPI 4.1 (Safety Case Flexibility) KPI 4.4 (Inter-Agency Emergency Preparedness)
32	ISO 14620-3:2021	ISO	Space systems — Safety requirements — Part 3: Flight safety systems	Safety Standards and Technical Specifications Hazard Analysis and Risk Assessment	KPI 4.1 (Safety Case Flexibility)
53	NFPA 400	National Fire Protection Association®	Hazardous Materials Code	Hazard Analysis and Risk Assessment Emergency Response Planning	KPI 4.1 (Safety Case Flexibility) KPI 4.4 (Inter-Agency Emergency Preparedness)
54	NFPA 495	National Fire Protection Association®	Explosive Materials Code	Hazard Analysis and Risk Assessment Emergency Response Planning	KPI 4.1 (Safety Case Flexibility) KPI 4.4 (Inter-Agency Emergency Preparedness)
Interoperability & Ground Interface Standards (Tier 2)					
Scope & Function:		Technical norms defining standardized mechanical, fluid, electrical, cleanroom, and quality management interfaces between visiting launch vehicles and spaceport ground support equipment (GSE).			
34	ISO 14625:2023	ISO	Ground Support Equipment	Safety Standards and Technical Specifications Hazard Analysis and Risk Assessment	KPI 3.1 (Standardization & Harmonized Norms)
35	ISO 17689:2023	ISO	Interface Control Documents	Safety Standards and Technical Specifications Payload Review Requirements	KPI 3.1 (Standardization & Harmonized Norms)
55	ISO 14644-1:2015 (and 14644 Series)	ISO	Cleanroom standards	Technical Specifications	KPI 3.1 (Standardization & Harmonized Norms)
56	ISO 9001:2026	ISO	Quality Management Systems — Requirements	Technical Specifications	KPI 3.1 (Standardization & Harmonized Norms)
57	AS9100D	Aerospace Quality Group	Quality Management Systems — Requirements	Technical Specifications	KPI 3.1 (Standardization & Harmonized Norms)

Critical Infrastructure & Cybersecurity Guidelines (Tier 1 / Tier 2)					
Scope & Function:		Standards establishing information security management, command-and-control telemetry link encryption, and Critical National Infrastructure (CNI) resilience.			
58	ISO/IEC 27001:2022	ISO International Electrotechnical Commission (IEC)	Information Security Management System – Requirements	Technical Specifications Security Requirements	KPI 4.3 (Cybersecurity Integrity)
59	ISO/IEC 27032:2023	ISO IEC	Cybersecurity — Guidelines for Internet security	Technical Specifications Security Requirements	KPI 4.3 (Cybersecurity Integrity)
60	CAP 2535	UK Civil Aviation Authority (UK CAA)	Guidance on Cyber Security Strategies	Technical Guidance Security Requirements	KPI 4.3 (Cybersecurity Integrity)
61	NIS 2 Directive (Directive (EU) 2022/2555).	European Parliament / Council	Cyber Security Framework	EU Legislation Security Requirements	KPI 4.3 (Cybersecurity Integrity)
62	CAP 2217	UK CAA	Guidance on security matters for applicants and licensees	Technical Guidance Security Requirements	KPI 4.2 (Physical Security & CNI Safeguards)
Space Debris, Sustainability & Environmental Guidelines (Tier 3)					
Scope & Function:		International soft-law guidelines and technical codes of conduct governing orbital debris mitigation, upper-stage passivation, planetary protection, and spaceport lifecycle carbon accounting.			
38	ISO 24113:2023	ISO	Space systems — Space debris mitigation requirements	Debris Mitigation Requirements Adherence to Debris Mitigation Guidelines	KPI 6.1 (Space Debris Mitigation)
51	Space Debris Mitigation Guidelines of the Committee on the Peaceful Uses of Outer Space	UN Committee on the Peaceful Uses of Outer Space	Space Debris Mitigation Guidelines	Debris Mitigation Requirements Adherence to Debris Mitigation Guidelines	KPI 6.1 (Space Debris Mitigation)
52	IADC Space Debris Mitigation Guidelines (Rev. 4, 2025)	Inter-Agency Space Debris Coordination Committee	Space Debris Mitigation Guidelines	Debris Mitigation Requirements Adherence to Debris Mitigation Guidelines	KPI 6.1 (Space Debris Mitigation)

63	BSI Flex 1969 v2.0:2026-03	British Standards Institution (BSI)	Space Sustainability – Overarching Principles and Framework	Sustainability Provisions	KPI 6.1 (Space Debris Mitigation)
64	BSI Flex 1971 v2.0:2026-03	BSI	Space Sustainability – Launch – Code of Practice	Sustainability Provisions	KPI 6.1 (Space Debris Mitigation) KPI 6.3 (Hazardous Material & Propellant Lifecycle Flexibility)

VOLUME 5: Conclusion and forward look

5.1. Report Summary

The task underpinning this Report was the analytical bridge between the output of the previous work package and the next phase. It involved honing and preparing the data set to stimulate efficient and focused future work.

The practices identified in the previous work package have been sifted using an AEAAS proprietary assessment tool, allowing scrutiny and auditing of the independent assessment process. Of the original 266 practices, the sift, duplicate removal, initial gap analysis and *would add value* check produced a consolidated list of 179 "candidate best practices" to go forward to the next stage.

This task also required the development of the KPIs to be used in future-focused assessments. Each KPI has been individually described and justified, and its scoring criteria have been defined. The refined list of Candidate Best Practices is presented in Volume 2, while the detailed KPI framework is presented in Volume 3.

Finally, the task required consideration of standards and guidelines as potential technical standards or soft-law guidelines that could have a "presumption of conformity" function for a common regulatory approach for spaceports. The analysis of standards and guidelines differed from the practice analysis because it was not intended to narrow the dataset. The intended output was an expansive and comprehensive list for progression to future analysis. In addition to carrying forward all 52 standards and guidelines identified during the previous work package, the list was supplemented with 12 modern and/or specialist instruments that did not emerge from the previous work. These instruments were tested against the newly developed KPIs for alignment, and the product of this work can be found in Volume 4.

The purposes of this report (Deliverable 3 (D3) and part of Work Package 3 (WP3)) are to explain the processes used to refine the data, expose the KPIs have been developed and provide the output data to be used by future work packages.

5.2. High-Level Conclusions

The completion of Deliverable D3 marks the successful transition from qualitative inventory mapping to a quantitative, outcome-focused assessment framework. By establishing the 23 Refined Outcome KPIs aligned across Seven Strategic Pillars and applying a dual-reviewer sifting tool, the project has successfully distilled 266 raw practices into 179 Candidate Best Practices.

Key high-level insights from this phase include:

1. **Finding Best Practices:** Reiterating the conclusions of D2, the practices in use globally are extremely diverse, with some representing the absolute antithesis of others. The candidate best practice selection process removed many of the more extreme practices. The next phase will further evaluate the 179 retained Candidate Best Practices against the Outcome KPIs.

2. **Convergence on Core Enablers:** Over 85% direct consensus was achieved during independent sifting regarding practice selection, reflecting broad alignment between technical and operational evaluators on key regulatory enablers such as single-window lead agencies, statutory review clocks, and risk-proportional safety cases..
3. **Elimination of Administrative Friction:** Reconciling the 39 edge cases highlighted the necessity of filtering out practices that introduce uncapped regulatory discretion, open-ended consultations, or duplicative multi-agency approvals.
4. **Myriad Standards:** This analysis has shown that there is a plethora of standards and guidelines that could potentially support a presumption-of-conformity mechanism within the future regulatory framework, and while there is underlying coherence across the sector, examination of the detail will be critical before assuming that conformity is easily achieved by operators.
5. **Preparation for Next Tasks and Deliverable (D4):** The resulting dataset of 179 practices, coupled with technical standards and guidelines, provides a robust, manageable foundation for the deep-dive performance evaluation and gap analysis required in the next tasks.

5.3. Next Steps and Journey to Deliverable D4

The next tasks will culminate with D4 and will be focussed on further refining and preparing the data for WP4. This means the 179 candidate practices and 64 standards and guidelines will be formally evaluated and scored against the 23 Outcome KPIs with the purpose of confirming their relevance and importance to the regulatory framework development activity. This package of work also includes a deeper gap analysis, which will include identification of shortcomings and bottlenecks. Figure 7 shows the operational roadmap connecting Deliverable D3 to D4.

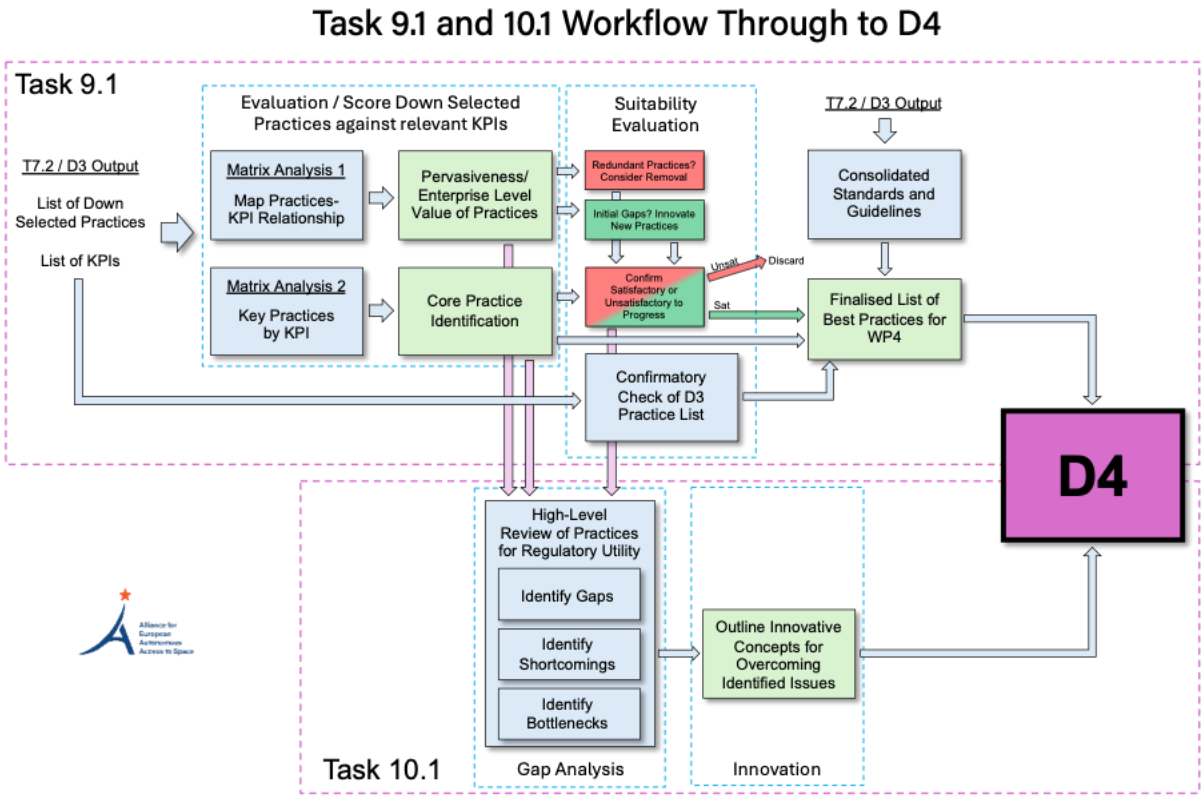


Figure 7. Tasks 9.1 and 10.1 workflow activities to Deliverable 4.

As detailed in the WP3 Workflow Diagram, Task 9.1 will execute Matrix Analysis 1 (Practice-to-KPI relationships) and Matrix Analysis 2 (Key Practices grouped by KPI) to evaluate practice pervasiveness and core utility. Practice suitability criteria will be finalized for the WP4 Common European Framework. Practices identified as unsatisfactory, redundant, or incomplete will feed into Task 10.1 (Gap Analysis & Innovation), where specific regulatory gaps, shortcomings, and bottlenecks will be analysed to generate innovative concepts for overcoming identified issues in D4.

5.4. Maintenance of the Analytical Threads

The diagram below (Figure 8) shows the progress of the main strands of analysis through the work packages. It is important to note that some strands are not considered at each step, but that no analysis is lost.

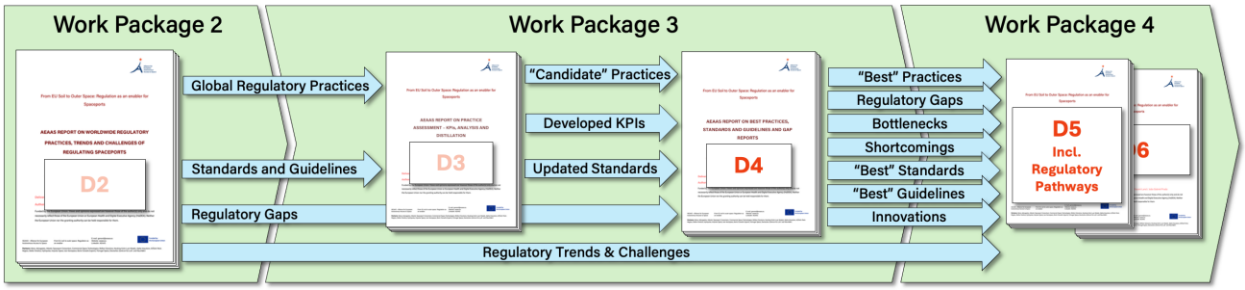


Figure 8. The progression of analytical data.

ANNEX A: Comprehensive list of the original practices from deliverable 2, with work package 3 additions

A.1 Comprehensive list of candidate best practices

The following table provides the full D2 output list of practices, showing those selected for progression in the green boxes, those rejected as crossed through, those innovation related additions in blue, and those previously rejected but forced through because of perceived added value in orange:

Administrative permission	
Practice 1.1	Private operators are required to obtain autonomous license to operate spaceport through a dedicated spaceport licensing regime
~~Practice 1.2~~	~~Private operators are not required to obtain an autonomous spaceport license, but must obtain a license for launch operations/space activities, in general (which *de facto* requires authorisation to undertake the typical operations of a spaceport)~~
Practice 1.3	Private operators are not subject to dedicated spaceport licensing regimes, but must obtain a license to operate a spaceport through applications which are assessed on a case-by-case basis
~~Practice 1.4~~	~~Private operators cannot obtain a license to operate spaceports because the infrastructure is state owned or under state control~~

Timing considerations	
~~Practice 2.1~~	~~No statutory maximum time for issuance of the license to operate a spaceport is prescribed~~
Practice 2.2	No statutory maximum time for issuance of the license to operate a spaceport is prescribed, but soft law indicates the timeframe
Practice 2.3	The deadline for issuance of the license to operate a spaceport is set statutorily
Practice 2.4	The expected time required for obtaining issuance of a license/permit is lower than 6 months
Practice 2.5	The expected time required for obtaining issuance of a license/permit is between 6 and 9 months
Practice 2.6	The expected time required for obtaining issuance of a license/permit is between 9 months and 12 months
Practice 2.7	The expected time required for obtaining issuance of a license/permit is over 12 months

One-stop-shop mechanisms	
~~Practice 3.1~~	~~There is no formal one-stop shop mechanism for the licensing process~~
Practice 3.2	A formal one-stop shop mechanism is provided for in regulation (information and documentation required for such authorizations may be submitted in the application)
~~Practice 3.3~~	~~The one-stop shop mechanism for the licensing process is elective (operator may obtain other opinions / licenses autonomously and inform and prove during application)~~
Practice 3.4	The one-stop shop mechanism for the licensing process is mandatory (operator must proceed through one-stop shop)

Prior qualification mechanisms

Practice 4.1	Mechanisms enabling submission of information in the context of a pre-application procedure which waives (re)submission of pre-qualified information for the effective application are available (not mandatory)
Practice 4.2	Launch facility conformity certification can be obtained in advance to simplify future applications
~~Practice 4.3~~	~~Critical systems and subsystems employed in space technology may be required to be certified by competent authorities for later employment~~
Practice 4.4	Safety approvals/certificates may be obtained to avoid need to submit safety information for each individual operation
~~Practice 4.5~~	~~*Ad hoc* waiver of requirements for ulterior licensing procedures may be issued by competent authorities following request by the operator~~
Practice 4.6	Application of criteria ulterior licensing procedures that, if met, create a regulatory presumption that the application is compliant

Procedural steps	
~~Practice 5.1~~	~~Operator must apply for a pre-application process (which is mandatory)~~
Practice 5.2	Operator may choose to submit to a prior qualification process (not mandatory)
~~Practice 5.3~~	~~Mandatory prior contact or meeting with administrative entity is required before the application for a spaceport license~~
Practice 5.4	Process includes a stage for a formal application for obtaining a spaceport license
Practice 5.5	The formal application for obtaining a spaceport licence is submitted to the body which ultimately grants the licence (the "Granting Authority")
~~Practice 5.6~~	~~The formal application for obtaining a spaceport license is submitted to another administrative entity or body (which is different from the Granting Authority)~~
~~Practice 5.7~~	~~The preparation of the administrative file for the issuance of the spaceport licence is entrusted to a body or entity other than the Granting Authority~~
~~Practice 5.8~~	~~The spaceport license process entails consultation of other bodies / governmental agencies~~
~~Practice 5.9~~	~~The spaceport license process requires pre-approvals from other bodies or governmental agencies (e.g., governmental pre-approval)~~
~~Practice 5.10~~	~~The Granting Authority is involved in the preparation of the pre-approvals it is required to sanction under the spaceport licence process~~
~~Practice 5.11~~	~~Statute does not specify which pre-approvals/consultations are required for licensing a spaceport; which entities must be heard is defined on a case-by-case basis~~
~~Practice 5.12~~	~~The spaceport license process requires requires obtaining additional licenses (e.g., telecoms)~~
~~Practice 5.13~~	~~Approval or authorization is not prepared by the Granting Authority, but rather by another administrative body~~
Practice 5.14	The spaceport license process contains modular licensing schemes, whereby information related to each aspect of the spaceport is submitted separately to streamline review
~~Practice 5.15~~	~~The spaceport licence process entails stakeholder consultation~~

Stakeholder consultation	
~~Practice 6.1~~	~~Binding consultation of civil society or ethnic groups is required for land access rights, typically lasting several months to years~~
~~Practice 6.2~~	~~Non-binding consultation of civil society or ethnic group is required for land use, typically lasting some weeks to a few months~~

Need to obtain opinions, pre-approvals or otherwise consultations	
~~Practice 7.1~~	~~No administrative entities are heard during the licensing process~~
~~Practice 7.2~~	~~The national space agency issues a binding opinion~~
Practice 7.3	The member/department of government issues a binding opinion
~~Practice 7.4~~	~~The national Aviation Authority issues a binding opinion~~
Practice 7.5	The member/department of government issues binding opinion; national security, health and safety, and environmental authorities issue non-binding opinions; maritime and telecommunications authorities are heard when relevant
~~Practice 7.6~~	~~The Environmental Authority issues binding opinion; national security authority, foreign affairs member of government, Space Agency, maritime and telecommunications authorities issue non-binding opinions~~
~~Practice 7.7~~	~~The Government, municipal and regional authorities issue binding opinions; Space Agency, defence member of government, foreign affairs member of government, internal affairs member of government, and infrastructure, health and environment member of government issue non-binding opinions; maritime authority is heard when relevant~~
~~Practice 7.8~~	~~The Defence member of government, foreign affairs member of government, and education and development member of government issue binding opinions; nuclear regulatory authority is heard when relevant~~
~~Practice 7.9~~	~~The Aviation Authority, Environmental Agency, Telecommunications Authority and Defence member of government issue binding opinions~~
~~Practice 7.10~~	~~Aviation Authority, Environmental Agency, Telecommunications Authority and Export Control Authority issue binding opinions~~
~~Practice 7.11~~	~~Aviation Authority, Environmental Agency, Maritime Authority, Telecommunications Authority, Hazardous materials and export control Authority issue binding opinions~~
Practice 7.12	No one issues opinions with binding effects; the Space Agency and Defence member of government are heard when relevant
Practice 7.13	No one issues opinions with binding effects; the national security authority, defence member of government and foreign affairs member of government issue non-binding opinions
Practice 7.14	No one issues opinions with binding effects; telecommunications authority, environmental authority, infrastructure member of government and national security authority issue non-binding opinions
Practice 7.15	Defence member of government, internal affairs member of government, intelligence services, health member of government and environmental agency issue non-binding opinions; aviation authority is heard when relevant
~~Practice 7.16~~	~~Case-by-case basis~~

Exemptions and light regimes	
~~Practice 8.1~~	~~No licence exemption or light regime exist~~
~~Practice 8.2~~	~~Light regimes exist but only for missions conducted by public bodies or agencies, or ordered or requested by those bodies or agencies~~
~~Practice 8.3~~	~~Spaceport operation by governmental agencies/ bodies is subject to simplified licensing procedure~~
Practice 8.4	Whenever the launch is directly conducted by the operator of the spaceport (dual service provision) the launch will be subject to simplified licensing procedure

Practice 8.5	Tests, experimental operations, prototypes and similar operations are excluded from typical commercial spaceport licensing regimes
Practice 8.6	Requirements to obtain certification acting as easement / replacement of administrative reviews for approvals (reduction of time for issuance from application up to three quarters)
~~Practice 8.7~~	~~Case-by-case basis licensing enabling adjustment, exemptions, easements and ad hoc light regimes~~
~~Practice 8.8~~	~~Possibility of submitting *ad hoc* request for easement / light regime / exemption / waiver~~
Practice 8.9	Amateur unmanned rocket operations do not require a site operator license
Practice 8.10	Incremental review approach (modular submission process)
Practice 8.11	Easements for experienced operators using proven vehicles from established sites

Organisational requirements	
From a legal/financial fitness perspective:	
Practice 9.1	The applicant must be fit and proper (proven, e.g., through submission of resumes of decision-making bodies and criminal records)
Practice 9.2	The applicant must demonstrate financial capacity, responsibility and adequate financial arrangements (e.g., through submission of sources of financing, IRS filings, expected revenues and financial return)
~~Practice 9.3~~	~~The applicant must have legal representative / headquarters in the jurisdiction~~
~~Practice 9.4~~	~~The applicant must submit evidence of regular tax status~~
Practice 9.5	Strictness of fitness legal/financial fitness requirements is proportional to risks and size of the company (otherwise undefined)
From a technical standpoint:	
~~Practice 9.6~~	~~The applicant must demonstrate technical capability/competence (terms not defined)~~
Practice 9.7	Applicant must demonstrate technical parameters, mission planning and readiness assessment
Practice 9.8	The applicant must demonstrate qualified personnel (through description of human resources, resumes, or certifications)
Practice 9.9	The applicant must demonstrate adequacy of operational procedures
~~Practice 9.10~~	~~The applicant must submit description of company activities over prior three years and/or business plan for the near future~~
Practice 9.11	The applicant technical competence is implied through certification requirements (certifications of space technology)
Practice 9.12	Evidence of the applicant technical competence is not autonomous requirement, but is instead included as part of the safety component
Practice 9.13	The applicant must demonstrate aptitude and qualified technical team
As miscellaneous:	
Practice 9.14	Insurance/financial requirements must be satisfied by the applicant before license is issued
~~Practice 9.15~~	~~The applicant must enter compensation contract for damages with the State before license is issued~~
Practice 9.16	The applicant must submit sworn statement of absence of suspensions of activities, domestic or abroad
Practice 9.17	The applicant must disclose foreign ownership

Practice 9.18	The applicant must describe the organizational structure (organization chart) highlighting specific responsibilities
Practice 9.19	The applicant must submit proof of rights to facilities and equipment
~~Practice 9.20~~	~~There are no general spaceport operator requirements; the licence is instead subject to conditions set by the Granting Authority on a case-by-case basis as appropriate~~

Documentation evidencing the concept and implementation of operations	
~~Practice 10.1~~	~~Applicant must demonstrate "sufficient ground safety" (use of indeterminate concept)~~
Practice 10.2	Applicant must submit flight safety assessment
Practice 10.3	Applicant must submit evidence of compliance with specific norms or safety standards (i.e., ISO standards)
Practice 10.4	Applicant must submit evidence that the risks of operation are ALARP (as low as reasonably practicable)
Practice 10.5	Applicant must submit safety/risk assessment of the spaceport operation
Practice 10.6	Applicant must submit precautionary measures to protect public safety and order
Practice 10.7	Rocket design must meet launch vehicle safety standards
Practice 10.8	Applicant must submit indication of safety buffers
Practice 10.9	Applicant must submit hazard identification plan
Practice 10.10	Applicant must submit report demonstrating compliance with safety standards
Practice 10.11	Applicant must submit plan for safety audits
Practice 10.12	Applicant must submit safety management plan and key personnel
~~Practice 10.13~~	~~An explicit requirement exists to not compromise national security matters (e.g., through prohibition or subjection to security assessment by public authorities)~~
Practice 10.14	An explicit requirement exists to protect state secrets/commercial secrets
Practice 10.15	Applicant must submit security risk assessment
Practice 10.16	Applicant must submit security plan/programme
Practice 10.17	Applicants must submit cybersecurity measures planned
Practice 10.18	Applicants are responsible for planning and ensuring control of public access to the facilities
Practice 10.19	Applicants must have a video surveillance system installed and submit a map of its location during the application
Practice 10.20	Applicant must submit proposed methods of archiving confidential and secure documents and data
Practice 10.21	Applicant must demonstration sufficient physical security of the center's facilities and operations (including against natural phenomena and man-made disasters)
Practice 10.22	Applicants must submit an environmental protection plan during application
Practice 10.23	Applicants must undertake Environmental Impact Assessment before construction
~~Practice 10.24~~	~~Applicants must obtain approval from the environmental authority before construction.~~
Practice 10.25	Applicants must demonstrate compliance with COPUOS, or other, debris mitigation guidelines
~~Practice 10.26~~	~~Applicants must show their activities do not cause disproportionate damage to the environment~~
Practice 10.27	Applicants must submit of evidence of environmental safety in space, including measures to cleanup in case of environmental accident

~~Practice 10.28~~	~~Subjection to dedicated EIA for infrastructure presenting major risks or severe potential nuisances to health, safety, or the environment~~
Practice 10.29	Submission of waste management procedures and location/storage and handling of hazardous substance storage
Practice 10.30	Statutory waivers to bypass duplicative multi-agency environmental reviews/licenses
Practice 10.31	Applicants must submit emergency plan / response procedures as standard licence condition
Practice 10.32	Applicants must submit Incident Report template
Practice 10.33	Applicant must demonstrate technical compatibility with launch site infrastructure
Practice 10.34	Applicant must submit a quality management system
Practice 10.35	Applicant must demonstrate suitable vehicle interface (through certification)
Practice 10.36	Applicants must anticipate measures for orderly termination of activities
Practice 10.37	Applicants must submit launch plan showing flight path and flight termination measures
Practice 10.38	Applicant must demonstrate protection against lightning and anticipate submit plan for handling explosive siting requirements
Practice 10.39	Applicants must report on the maximum expected launch frequency by vehicle type per launch point and activity schedule
Practice 10.40	Applicants must submit operations and maintenance manual for the centre and its obsolescence plan
~~Practice 10.41~~	~~Applicants must identify potential users of the services~~
~~Practice 10.42~~	~~Applicants must conduct an Export Control Assessment and FDI screening as part of the licensing process~~
Practice 10.43	Applicants must obtain a spectrum authorization prior to initiating their spaceport activity
Practice 10.44	Applicants must demonstrate compliance with COSPAR Planetary Protection Policy for missions to other celestial bodies
Practice 10.45	Applicants must submit the terms and conditions they intend to apply for the provision of infrastructure and services to launch / mission control operators
Practice 10.46	If applicable, applicants must submit systems and processes implemented for mission control
Practice 10.47	Applicants must submit space operations communication plan, including notification of the launch and/or re-entry schedule
Practice 10.48	Applicant must submit description of the types of vehicles that can be launched and/or returned to the spaceport
Practice 10.49	Applicant must demonstrate that at least one type of launch vehicle can be safely flown from each proposed launch point
~~Practice 10.50~~	~~Mandatory joint exercises with emergency management services~~
~~Practice 10.51~~	~~Corrective actions may be imposed by competent authority~~
~~Practice 10.52~~	~~Zero-defect analysis before resuming launch operations after failures~~
~~Practice 10.53~~	~~Undertaking of safety drills at facilities~~
~~Practice 10.54~~	~~Coordination of emergency plans with local government, fire and disaster authorities~~
~~Practice 10.55~~	~~Coordination arrangements with emergency authorities during launches~~
~~Practice 10.56~~	~~The licensee must preserve all records related to mishaps or occurrences having an impact on safety~~
~~Practice 10.57~~	~~Compliance with hazardous substance control, and propellant handling~~

Practice 10.58	Applicants must submit evidence of their LCA (Life Cycle Analysis) processes
Practice 10.59	Applicants must submit evidence of their supply chain security protocols
Practice 10.60	Applicants must submit their training regime, to ensure the spaceport personnel are suitably qualified

Adjustable requirements, on a case-by-case basis	
~~Practice 11.1~~	~~Yes, the granting authority may impose additional requirements;~~
Practice 11.2	No, the granting authority may not impose additional requirements.

Licence Transfer	
~~Practice 12.1~~	~~Operators may not transfer their licence to other operators~~
Practice 12.2	Licence transfer is permitted subject to prior approval by the competent authority, and the transferee is required to demonstrate compliance with the applicable licensing requirements

Cross-border market access mechanisms	
From an equivalence standpoint:	
~~Practice 13.1~~	~~No formal mutual-recognition or equivalence mechanism in place~~
Practice 13.2	Foreign authorisation may be recognised based on equivalent assessment criteria
Practice 13.3	Foreign certification of a technical element may be accepted where the foreign certification system is deemed equivalent
Practice 13.4	Foreign authorisation may justify simplified procedures or exemption from domestic licensing requirements
~~Practice 13.5~~	~~Foreign assessments or authorisations may be considered without constituting formal equivalence or recognition~~
Practice 13.6	Treaty-based bilateral agreement allowing for the recognition of foreign authorisation
From a mutual recognition standpoint:	
Practice 14.1	Automatic mutual recognition of foreign authorisations pursuant to an international agreement
~~Practice 14.2~~	~~Recognition of certification by foreign actors (state authorities or standardisation organisations) when these actors have been unilaterally sanctioned by the domestic competent authorities~~
Practice 14.3	Domestic competent authorities are authorised by statute to consider foreign licenses / authorizations and/or certifications (although waiver is not automatic)
Practice 14.4	Operators licensed by foreign authorities may benefit from waiver or streamlined processes if they are able to bring evidence of equivalence of the foreign requirements to applicable international obligations
~~Practice 14.5~~	~~No mutual recognition mechanisms are available – national license is required regardless of foreign authorizations held~~
Licence duration, term and termination	
Practice 15.1	The spaceport operator licence expires at the end of a fixed licence term
~~Practice 15.2~~	~~The spaceport operator licence expires upon completion of the authorised mission or operation~~
Practice 15.3	The spaceport operator licence lapses if the authorised activity does not commence within a specified period
Practice 15.4	The spaceport operator licence does not automatically expire and may be granted for an indefinite period

Practice 15.5	The spaceport operator licence may be revoked for breach of licence conditions or applicable legal requirements
Practice 15.6	Prior notice and a right to be heard are required before revocation of the spaceport operator licence
~~Practice 15.7~~	~~The spaceport operator licence revocation may entail restrictions on future applications~~
Practice 15.8	Voluntary surrender / renunciation of the spaceport operator licence is expressly permitted
~~Practice 15.9~~	~~Change of control requires prior approval or a new authorisation / licensing process for spaceport operator~~
Practice 15.10	Change of control may trigger reassessment of the licensee´s eligibility for spaceport operator
~~Practice 15.11~~	~~National security, national interest or international obligations may justify refusal, suspension, revocation or restriction of the licensed activities, as well as exemption from any licensing rules~~
~~Practice 15.12~~	~~Competent authorities may impose additional measures to ensure regulatory compliance, operational continuity or the safe cessation of licensed activities~~

Fees	
Practice 16.1	No fees are required for applying for a spaceport licence, for issuance of the licence, or for renewal
Practice 16.2	Specific fees in connection with spaceport license are prescribed by law or regulation
Practice 16.3	Fees in connection with spaceport license are due at the time of application
Practice 16.4	Fees in connection with spaceport license are due upon issuance of license
Practice 16.5	Fees in connection with spaceport license are due annually
Practice 16.6	Fees in connection with spaceport license are due for renewal of license
~~Practice 16.7~~	~~Amount of fees in connection with spaceport license is proportional to investment in space technology and infrastructure~~

Safety and technical standards	
Practice 17.1	Operators must organise and participate in mandatory joint exercises with local administrative emergency management services
~~Practice 17.2~~	~~Corrective actions may be imposed by competent authority following inspection or incident~~
~~Practice 17.3~~	~~Operators must conduct zero-defect analysis before resuming launch operations after failures~~
Practice 17.4	Operators must undertake safety drills at facilities regularly
Practice 17.5	Operators must coordinate emergency plans with local government, fire and disaster authorities
Practice 17.6	Operators must coordinate with emergency authorities during launches
Practice 17.7	A government representative at the scene oversees guiding the safety protocols of the spaceport
Practice 17.8	Operators must preserve all records related to mishaps or occurrences having an impact on safety
Practice 17.9	Operators must implement procedures to ensure compliance with hazardous substance control, and propellant handling
Practice 17.10	Handling of toxic and acutely hazardous propellants are regulated through safety plans in launch service agreements and payload user manual
~~Practice 17.11~~	~~Certain toxic and acutely hazardous materials are banned~~
Practice 17.12	Certification of safety critical equipment is required
Practice 17.13	Operators are required to comply with physical security and/or Critical National Infrastructure security standards

Compliance, Liability and Insurance	
Responsibility for compliance	
Practice 18.1	The licensed operator is responsible for facility safety, environmental compliance, security, coordination with authorities, license conditions and activities requirements
Practice 18.2	The land access and planning compliance rest with the landowner or leaseholder
Practice 18.3	The property safety lies with landowner/leaseholder
Practice 18.4	The site owner is not separately liable under space legislation but is subject to general liability
Practice 18.5	The responsibility for handling propellant lies with site operator
~~Practice 18.6~~	~~There is no liability for operational failures expressly foreseen~~
Practice 18.7	Where multiple entities are involved allocation of responsibilities is determined by licence conditions
Liability	
Practice 19.1	The state has right of recourse against operator for damages incurred under international law
Practice 19.2	The State's right of recourse is capped, either by statute or through a licence (the State assumes liability beyond the cap of recourse)
~~Practice 19.3~~	~~Operator must compensate State for liability claims~~
Practice 19.4	Government bodies are responsible for accident clean-up
Practice 19.5	Scope of liability and limits are specified by statute
Insurance	
Practice 20.1	Insurance covering third-party liability is required for the operation or use of spaceports / performance of the relevant space activities
Practice 20.2	Insurance covering the lives and health of cosmonauts and employees of space infrastructure is required
Practice 20.3	Insurance for damages caused on government property s required for the operation or use of spaceports / performance of the relevant space activities
~~Practice 20.4~~	~~Insurance is not required for the operation or use of spaceports / performance of the relevant space activities~~
~~Practice 20.5~~	~~Insurance requirements for the operation or use of spaceports / performance of the relevant space activities may be waived or reduced~~
Practice 20.6	Insurance requirements for the operation or use of spaceports / performance of the relevant space activities may be satisfied through an alternative financial guarantee for certain operations
Practice 20.7	The State must be a named beneficiary under the insurance scheme
Maximum amounts payable	
Practice 21.1	Insurance required for the operation of a spaceport must cover maximum probable loss to third parties
~~Practice 21.2~~	~~Insured amounts are specified in the spaceport licence on a case-by-case basis~~
Practice 21.3	Insurance coverage requirements are fixed amounts per type of operation envisaged in the spaceport
~~Practice 21.4~~	~~Insurance coverage requirements are fixed amounts proportional to the mass of the object insured to be launched from the spaceport~~
Practice 21.5	Lowest amount of insurance coverage identified in connection with spaceport activity was 2.000.000 EUR (two million euros) in damages

Practice 21.6	Middle range amount of insurance coverage identified in connection with spaceport activity was 70.000.000 EUR (seventy million euros) in damages
~~Practice 21.7~~	~~Highest amount of insurance coverage identified in connection with spaceport activity was 500.000.000 EUR (five hundred million euros) in damages~~

Standardization and Interoperability Requirements	
Practice 22.1	Operators are only subject to compliance with space management, product assurance, engineering technology, operation service, space application and space science standards
Practice 22.2	Regulation contains standards that de facto reference IADC/ECSS/ISO/COPUOS guidelines
Practice 22.3	IADC/ECSS/ISO/COPUOS guidelines are specifically incorporated in regulation
~~Practice 22.4~~	~~Certification of all space technology employed required~~

Operational requirements - Types of Launch	
Practice 23.1	The spaceport operator license specifies permitted types of launch (e.g. vertical/horizontal or by weight class)
Practice 23.2	The spaceport operator licence does not limit types of launch

Operational requirements - Rights	
Practice 24.1	The spaceport operator is entitled to install the infrastructure and operate the spaceport
Practice 24.2	The spaceport operator is only entitled to operate the spaceport
~~Practice 24.3~~	~~The operator is entitled to operate the spaceport on an exclusive basis~~
Practice 24.4	The spaceport operator is granted with access rights (when infrastructure is owned or operated by public entities)
Practice 24.5	The spaceport operator is entitled to transfer the licence (as an explicit right, although subject to authorisation)

Operational requirements - Duties	
Practice 25.1	The spaceport operator is obliged to update the Granting Authority on an ongoing basis
Practice 25.2	The spaceport operator is obliged to follow incident and accident reporting procedures (see the section below)
Practice 25.3	The spaceport operator is obliged to cooperate with investigations by competent authorities
~~Practice 25.4~~	~~The spaceport operator is obliged to adhere to best practices and to employ best efforts~~
Practice 25.5	The spaceport operator is obliged to provide or enable access by competent authorities to facilities, documents and information
Practice 25.6	The spaceport operator is obliged to facilitate compliance monitoring
Practice 25.7	The spaceport operator is obliged to submit an annual report to the authorities
Practice 25.8	The spaceport operator is obliged to retain records of activities for entire duration of the licence and a determined number of years post-licence term
Practice 25.9	The spaceport operator is obliged to implement cybersecurity measures for spaceport
Practice 25.10	The spaceport operator is obliged to register with the cybersecurity authority
Practice 25.11	The spaceport operator is obliged to maintain a Critical Infrastructure Risk Management Programme (CIRMP) covering cyber, personnel, supply chain and physical hazards for relevant spaceport systems

Reporting incidents	
Practice 26.1	Accidents and malfunctions must be notified within 24 hours
Practice 26.2	Cyber incidents must be reported within 12 hours (critical incidents) or 72 hours (other incidents)
Practice 26.3	Events affecting the validity or continuance of the authorisation must be communicated within 30 days
Practice 26.4	Mitigation details must be submitted within 7 working days
Practice 26.5	Changes in Management and Control or shareholding must be notified within 48 hours
Practice 26.6	Applicant must submit plan for monitoring and sustainability reporting
Practice 26.7	Applicant must demonstrate how it will implement processes to notify competent authorities, within 72 hours, of any event likely to give rise to an insurance claim or of any other occurrence with a severe impact on safety or on operations
Practice 26.8	Licensee must control public access, schedule operations to prevent mishaps, implement mishap plans, comply with explosive siting and lightning protection
Practice 26.9	Physical security breaches must be reported within 12 hours (critical incidents) or 72 hours (other incidents)

Infrastructure and land use	
~~Practice 27.1~~	~~Site suitability (undefined) is assessed during application~~
Practice 27.2	Defined aspects of site suitability, such as launch trajectory or orbital access, population density, proximity to infrastructure, flight corridor analysis, risk analysis, explosive siting are assessed during application
Practice 27.3	Type-specific site safety standards are required for compliance certification
Practice 27.4	The applicants must submit map of the facilities envisaged for the spaceport
Practice 27.5	The applicants must submit description of transportation, power, and communications networks, including redundancies envisaged for the spaceport
~~Practice 27.6~~	~~The applicants must submit identification of suppliers connected with the envisaged spaceport activity~~
Practice 27.7	The applicants must submit dedicated construction plan (if applicable) for the spaceport
Practice 27.8	The site compatibility with suborbital operations, including airspace, infrastructure, and supply chain is assessed

Export Controls, ITAR, EAR, Customs	
~~Practice 28.1~~	~~Maintenance of a national Defence and Strategic Goods List (DSGL) for control of dual-use tech export~~
Practice 28.2	Government approval is required for the export of launch vehicle components, satellite parts and related dual-use technology
Practice 28.3	Launch vehicles are categorized as 'weapons equipment' (in several jurisdictions this is specifically per the MTCR regime)
~~Practice 28.4~~	~~Space-related manufacture (rocket development) and relevant software development are classified as "core designated business sectors"~~
Practice 28.5	Foreign trade act controls export of strategic goods including space technology, satellite components, and missile-related items

Practice 28.6	General monitoring, with the possibility of the government imposing conditions on, or blocking, transactions and exports of dual-use goods for national security reasons
~~Practice 28.7~~	~~Direct application of ITAR/EAR~~
~~Practice 28.8~~	~~Extraterritorial compliance with ITAR/EAR due to bilateral agreements necessary for use of US-origin technology~~
~~Practice 28.9~~	~~Jurisdiction specific equivalent to ITAR/EAR~~
~~Practice 28.10~~	~~Functional equivalent in the form of statute~~
~~Practice 28.11~~	~~No functional equivalent in the form of statute~~
~~Practice 29.1~~	~~Dedicated screening of foreign investment in space technology~~
~~Practice 29.2~~	~~Cap in foreign direct investment~~
Practice 29.3	No space technology specific FDI caps apply

ANNEX B: Detailed catalogue of 23 outcome KPIs

B.1 Detailed Pillar-by-Pillar Indicators & Rubrics

The following table provides the detailed information about each of the 23 Outcome KPIs developed during the Task. Listed under each of the seven pillars, the description, motivation and full scoring rubrics are shown.

Description	Motivation	Scoring Rubric (1–5)
PILLAR 1: FACILITATED ACCESS TO SPACEPORTS		
KPI 1.1: Administrative Velocity & One-Stop-Shop Integration		
Measures the degree to which spaceport licensing and operational approvals are centralized through a single window / lead agency versus requiring separate, uncoordinated applications across multiple authorities.	**Multi-agency approval processes create administrative paralysis and redundant filings. A true One-Stop-Shop drastically shortens launch campaign lead times.**	1: Fully fragmented process requiring independent applications to 5+ uncoordinated agencies without statutory coordination. 2: Fragmented filings across 3–4 agencies; minimal guidance; high administrative/legal overhead. 3: Centralized lead agency exists, but operators must still secure parallel non-binding/binding approvals independently from key authorities (e.g., aviation, environment). 4: Single entity receives application, but applicant manages 2–3 distinct sectoral approvals & fees. 5: Fully integrated One-Stop-Shop; single point of application, consolidated statutory review, and single decision issuance.
KPI 1.2: Statutory Review Clocks & Timeline Predictability		
Assesses whether licensing review periods are governed by legally binding statutory maximum timelines rather than open-ended target windows or soft-law guidance.	**Launch operators require timeline certainty to commit capital, reserve range slots, and sign customer manifest agreements.**	1: No statutory timeline or soft-law target specified; review period is entirely open-ended (often >12 months). 2: Indicative timeline 271–365 days (9–12 months); case-by-case processing without statutory limits. 3: Indicative or soft-law timeline specified (e.g., target 6–9 months), but subject to un-capped extension stops.

Description	Motivation	Scoring Rubric (1–5)
		4: Binding statutory clock 91–180 days (3–6 months); limited clock-stops allowed for formal Requests for Information (RFIs). 5: Legally binding statutory maximum review clock of ≤90 days with strict limitations on regulatory review pauses.
KPI 1.3: Fee Proportionality & Operator Compliance Cost Stack		
Evaluates the fee structure for spaceport operator and launch site licenses, assessing whether fees are fixed/proportional to risk or open-ended based on full regulatory cost recovery.	**Excessive or unpredictable administrative fees inflate the operator compliance cost stack and penalize emerging commercial spaceport business models.**	1: Exorbitant or open-ended full cost-recovery fee structure with mandatory annual recurring fee burdens. 2: High variable fee structure; compliance checks billed at full commercial rate without prior estimates. 3: Moderate fixed fees, but additional variable costs imposed for external expert reviews without prior capping. 4: Transparent fixed fee schedule with modest, capped processing costs. 5: Zero-fee structure or low, transparent, fixed administrative fee schedule proportional to facility class.
KPI 1.4: Legal Certainty & Administrative Discretion		
Evaluates the clarity of statutory eligibility criteria versus the degree of un-capped administrative discretion granted to regulatory authorities to alter or add license conditions.	**Arbitrary or case-by-case regulatory discretion introduces severe legal risk and commercial uncertainty for spaceport investors.**	1: Un-capped statutory authority for regulators to impose arbitrary, case-by-case conditions or revoke approvals at any time without formal appeal. 2: High discretionary oversight; license conditions subject to unilateral updates by authorities mid-campaign. 3: Defined criteria exist, but broad catch-all clauses allow regulatory updates during active operations. 4: Clear statutory eligibility criteria with defined administrative boundaries and standard right-to-be-heard steps. 5: Strictly bounded regulatory discretion; clear statutory criteria, robust right-to-be-heard protections, and formal appeal mechanisms.
KPI 1.5: Proportionality of Fitness & Pre-Qualification Frameworks		
Assesses the availability of modular, risk-based pre-qualification and operator fitness schemes prior to full spaceport license application.	**Pre-qualification allows operators to validate corporate, financial, and technical fitness early, reducing sunk capital risks before committing to**	1: No pre-qualification available; full, costly application file required upfront with zero preliminary feedback.

Description	Motivation	Scoring Rubric (1–5)
	site-specific infrastructure investments.	2: Ad-hoc, informal pre-application meetings permitted, but providing zero legal or administrative status. 3: Optional pre-application consultations available, but non-binding and without formal qualification status. 4: Structured pre-qualification process allowing preliminary formal feedback on major safety/fitness elements. 5: Statutory modular pre-qualification framework enabling formal early-stage approval of operator fitness and facility concepts.
PILLAR 2: EU SOVEREIGNTY AND DUAL-USE ACTIVITY		
KPI 2.1: Civil-Military Infrastructure Interoperability & Dual-Use Clearance		
Evaluates mechanisms facilitating the shared or joint use of civil and military range infrastructure, airspace, and dual-use clearance protocols.	**European sovereign launch capability relies on flexible integration between commercial spaceport operations and defense/military range assets.**	1: Total separation or ad hoc, restrictive military vetoes over commercial access to range assets and airspace. 2: Military range access permitted, but subject to arbitrary military preemption without schedule protection. 3: Case-by-case bilateral agreements required between civil operators and defense authorities without standardized clearance SLAs. 4: Clear separation of civil and defence tracks; transparent criteria for military priority interventions. 5: Standardized, statutory civil-military interoperability framework with pre-agreed dual-use clearance protocols.
KPI 2.2: Foreign Direct Investment (FDI) & Foreign Ownership Screening Transparency		
Measures the transparency, speed, and objective criteria applied during Foreign Direct Investment (FDI) screening and foreign ownership disclosures for spaceport infrastructure.	**Clear FDI screening protects national security while allowing commercial spaceports to attract global equity capital.**	1: Opaque, open-ended FDI blocking rights or rigid ownership caps that restrict non-domestic capital. 2: Restrictive foreign ownership limits requiring onerous domestic equity control. 3: Standard FDI review required, but timelines and criteria are subject to broad national interest interpretations. 4: Transparent FDI review with clear statutory assessment clocks (60 days).

Description	Motivation	Scoring Rubric (1–5)
		5: Transparent, fast-track FDI screening with clear statutory thresholds and safe-harbor exemptions for allied partners.
KPI 2.3: Supply Chain Continuity & Subsystem Protection		
Measures regulations safeguarding critical spaceport subsystems and component supply chains against strategic geopolitical disruptions.	**Spaceports require resilient access to specialized ground equipment, propellants, and tracking technologies.**	1: No regulatory recognition of spaceport supply chain criticality; vulnerable to sudden export or trade freezes. 2: Basic industrial protection laws; no specific provisions for space hardware or ground support equipment. 3: General strategic sector classification without specific fast-track import/export protections for ground infrastructure. 4: Recognized critical infrastructure status with priority customs and import clearance for spare parts. 5: Dedicated statutory protection and streamlined trade clearance for certified spaceport critical subsystems and components.
PILLAR 3: INTEROPERABILITY AMONG SPACEPORTS AND VEHICLES		
KPI 3.1: Standardization & Harmonized Norms (ISO / ECSS Alignment)		
Evaluates the incorporation of international and European consensus technical standards (e.g., ISO, ECSS) into spaceport regulatory requirements.	**Direct reference to established standards eliminates bespoke national design requirements and ensures vehicle-to-spaceport technical compatibility.**	1: Bespoke, jurisdiction-specific technical standards that conflict with international norms. 2: Purely custom local range safety criteria; regulator requires custom proof for all vehicle interfaces. 3: Voluntary use of ISO/ECSS standards; partial acceptance of international compliance evidence. 4: Standardized interface guidelines published; formal presumption of conformity for major ISO/ECSS standards. 5: Full statutory presumption of conformity for ISO, ECSS, and AIAA standards embedded directly into launch law.
KPI 3.2: Foreign Certification Recognition & Cross-Border Portability		
Assesses legal frameworks enabling mutual recognition or simplified acceptance of technical certifications	**Cross-border portability avoids duplicate safety and vehicle qualification campaigns when**	1: Complete refusal to recognize foreign technical assessments; full local re-certification mandated.

Description	Motivation	Scoring Rubric (1–5)
granted by recognized foreign space authorities.	**operators launch from different European spaceports.**	2: Case-by-case consideration of foreign licenses; extensive re-submission of underlying technical files. 3: Structured equivalence mechanisms allowing partial reuse of safety cases with local range adjustments. 4: Pre-qualification models (e.g., FAA Safety Element Approval / PT pre-qualification) recognized for fast-track review. 5: Automatic mutual recognition of equivalent foreign operator licenses, safety cases, and vehicle qualifications.
KPI 3.3: Non-Discriminatory Access & Multi-Operator Shared Infrastructure		
Measures legal requirements ensuring spaceport operators provide fair, open, and non-discriminatory access to shared launch infrastructure (e.g., propellant farms, range tracking, safety zones).	**Multi-tenant spaceports lower capital barriers for new micro-launcher operators and prevent monopolistic infrastructure lock-out.**	1: Exclusive single-tenant licensing regimes that allow primary operators to block competitor access. 2: Multi-tenant permitted in theory, but exclusive safety buffers block concurrent operations. 3: Basic co-location rules; shared infrastructure managed via ad-hoc operator agreements. 4: Codified explosive-siting & quantity-distance rules enabling independent multi-pad operations. 5: Explicit, non-discriminatory multi-user co-location rules; standardized shared hazard zones and automated scheduling.
PILLAR 4: SAFETY AND SECURITY OF INFRASTRUCTURE		
KPI 4.1: Safety Case Flexibility & ALARP Risk Frameworks		
Measures the adoption of objective-based safety frameworks (e.g., ALARP - As Low As Reasonably Practicable) versus rigid prescriptive safety mandates.	**Flexible, objective-based safety cases accommodate novel launcher architectures, whereas rigid rules force costly design modifications.**	1: Rigid prescriptive safety rules requiring exact physical designs regardless of vehicle risk profile. 2: Highly prescriptive rules with limited, complex waiver procedures for non-standard vehicle designs. 3: Mixed framework; objective safety goals allowed, but backed by heavy prescriptive default conditions. 4: Objective safety framework with clear acceptable risk criteria (e.g., 10^{-6} casualty expectation thresholds).

Description	Motivation	Scoring Rubric (1–5)
		5: Fully objective, risk-proportional ALARP safety case framework tailored to specific operator flight profiles.
KPI 4.2: Physical Security & Critical Infrastructure Safeguards		
Assesses requirements for physical security, access control, and Critical National Infrastructure (CNI) protection at spaceport facilities based on Threat, Vulnerability, and Risk Assessments (TVRA).	**Robust physical security protects high-value launch assets, dangerous propellants, and range operations from unlawful interference.**	1: Undefined or absent physical security standards, leaving facilities exposed to operational disruption. 2: Basic site fencing required; access control managed informally by the site owner. 3: Mandated site security plan; defined perimeter checks and badging for hazardous areas. 4: Codified spaceport security standards with multi-zone access control (cleanrooms, pad, storage). 5: Statutory spaceport security framework anchored in TVRA threat-modeling; integrated access control, drone defense, and risk-proportional perimeter protection.
KPI 4.3: Cybersecurity Integrity & CIRMP Compliance		
Measures requirements for cybersecurity resilience, critical infrastructure risk management plans (CIRMP), and telemetry/command link protection.	**Modern digitalized spaceports are vulnerable to cyber intrusions that could compromise launch safety or proprietary operational data.**	1: Unspecified general IT law; no spaceport-specific cyber-resilience or TT&C protection rules. 2: Basic cyber guidelines for office IT; no mandatory requirements for mission control or TT&C encryption. 3: Mandated cyber incident reporting; basic security expectations for flight-critical ground systems. 4: Codified space-cyber framework aligning with critical infrastructure rules (e.g., EU NIS 2 / CRA baseline). 5: Comprehensive space-cyber certification covering supply chain, TT&C link encryption, and real-time incident reporting.
KPI 4.4: Inter-Agency Emergency Preparedness & Drills		
Measures the statutory framework governing joint emergency response plans, mandatory drills, and coordination between spaceports and local first	**Rapid, pre-coordinated emergency response minimizes loss of life and property damage during catastrophic launch or static-fire failures.**	1: No requirement for coordinated emergency planning or joint exercises. 2: Emergency plans required informally without statutory coordination with local civil protection authorities.

Description	Motivation	Scoring Rubric (1–5)
responders (fire, medical, civil protection).		3: Mandatory emergency response plan submission required, but joint drills are voluntary or ad hoc. 4: Centralized incident command structure with pre-coordinated multi-agency emergency protocols. 5: Statutory mandate for integrated multi-agency emergency plans backed by periodic joint exercises and drills.
KPI 4.5: Accident Reporting Velocity & Incident Investigation		
Measures the clarity, timelines, and legal protections associated with reporting operational mishaps and conducting no-fault safety investigations.	**Rapid, standardized mishap reporting enables immediate hazard containment and industry-wide safety learning without premature penalization.**	1: Unclear reporting timelines and punitive investigation processes that discourage transparent disclosure. 2: Fixed reporting deadlines exist, but investigations are managed under general criminal/police authority frameworks. 3: Fixed reporting deadlines exist (e.g., within 24–48 hours), but investigation protocols lack clear separation between safety and liability. 4: Rapid reporting clocks (24 hours) integrated with independent civilian air/space accident investigation boards. 5: Rapid mandatory mishap reporting clocks (<12 hours for critical incidents) integrated with structured, no-fault safety investigation protocols.
PILLAR 5: INTERNATIONAL COOPERATION AND RESPONSIBILITY		
KPI 5.1: Statutory Liability Capping (MPL) & State Backstop		
Evaluates whether Third-Party Liability (TPL) insurance requirements are capped at a Maximum Probable Loss (MPL) limit backed by a state indemnification guarantee.	**Uncapped or exorbitant TPL requirements render commercial spaceport operations uninsurable on the international market.**	1: Unlimited strict operator liability; no statutory liability cap and no state indemnification. 2: Case-by-case discretionary liability limits set late in the application process. 3: High fixed liability cap (> €100M) without state backstop, or full market-rate insurance required. 4: Fixed, reasonable statutory TPL liability cap (≈ €50M - €60M) with partial state backstop above cap. 5: Codified statutory TPL cap based on Maximum Probable Loss (MPL) + 100% State indemnification above cap.

Description	Motivation	Scoring Rubric (1–5)
KPI 5.2: UN Treaty Alignment & Spacecraft Registration		
Assesses legal mechanisms ensuring compliance with UN Space Treaties (1967 OST, 1972 Liability, 1975 Registration) and efficient national registry operations.	**Proper treaty implementation protects state international responsibility while providing launch operators with transparent orbital registration pathways.**	1: Delayed manual registration (>12 months); opaque public object records under UN Convention. 2: Registration processed 6–12 months post-launch; basic manual reporting to the Ministry of Foreign Affairs. 3: Standard registration within 3–6 months post-launch; compliant with minimum UN Convention terms. 4: Rapid registration within 30–90 days post-launch; accessible public digital space object registry. 5: Automated immediate registration (<30 days); real-time public registry integration with standard UN orbital parameters and voluntary Space Traffic Management (STM) tracking data.
KPI 5.3: Inter-Operator Cross-Waivers & State Recourse Capping		
Evaluates statutory mandates requiring reciprocal waivers of liability (cross-waivers) among spaceport operators, launch providers, and contractors.	**Mandatory cross-waivers eliminate complex, inter-party litigation following launch mishaps, stabilizing industry insurance costs.**	1: No statutory cross-waiver rules; parties must negotiate complex bilateral indemnities individually. 2: Voluntary cross-waiver guidelines provided, but without statutory legal enforceability. 3: Standard contractual cross-waivers encouraged, but not legally enforced by space legislation. 4: Statutory cross-waivers mandated for primary contractors and launch operators. 5: Statutory mandate requiring all spaceport users, contractors, and customers to execute mutual waivers of liability.
PILLAR 6: SUSTAINABILITY OF OPERATIONS AND MATERIALS		
KPI 6.1: Space Debris Mitigation & In-Orbit Guidelines Compliance		
Assesses statutory frameworks governing orbital space debris mitigation guidelines (e.g., COPUOS, IADC, ISO 24113) alongside legal pathways for controlled re-entry,	**Orbital sustainability requires strict pre-launch verification of upper-stage passivation and de-orbit plans. Simultaneously, clear**	**1: Framework assumes expendable-only launchers; no legal pathway for recovery permits or orbital debris rules.** **2: Ad-hoc landing/recovery permits; orbital debris mitigation addressed informally without binding rules.**

Description	Motivation	Scoring Rubric (1–5)
downrange recovery, and reusable launcher operations.	**legal provisions for re-entry licensing, hazard area clearance, and stage recovery are vital to enable circular space economy models and next-generation reusable European launch architectures.**	**3: Basic re-entry permits available; voluntary alignment with international orbital debris guidelines.** **4: Codified downrange landing permits; mandatory upper-stage passivation and 25-year deorbit rules.** **5: Dedicated reusability laws (vertical/horizontal recovery) + codified mandatory orbital debris mitigation & passivation rules (ISO 24113 aligned).**
KPI 6.2: Environmental Impact Assessment (EIA) Streamlining		
Evaluates legal mechanisms designed to streamline Environmental Impact Assessments (EIAs) for spaceports while maintaining high environmental standards.	**Traditional infrastructure EIAs can take years; statutory waivers for tier-2 modifications or specialized spaceport EIA fast-tracks prevent excessive development delays.**	1: Unclassified; spaceports regulated strictly by analogy to general chemical factories or airports. 2: Spaceports acknowledged under general infrastructure laws; no standardized environmental metrics. 3: Basic spaceport environmental guidelines; voluntary reporting of carbon footprint and site emissions. 4: Spaceports classified as a distinct infrastructure class; standardized Environmental Impact Assessment parameters. **5:** Explicit statutory spaceport classification in environmental law + standardized EU-aligned Lifecycle Assessment (LCA) guidance.
KPI 6.3: Hazardous Material & Propellant Lifecycle Flexibility		
Measures regulations governing the handling, storage, transport, and environmental compliance of traditional and green spaceport propellants.	**Propellant licensing must balance community safety with operational flexibility, particularly for high-cadence commercial fueling operations.**	1: Rigid one-size-fits-all EIA; non-exempt chemical bans (e.g., REACH hydrazine) block operations. 2: High EIA burden for small campaigns; long environmental review (>18 months) without propellant flexibilities. 3: Standard EIA process (6–12 months); basic distinctions for low-risk testing or small launchers. 4: Risk-based environmental thresholds; streamlined EIA for micro-launchers and clean propellant profiles.

Description	Motivation	Scoring Rubric (1–5)
		5: Integrated spaceport propellant licensing embedded within established industrial safety baselines (e.g., SEVESO III/ADR), enabling consolidated bulk storage permits and fast-track REACH exemptions for green engines.
PILLAR 7: INTELLECTUAL PROPERTY PROTECTION		
KPI 7.1: Commercial Secrets & Proprietary Data Protection		
Assesses statutory obligations and administrative procedures protecting proprietary launcher data, flight software, and trade secrets submitted during regulatory reviews.	**Launch providers will not deploy advanced proprietary technology to European spaceports if regulatory submissions risk public or competitor disclosure.**	1: Unspecified data protections; submitted blueprints/software shared across un-vetted inter-agency bodies. 2: Basic non-disclosure rules, but no statutory protections against commercial IP leaks during reviews. 3: Standard administrative confidentiality rules protecting commercial submittals during review. 4: Codified IP safeguards with designated secure data vaults for sensitive technical submittals. 5: Strict statutory IP isolation; legally enforced data firewalling across reviewing agencies with severe breach penalties.

ANNEX C: Standards and guidelines from Deliverable 2

C.1 Harmonised Table from D2.

The table below shows the output from WP2. Those rows highlighted in green are the standards that have been selected due to their direct alignment with the KPIs discussed in Volume 3 of this document.

AEAAS | WP2 | Harmonised Table | Standards and Guidelines							
#	**Standard**	**Category**	**Relevant AEAAS regulatory item(s) (D2 Annex D)**	**WP2 Assessment**	**Geographic Scope**	**Short Description**	**Reference Source**
ECSS							
Management Standards (ECSS-M)							
1	**ECSS-M-ST-10C Rev.1**	Project Management	*No direct Annex D item; horizontal project support*	**Normative status:** ECSS technical standard **Lifecycle stage:** Planning / construction **Relevance:** Supporting	European	Establishes the requirements for the planning, management and implementation of space projects throughout their lifecycle, including governance, reviews, configuration, risk and project control processes.	https://ecss.nl/standard/ecss-m-st-10c-rev-1-project-planning-and-implementation/
2	**ECSS-M-ST-40C Rev.1**	Configuration and Information Management	**D.1** - Safety standards and technical specifications	**Normative status:** ECSS technical standard **Lifecycle stage:** All lifecycle stages **Relevance:** Supporting	European	Defines the requirements for configuration and information management throughout the lifecycle of space projects, ensuring the identification, control, traceability and integrity of technical information and configuration items.	https://ecss.nl/standard/ecss-m-st-40c-rev-1-configuration-and-information-management/

3	**ECSS-M-ST-60C**	Cost and Schedule Management	*No direct Annex D item; horizontal project s upport*	**Normative status:** ECSS technical standard **Lifecycle stage:** Planning / construction **Relevance:** Indirect	European	Establishes the requirements for planning, monitoring and controlling project costs and schedules throughout the lifecycle of space projects. It defines the management processes necessary to support the efficient use of resources, identify potential cost and schedule deviations, and implement appropriate corrective actions to achieve project objectives.	https://ecss.nl/standard/ecss-m-st-60c-cost-and-schedule-management/
4	**ECSS-M-ST-80C**	Risk Management	**D.4** - Hazard analysis and risk assessment	**Normative status:** ECSS technical standard **Lifecycle stage:** All lifecycle stages **Relevance:** Supporting	European	Defines the requirements for identifying, assessing, monitoring and mitigating risks throughout the lifecycle of space projects to support informed decision-making.	https://ecss.nl/standard/ecss-m-st-80c-risk-management/
Engineering Standards (ECSS-E)							
5	**ECSS-E-ST-10C Rev.1**	System Engineering	**D.1** - Safety standards and technical specifications	**Normative status:** ECSS technical standard **Lifecycle stage:** Planning / construction **Relevance:** Supporting	European	Defines the general systems engineering requirements for the development, integration, verification and validation of space systems throughout the project lifecycle.	https://ecss.nl/standard/ecss-e-st-10c-rev-1-system-engineering-general-requirements-15-february-2017/
6	**ECSS-E-ST-10-06C**	Technical Requirements Specification	**D.1** - Safety standards and technical specifications	**Normative status:** ECSS technical standard **Lifecycle stage:** Planning / construction **Relevance:** Supporting	European	Establishes the requirements for the preparation and management of technical requirements specifications for space systems. It defines the different types of technical requirements and the principles for developing clear, complete and consistent	https://ecss.nl/standard/ecss-e-st-10-06c-technical-requirements-specification/

						specifications applicable to all space projects.	
7	**ECSS-E-ST-10-02C Rev.1**	Verification	**D.1** - Safety standards and technical specifications	**Normative status:** ECSS technical standard **Lifecycle stage:** Construction / operation **Relevance:** Supporting	European	Establishes the requirements for planning, performing and documenting verification activities to demonstrate compliance with system requirements.	https://ecss.nl/standard/ecss-e-st-10-02c-rev-1-verification-1-february-2018/
8	**ECSS-E-ST-10-03C** Rev.1	Testing	**D.1** - Safety standards and technical specifications	**Normative status:** ECSS technical standard **Lifecycle stage:** Construction / operation **Relevance:** Supporting	European	Defines the requirements for planning, conducting and documenting tests performed during the development and qualification of space systems.	https://ecss.nl/standard/ecss-e-st-10-03c-rev-1-testing-31-may-2022/
9	**ECSS-E-ST-10-04C Rev.1**	Space Environment	**D.1** - Safety standards and technical specifications	**Normative status:** ECSS technical standard **Lifecycle stage:** Planning / construction / operation **Relevance:** Supporting	European	Defines the natural and induced space environments applicable to space systems, including environmental models and rules for determining mission-specific environmental conditions across different space regimes.	https://ecss.nl/standard/ecss-e-st-10-04c-rev-1-space-environment-15-june-2020/
10	**ECSS-E-ST-10-24C Rev.1**	Interface Management	**D.1** - Safety standards and technical specifications **H.3** - Payload review requirements	**Normative status:** ECSS technical standard **Lifecycle stage:** Planning / construction / operation **Relevance:** Supporting	European	Establishes a systematic process for the identification, specification, approval, implementation, verification and control of interfaces throughout the lifecycle of space projects. It defines the requirements for managing interfaces between space, ground and launch segments to ensure functional and physical compatibility across interconnected systems.	https://ecss.nl/standard/ecss-e-st-10-24c-rev-1-interface-management-15-november-2024/

11	**ECSS-E-ST-20C**	Electrical and Electronic	**D.1** - Safety standards and technical specifications	**Normative status:** ECSS technical standard **Lifecycle stage:** Planning / construction **Relevance:** Supporting	European	Establishes the general engineering principles, requirements and processes applicable to electrical, electronic, electromagnetic and microwave engineering in space projects, including the design and verification of electrical subsystems and payloads.	https://ecss.nl/standard/ecss-e-st-20c-rev-2-electrical-and-electronic-8-april-2022/
12	**ECSS-E-ST-20-07C Rev.2**	Electromagnetic Compatibility	**D.1** - Safety standards and technical specifications	**Normative status:** ECSS technical standard **Lifecycle stage:** Construction / operation **Relevance:** Supporting	European	Establishes the engineering requirements for ensuring electromagnetic compatibility in space systems. It defines the system requirements, verification processes and test methods necessary to control electromagnetic effects and demonstrate compliance throughout the development and verification of space projects.	https://ecss.nl/standard/ecss-e-st-20-07c-rev-2-electromagnetic-compatibility-3-january-2022/
13	**ECSS-E-ST-32C Rev.1**	Structural General Requirements	**D.1** - Safety standards and technical specifications	**Normative status:** ECSS technical standard **Lifecycle stage:** Construction **Relevance:** Supporting	European	Establishes the mechanical engineering requirements for structural engineering, covering the definition, design, development, verification, production, operation and disposal of structural subsystems throughout the lifecycle of space products.	https://ecss.nl/standard/ecss-e-st-32c-rev-1-structural-general-requirements/
14	**ECSS-E-ST-35C Rev.1**	Propulsion	**D.1** - Safety standards and technical specifications	**Normative status:** ECSS technical standard **Lifecycle stage:** Planning / construction / operation **Relevance:** Supporting	European	Establishes the engineering requirements applicable to liquid, solid and electric propulsion systems used in launch vehicles and spacecraft. It defines the activities, processes and	https://ecss.nl/standard/ecss-e-st-35c-rev-1-propulsion-general-requirements/

						engineering requirements covering functional, physical, environmental, quality, operational and verification aspects of propulsion systems.	
15	**ECSS-E-ST-40C Rev.1**	Software	**D.1** - Safety standards and technical specifications	**Normative status:** ECSS technical standard **Lifecycle stage:** Construction / operation **Relevance:** Supporting	European	Establishes the software engineering requirements for the development of software used in space systems. It defines the processes for software requirements, design, development, verification, validation, operation and maintenance, providing a comprehensive framework for software engineering throughout the lifecycle of space projects.	https://ecss.nl/standard/ecss-e-st-40c-rev-1-software-30-april-2025/
16	**ECSS-E-ST-50C Rev.2**	Communications	**D.1** - Safety standards and technical specifications **G.4** - Compliance with ITU Radio Regulations	**Normative status:** ECSS technical standard **Lifecycle stage:** Construction / operation **Relevance:** Supporting	European	Establishes the engineering requirements for the development of end-to-end spacecraft communication systems. It defines the terminology, engineering activities, functional and performance requirements for space-ground, space-to-space and spacecraft communication links, covering the space link, space network and relevant aspects of the ground network.	https://ecss.nl/standard/ecss-e-st-50c-rev-1-communications-5-december-2024/
17	**ECSS-E-ST-70C**	Ground Systems and Operations	**D.1** - Safety standards and technical specifications	**Normative status:** ECSS technical standard	European	Contains the basic rules, principles and requirements for engineering the ground segment and mission	https://ecss.nl/standard/ecss-e-st-70c-ground-systems-and-operations/

				Lifecycle stage: Operation **Relevance:** Supporting		operations that form part of a space project, including customer-supplier relationships. It excludes ground systems (for example, EGSE (Electrical Ground Support Equipment)) and operations supporting space-segment verification, which are covered by ECSS-E-ST-10-02, and it excludes the launch segment and its operations. It is therefore supporting rather than directly applicable to spaceport launch operations.	
18	**ECSS-E-ST-80C**	Security in Space Systems Lifecycles	**D.6** - Security requirements	**Normative status:** ECSS technical standard **Lifecycle stage:** All lifecycle stages **Relevance:** Supporting	European	Establishes the security engineering requirements for space systems throughout their lifecycle. It defines the processes and controls necessary to ensure the implementation of security measures across space, ground, launch and support segments, addressing both system security and lifecycle security through a risk-based approach.	https://ecss.nl/standard/ecss-e-st-80c-space-engineering-security-in-space-systems-lifecycles/
ECSS-Q — Product Assurance Standards							
19	**ECSS-Q-ST-10C Rev.1**	Product Assurance Management	**D.1** - Safety standards and technical specifications	**Normative status:** ECSS technical standard **Lifecycle stage:** All lifecycle stages **Relevance:** Supporting	European	Establishes the management principles and requirements for implementing and maintaining a Product Assurance programme throughout all phases of a space project. It defines the Product Assurance management framework,	https://ecss.nl/standard/ecss-q-st-10c-rev-1-product-assurance-management-15-march-2016/

						including planning, documentation and project-wide assurance activities applicable to all space projects.	
20	**ECSS-Q-ST-10-09C Rev.1**	Nonconformance Control System	**D.1** - Safety standards and technical specifications	**Normative status:** ECSS technical standard **Lifecycle stage:** Construction / operation **Relevance:** Supporting	European	Establishes the requirements for the identification, documentation, assessment and control of non-conformances affecting deliverable products and supplies in space projects. It defines the processes for managing non-conformances throughout the project lifecycle to ensure compliance with project requirements.	https://ecss.nl/standard/24183/
21	**ECSS-Q-ST-20C Rev.2**	Quality Assurance	**D.1** - Safety standards and technical specifications	**Normative status:** ECSS technical standard **Lifecycle stage:** All lifecycle stages **Relevance:** Supporting	European	Establishes the quality assurance requirements for the planning, implementation and maintenance of a Quality Assurance programme for products developed within space projects. The standard defines the quality assurance framework applicable throughout the project lifecycle and is applicable to all space projects.	https://ecss.nl/standard/ecss-q-st-20c-rev-2-quality-assurance-1-february-2018/
22	**ECSS-Q-ST-20-07C**	Quality and Safety Assurance for Space Test Centres	**D.1** - Safety standards and technical specifications **D.4** - Hazard analysis and risk assessment	**Normative status:** ECSS technical standard **Lifecycle stage:** Construction / operation **Relevance:** Supporting	European	Establishes the quality assurance and safety assurance requirements for space test centres. It defines the requirements applicable to test processes, personnel, facilities, test environments and operations associated with test specimens to ensure the	https://ecss.nl/standard/ecss-q-st-20-07c-quality-and-safety-assurance-for-space-test-centres-1-october-2014/

						safe and reliable execution of testing activities in space projects.	
23	**ECSS-Q-ST-30C Rev.1**	Dependability	**D.1** - Safety standards and technical specifications **D.4** - Hazard analysis and risk assessment	**Normative status:** ECSS technical standard **Lifecycle stage:** All lifecycle stages **Relevance:** Supporting	European	Establishes the dependability assurance programme and the dependability requirements applicable to space systems. It defines the principles, processes and engineering activities required to identify, assess and mitigate technical risks, ensuring that dependability objectives are achieved throughout all phases of a space project.	https://ecss.nl/standard/ecss-q-st-30c-rev-1-space-product-assurance-dependability-15-february-2017/
24	**ECSS-Q-ST-40C Rev.1**	Safety	**D.1** - Safety standards and technical specifications **D.4** - Hazard analysis and risk assessment	**Normative status:** ECSS technical standard **Lifecycle stage:** All lifecycle stages **Relevance:** Supporting	European	Establishes the safety programme and the technical safety requirements for space projects. It defines the principles and requirements for identifying, assessing and controlling hazards to protect personnel, space systems, launch vehicles, ground support equipment, property and the environment throughout the project lifecycle.	https://ecss.nl/standard/ecss-q-st-40c-rev-1-safety-15-february-2017/
25	**ECSS-Q-ST-40-02C**	Hazard Analysis	**D.4** - Hazard analysis and risk assessment	**Normative status:** ECSS technical standard **Lifecycle stage:** Planning / construction / operation **Relevance:** Supporting	European	Establishes the principles, processes and requirements for performing hazard analyses in space projects. It defines the methodology for identifying, assessing and managing hazards that may affect personnel, space systems, ground support equipment, facilities, property or the	https://ecss.nl/standard/ecss-q-st-40-02c-hazard-analysis/

						environment throughout the project lifecycle.	
26	**ECSS-Q-ST-60C Rev.4**	Electrical, Electronic and Electromechanical (EEE) Components	**D.1** - Safety standards and technical specifications	**Normative status:** ECSS technical standard **Lifecycle stage:** Construction **Relevance:** Indirect	European	Establishes the requirements for the selection, control, procurement and use of electrical, electronic and electromechanical (EEE) components in space projects. It defines component assurance requirements based on three classes of assurance and risk, supporting their appropriate application throughout the development and integration of space systems.	https://ecss.nl/standard/ecss-q-st-60c-rev-4-electrical-electronic-and-electromechanical-eee-components-30-april-2025/
27	**ECSS-Q-ST-70C Rev.2**	Materials, Mechanical Parts and Processes	**D.1** - Safety standards and technical specifications	**Normative status:** ECSS technical standard **Lifecycle stage:** Construction **Relevance:** Indirect	European	Establishes the requirements for the selection, qualification, procurement, control and use of materials, mechanical parts and manufacturing processes in space projects. It defines the management, technical and documentation requirements necessary to ensure their suitability and approval for integration into space systems and associated equipment.	https://ecss.nl/standard/ecss-q-st-70c-rev-2-materials-mechanical-parts-and-processes-15-october-2019/
28	**ECSS-Q-ST-70-01C Rev.1**	Cleanliness and Contamination Control	**D.1** - Safety standards and technical specifications	**Normative status:** ECSS technical standard	European	Establishes the requirements for cleanliness and contamination control throughout the lifecycle of	https://ecss.nl/standard/ecss-q-st-70-01c-cleanliness-and-

				Lifecycle stage: Construction / operation **Relevance:** Supporting		space projects. It defines the management, planning and control measures necessary to achieve and maintain required cleanliness levels for personnel, facilities, operations and contamination-sensitive hardware during design, development, production, testing, launch and mission operations.	contamination-control-15-october-2025/
29	**ECSS-Q-ST-80C Rev.2**	Software Product Assurance	**D.1** - Safety standards and technical specifications	**Normative status:** ECSS technical standard **Lifecycle stage:** Construction / operation **Relevance:** Indirect	European	Establishes the software product assurance requirements for the development, maintenance and reuse of software used in space systems. It defines the product assurance processes necessary to ensure the quality, reliability and compliance of deliverable and quality-affecting software throughout the lifecycle of space projects.	https://ecss.nl/standard/ecss-q-st-80c-rev-2-software-product-assurance-30-april-2025/
#	**Standard**	**Category**	**Relevant AEAAS regulatory item(s) (D2 Annex D)**	**WP2 Assessment**	**Geographic Scope**	**Short Description**	**Reference Source**
ISO							
30	**ISO 14620-1:2018**	Safety Requirements	**D.1** - Safety standards and technical specifications **D.4** - Hazard analysis and risk assessment	**Normative status:** ISO International Standard **Lifecycle stage:** All lifecycle stages **Relevance:** Supporting	International	Establishes the safety programme and technical safety requirements for space systems. It defines the principles and processes for hazard identification, risk assessment, hazard control, safety verification and safety	https://www.iso.org/standard/67837.html

						validation to ensure the protection of personnel, space systems, infrastructure, property and the environment throughout the lifecycle of space projects.	
31	**ISO 14620-2:2019**	Launch Site Operations	**D.1** - Safety standards and technical specifications **D.4** -Hazard analysis and risk assessment **D.5** - Emergency response planning	**Normative status:** ISO International Standard **Lifecycle stage:** Licensing / operation **Relevance:** Direct	International	Establishes the safety requirements for launch site operations, defining the responsibilities of operators and the principles, methods and procedures necessary to ensure the safety of personnel, property and the environment during the preparation and launch of space systems.	https://www.iso.org/standard/74116.html
32	**ISO 14620-3:2021**	Flight Safety Systems	**D.2** - Range safety requirements **D.3** - Flight termination system requirements **D.4** - Hazard analysis and risk assessment	**Normative status:** ISO International Standard **Lifecycle stage:** Licensing / operation **Relevance:** Direct	International	Establishes the minimum requirements for flight safety systems used during orbital and suborbital launches, including flight termination, tracking and telemetry systems. It defines the safety requirements necessary to minimize risks to people, property and the environment during space launch operations.	https://www.iso.org/standard/81677.html
33	**ISO 14620-4:2025**	Spacecraft Assembly, Integration and Test	**D.1** - Safety standards and technical specifications **D.4** - Hazard analysis and risk assessment	**Normative status:** ISO International Standard **Lifecycle stage:** Construction / operation **Relevance:** Direct	International	Establishes the safety requirements for the management and operation of spacecraft assembly, integration and test (AIT) activities. It defines the principles for hazard identification, risk reduction and safe operations during	https://www.iso.org/standard/84446.html

			H.3 - Payload review requirements			spacecraft assembly, testing, logistics, handling and related activities at space test centres and AIT facilities.	
34	**ISO 14625:2023**	Ground Support Equipment	**D.1** - Safety standards and technical specifications **D.4** - Hazard analysis and risk assessment	**Normative status:** ISO International Standard **Lifecycle stage:** Construction / operation **Relevance:** Direct	International	Specifies general characteristics and minimum performance, design, test, checkout, maintenance, safety, reliability, maintainability and quality requirements for non-flight ground support equipment used to transport, handle, assemble, inspect, test, service, launch or recover space vehicles and payloads at launch, landing or retrieval sites.	https://www.iso.org/standard/78977.html
35	**ISO 17689:2023**	Interface Control Documents	**D.1** - Safety standards and technical specifications **H.3** - Payload review requirements	**Normative status:** ISO International Standard **Lifecycle stage:** Planning / construction / operation **Relevance:** Direct	International	Establishes basic requirements for preparing interface control documents and controlling interfaces among ground support equipment, payloads, launch vehicles, other ground support equipment and launch-site utility systems; it applies to ground-support-equipment developers and operators performing space activities.	https://www.iso.org/standard/83490.html
36	**ISO/TR 17400:2021**	Launch-Complex Testing	**D.1** - Safety standards and technical specifications **D.4** - Hazard analysis and risk assessment	**Normative status:** ISO Technical Report (guidance) **Lifecycle stage:** Construction / operation **Relevance:** Direct	International	Provides general testing guidance for new, redesigned or upgraded launch complexes, integration sites and associated equipment, covering testing phases and objectives before facilities are declared ready for launch-vehicle processing and launch.	https://www.iso.org/standard/74190.html

37	**ISO 22772:2020**	LV-to-EGSE Electrical Interfaces	**D.1** - Safety standards and technical specifications	**Normative status:** ISO International Standard **Lifecycle stage:** Construction / operation **Relevance:** Direct	International	Defines electrical-interface types, design and environmental requirements, verification methods, and interface-check requirements for launch-vehicle-to-electrical-ground-support-equipment interfaces used in online processing.	https://www.iso.org/standard/73897.html
38	**ISO 24113:2023**	Space debris mitigation requirements	**E.3** - Debris mitigation requirements **G.5** - Adherence to debris mitigation guidelines	**Normative status:** ISO International Standard **Lifecycle stage:** Planning / operation / decommissioning **Relevance:** Supporting	International	Establishes the primary requirements for mitigating the generation of space debris throughout the lifecycle of unmanned space systems. It defines the measures applicable to launch vehicles, spacecraft and other objects operating in or passing through near-Earth space to reduce the long-term impact of debris on the space environment.	https://www.iso.org/standard/83494.html
39	**ISO 16290:2013**	Technology Readiness Levels (TRLs)	*No direct Annex D item; horizontal project support*	**Normative status:** ISO International Standard **Lifecycle stage:** Planning / construction **Relevance:** Indirect	International	Defines the Technology Readiness Levels (TRLs) and the assessment criteria for evaluating the maturity of space technologies. It establishes the conditions to be met at each readiness level to enable a consistent and objective assessment of technology development.	https://www.iso.org/standard/56064.html
40	**ISO 27875:2026**	Re-entry Risk Management	**C.3** - Re-entry licence requirements	**Normative status:** ISO International Standard **Lifecycle stage:** Licensing / operation **Relevance:** Direct	International	Establishes a framework for assessing, reducing and controlling the risks associated with the atmospheric re-entry of uncrewed spacecraft and	https://www.iso.org/standard/87629.html

			D.4 - Hazard analysis and risk assessment			launch vehicle orbital stages. It defines requirements for mission planning, design and review to protect people and the environment from hazards arising during controlled and uncontrolled re-entry.	
41	**ISO 20892:2025**	Launch Complex Modernisation	**D.1** - Safety standards and technical specifications	**Normative status:** ISO International Standard **Lifecycle stage:** Planning / construction / operation **Relevance:** Direct	International	Establishes the general requirements for the modernization of launch complexes and their components. It defines the modernization process, including its stages, performance requirements, and the roles and interactions of the organizations involved in planning and implementing modernization activities.	https://www.iso.org/standard/88934.html
42	**ISO 21349:2023**	Project Reviews	*No direct Annex D item; horizontal project support*	**Normative status:** ISO International Standard **Lifecycle stage:** All lifecycle stages **Relevance:** Supporting	International	Specifies the process requirements for conducting project reviews throughout the lifecycle of space projects. It defines the responsibilities of review boards, the review process, and the inputs, outputs and conditions necessary to support project oversight and decision-making at key milestones.	https://www.iso.org/standard/84724.html
43	**ISO 21886:2019**	Configuration Management	**D.1** - Safety standards and technical specifications	**Normative status:** ISO International Standard **Lifecycle stage:** All lifecycle stages **Relevance:** Supporting	International	Defines the requirements, methods and responsibilities for configuration management throughout the lifecycle of space projects. It establishes the processes necessary to maintain the integrity, traceability and	https://www.iso.org/standard/72052.html

						control of project configurations from mission analysis through disposal.	
44	**ISO 16091:2018**	Integrated Logistic Support	**D.1** - Safety standards and technical specifications	**Normative status:** ISO International Standard **Lifecycle stage:** Construction / operation **Relevance:** Supporting	International	Defines the management requirements for planning, developing and providing integrated logistic support throughout the lifecycle of space systems. It establishes the processes necessary to ensure that systems can be effectively operated, maintained and supported while meeting operational objectives and lifecycle requirements.	https://www.iso.org/standard/72937.html
45	**ISO 14300-1:2023**	Part 1: Structuring of a project | Programme Management	*No direct Annex D item; horizontal project support*	**Normative status:** ISO International Standard **Lifecycle stage:** All lifecycle stages **Relevance:** Indirect	International	Specifies the programme and project management requirements applicable to space projects within contractual relationships between customers and suppliers. It establishes the management framework for planning, organizing and controlling space projects throughout their lifecycle.	https://www.iso.org/standard/86543.html
46	**ISO 14300-2:2023**	Part 2: Product assurance | Programme Management	**D.1** - Safety standards and technical specifications	**Normative status:** ISO International Standard **Lifecycle stage:** All lifecycle stages **Relevance:** Supporting	International	Defines the product assurance policy, objectives, principles and requirements applicable throughout the lifecycle of space products. It establishes the framework for quality, safety, dependability, software and hardware assurance, as well as parts, materials and processes, to ensure the integrity and reliability of space systems.	https://www.iso.org/standard/86544.html

#	Standard	Category	Relevant AEAAS regulatory item(s) (D2 Annex D)	WP2 Assessment	Geographic Scope	Short Description	Reference Source
ICAO (International Civil Aviation Organisation)							
47	**ICAO NAT Doc 013 – Operational Guidance Material for Commercial Space Operations (CSO) – North Atlantic Region (1st ed., July 2024)**	Commercial Space Operations	**D.7** - Airspace and maritime coordination **H.1** - Pre-launch notification requirements **H.2** - Launch window coordination	**Normative status:** ICAO regional guidance (non-binding) **Lifecycle stage:** Licensing / operation **Relevance:** Direct	Regional – ICAO North Atlantic (NAT) Region	Provides North Atlantic regional guidance for integrating commercial launch and re-entry operations and other new entrants into the air traffic management system. It supports coordination among State space regulators, launch and re-entry operators, air navigation service providers and air traffic service units, while remaining descriptive guidance rather than a basis for regulatory formulation.	Operational Guidence Material for Commercial Space Operations (CSO)
48	**ICAO Annex 11 – Air Traffic Services**	Air Traffic Services	**D.7** - Airspace and maritime coordination	**Normative status:** ICAO SARPs (Standards and Recommended Practices) (subject to State implementation) **Lifecycle stage:** Licensing / operation **Relevance:** Supporting	International	Establishes the international standards and recommended practices for the provision of air traffic services. It defines the framework for the organization and management of airspace, the provision of air traffic control, flight information and alerting services, and the coordination of airspace to ensure the safe, orderly and efficient flow of air traffic.	https://ffac.ch/wp-content/uploads/2020/10/ICAO-Annex-11-Air-Traffic-Services.pdf
49	**ICAO Doc 4444 – Procedures for Air**	Air Traffic Management	**D.7** - Airspace and maritime coordination	**Normative status:** ICAO PANS (State implementation)	International	Establishes the internationally recognized procedures for air traffic management. It defines the operational procedures for	https://recursosdeaviacion.com/wp-content/uploads/2021/01/icao-doc-4444-air-

	Navigation Services – Air Traffic Management (PANS-ATM)			**Lifecycle stage:** Operation **Relevance:** Supporting		the provision of air traffic services, including flight planning, separation, coordination, communication a nd airspace management, to ensure the safe, orderly and efficient movement of air traffic.	traffic-management.pdf
#	**Standard**	**Category**	**Relevant AEAAS regulatory item(s) (D2 Annex D)**	**WP2 Assessment**	**Geographic Scope**	**Short Description**	**Reference Source**
UNOOSA (United Nations Office for Outer Space Affairs)							
50	**Guidelines for the Long-term Sustainability of Outer Space Activities of the Committee on the Peaceful Uses of Outer Space**	Long-term Sustainability of Outer Space Activities	**E.4** -2413 Sustainability provisions **G.5** - Adherence to debris mitigation guidelines	**Normative status:** UN COPUOS guidelines (non-binding) **Lifecycle stage:** All lifecycle stages **Relevance:** Supporting	International	Establishes internationally recognized guidelines to promote the safe, sustainable and responsible conduct of outer space activities. It provides recommendations for policy and regulatory frameworks, safety, information exchange, risk management, scientific and technical cooperation, and the long-term sustainability of the space environment.	Guidelines for the Long-term Sustainability of Outer Space Activities
51	**Space Debris Mitigation Guidelines of the Committee on the Peaceful Uses of Outer Space**	Space Debris Mitigation	**E.3** - Debris mitigation requirements **G.5** - Adherence to debris mitigation guidelines	**Normative status:** UN COPUOS guidelines (non-binding) **Lifecycle stage:** Planning / operation / decommissioning **Relevance:** Supporting	International	Establishes internationally recognized guidelines to mitigate the creation of space debris throughout the mission lifecycle. It provides recommendations for mission planning, spacecraft and launch vehicle design, operational practices and end-of-life disposal to reduce debris generation and preserve	Space Debris Mitigation Guidelines of the Committee on the Peaceful Uses of Outer Space

						the long-term sustainability of the space environment.	
#	**Standard**	**Category**	**Relevant AEAAS regulatory item(s) (D2 Annex D)**	**WP2 Assessment**	**Geographic Scope**	**Short Description**	**Reference Source**
IADC							
52	**IADC Space Debris Mitigation Guidelines (Rev. 4, 2025)**	Space Debris Mitigation	**E.3** - Debris mitigation requirements **G.5** - Adherence to debris mitigation guidelines	**Normative status:** IADC technical guidelines (non-binding) **Lifecycle stage:** Planning / operation / decommissioning **Relevance:** Supporting	International	Establishes internationally recognized technical guidelines for mitigating space debris throughout the lifecycle of spacecraft and launch vehicle orbital stages. It provides recommendations for mission planning, spacecraft design, operational practices, collision prevention, post-mission disposal and constellation management to preserve the long-term sustainability of the space environment.	IADC Space Debris Mitigation Guidelines