

**BY ORDER OF THE  
SECRETARY OF THE AIR FORCE**

**HEADQUARTERS AIR FORCE  
MISSION DIRECTIVE 2-7**



**18 MAY 2023**

***Special Management***

***DEPUTY CHIEF OF SPACE  
OPERATIONS FOR TECHNOLOGY  
AND INNOVATION***

**COMPLIANCE WITH THIS PUBLICATION IS MANDATORY**

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**1. Mission.** The Deputy Chief of Space Operations for Technology and Innovation (SF/CTIO), pursuant to Title 10, United States Code (U.S.C.) Sections 9013 and 9081-9084, and this Headquarters Air Force Mission Directive (HAFMD), assists the Secretary of the Air Force (SecAF), other Secretariat offices, and the Chief of Space Operations (CSO) to develop the United States Space Force (USSF) vision and capability needs; champion the advancement of emerging technologies; employ advanced technologies to digitally transform the USSF; assure USSF digital infrastructure and Information Technology (IT) needs are met; effectively manage USSF data; and coordinate, synchronize, and conduct analysis supporting the Office of the Chief of Space Operations staff. The SF/CTIO accomplishes these missions through a variety of means including training, providing subject matter expertise, spotlighting key activities to senior leaders and the USSF, bridging linkages among organizations, championing initiatives for funding and collaboration, and providing guidance and direction through the preparation of policies for approval. SF/CTIO issues guidance/procedures, via official Department of the Air Force (DAF) publications, to ensure implementation of those policies. The SF/CTIO also assists the CSO in their role, pursuant to Title 10 U.S.C. Sections 151 and 9082, as a member of the Joint Chiefs of Staff.

**2. Organizational Relationships.** The SecAF is responsible for and has all legal authority necessary to conduct the affairs of the DAF. The Secretariat, the CSO, and the Office of the Chief of Space Operations perform their functions subject to the authority, direction, and control of the SecAF. The Office of the Chief of Space Operations is colloquially referred to as the Space Staff.

2.1. The SF/CTIO reports directly to the CSO and provides support to the SecAF, the Under Secretary of the Air Force, other Secretariat offices, the CSO, and other Space Staff offices. The SecAF may re-delegate authority/assign responsibility through the CSO to the SF/CTIO, but the SecAF, through the CSO and, as appropriate, Assistant Secretaries of the Air Force, retain ultimate responsibility for all matters listed in this publication.

2.2. The SF/CTIO is part of the Space Staff and as such works closely with other Space Staff offices to assist the SecAF and the CSO in carrying out their responsibilities. The SF/CTIO works in cooperation with the Vice Chief of Space Operations, Assistant Secretaries and Deputy Under Secretaries of the Air Force, the Deputy Chiefs of Space Operations, and, as appropriate, the Deputy Chiefs of Staff of the Air Force, and their respective offices, which are responsible, pursuant to 10 U.S.C. §§ 9011-9024, §§ 9031-9040, and §§ 9081-9084, for assisting the SecAF and the CSO in carrying out their responsibilities.

2.2.1. Pursuant to Headquarters Operating Instruction 90-1, *Headquarters Air Force Mission Directives and Department of Defense Issuances Program*, two or more HAF 2-letter organizations with responsibilities in the same functional area are encouraged to develop standard operating procedures that set forth procedures enabling covered organizations to fulfill and carry out their respective missions, roles, and responsibilities. Currently, the SF/CTIO has not entered into any standard operating procedures; however any future standard operating procedures between the SF/CTIO and other HAF 2-letter organizations will be included in **Attachment 3** of this publication.

**3. Responsibilities.** The SF/CTIO is responsible for developing the USSF long-term military requirements to advance technologies, employing advanced technologies to digitally transform the USSF; assuring USSF digital infrastructure and IT needs are met; effectively managing USSF data; and coordinate, synchronize, and conduct analysis supporting all USSF staff. Additionally, the SF/CTIO serves as the principal liaison and chief advisor to USSF and other DAF leadership regarding USSF matters related to these responsibilities.

**4. Delegations of Authority/Assignment of Responsibility:** **Attachment 1** lists authorities delegated and responsibilities assigned to the SF/CTIO. The authorities delegated and responsibilities assigned to the SF/CTIO by this mission directive may generally be re-delegated to other DAF officials, unless re-delegation is expressly prohibited by the attached delegation or superseding law, regulation, or Department of Defense (DoD) Issuance. While the authorities are delegated and responsibilities are assigned to the SF/CTIO, the exercise of the authorities/responsibilities remain subject to the oversight and control of the SecAF, any Assistant Secretary of the Air Force having oversight, and the CSO. Any re-delegation of authority/assignment of responsibility made shall not be effective unless it is in writing. Any person re-delegating authorities in accordance with this Directive may further restrict or condition the authority being re-delegated.

**5. Continuation of Prior Re-Delegations of Authority/Assignments of Responsibility:** Re-delegations of authority/assignments of responsibility made prior to the date of issuance of this HAFMD remain effective insofar as such re-delegations are not inconsistent with the terms of this HAFMD, unless superseded by new issuances.

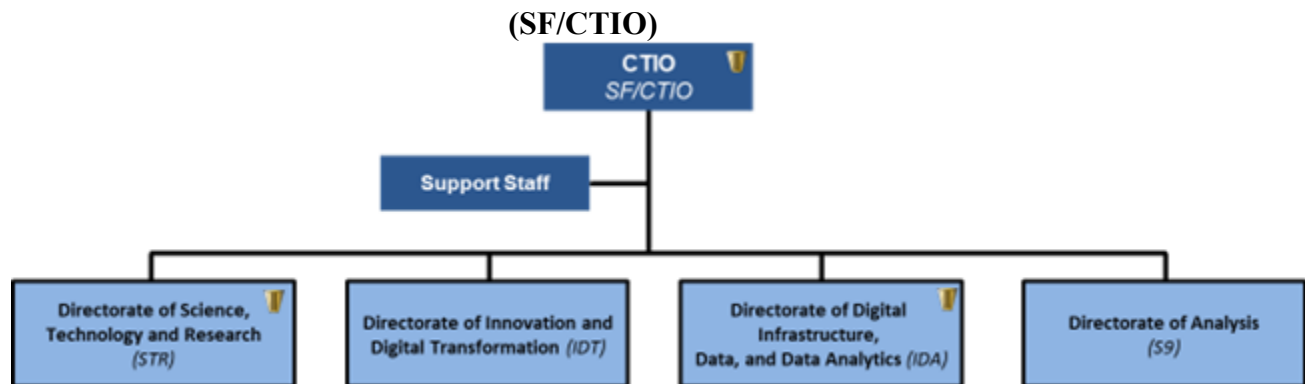
Frank Kendall  
Secretary of the Air Force

**DELEGATIONS OF SECRETARY OF THE AIR FORCE  
AUTHORITY/ASSIGNMENTS OF RESPONSIBILITY  
TO THE  
DEPUTY CHIEF OF SPACE OPERATIONS FOR TECHNOLOGY AND INNOVATION**

**A1.1.** Responsibility relating to USSF data collection, maintenance, and support to strategic analyses as assigned to the Secretary of the Air Force pursuant to DoD Directive 8260.05, *Support for Strategic Analysis*.

## Attachment 2

## DEPUTY CHIEF OF SPACE OPERATIONS FOR TECHNOLOGY AND INNOVATION



**A2.1.** Deputy Chief of Space Operations for Technology and Innovation (SF/CTIO). The Deputy Chief of Space Operations for Technology and Innovation is responsible for developing USSF capability needs; championing the advancement of emerging technologies; employing advanced technologies to digitally transform the USSF; assuring USSF IT needs are met; effectively managing USSF data; and coordinating, synchronizing, and conducting analysis supporting all USSF staff elements.

**A2.2.** Subordinate offices include:

A2.2.1. Directorate of Science, Technology, and Research (SF/CTIO/STR). The Directorate of STR serves as the central science and technology (S&T) lead within USSF. Its primary missions are to develop USSF capability needs, champion the advancement of emerging technologies, provide input to and coordination with the Assistant Secretary of the Air Force for Space Acquisition and Integration (SAF/SQ) and other DAF S&T organizations in the development of DAF S&T strategy, and advise USSF field commands and partner organizations on space S&T priorities. All USSF-specific policy and space enterprise strategy will be consistent with DAF policies and guidance. The directorate will:

A2.2.1.1. Support SAF/SQ, the Service Acquisition Executive for space systems and programs, provide strategic input on space S&T and Research, Development, Test, and Evaluation (RDT&E) enterprise including advocating for the importance of properly acquiring, licensing, and managing intellectual property (IP).

A2.2.1.2. Support the DAF in the development of the vision and strategy for space S&T and RDT&E reflecting CSO's intent and USSF capability and technology needs. Provide guidance on addressing current and future capability gaps identified through analysis or operational need statements.

A2.2.1.3. Serve as USSF space technology advocate. Coordinates with SAF/SQ, Assistant Secretary of the Air Force (Acquisition, Technology, and Logistics) (SAF/AQ) (if applicable), Space Rapid Capabilities Office (if applicable), Space Development Agency (if applicable), when collaborating with field commands, Air Force Research Laboratory (AFRL), and the Director of Small Business Programs (SAF/SB) to interface with external ecosystem, such as the Naval Research Lab, Army Research Lab, Office of the Under Secretary of Defense for Research and Engineering, Intelligence Community S&T

elements (in coordination with the USSF Director for Intelligence Surveillance and Reconnaissance (SF/S2)), universities, and industry, to drive ideation and maturation of new technologies, stay abreast of trends and activities, and establish collaborations to accelerate efforts, including small business programs, consistent with HAFMD 1-30, *Director, Small Business Programs*.

A2.2.1.4. Coordinate with the Deputy Chief of Space Operations for Strategy, Plans, Programs, and Requirements (SF/S5/8) Partnership Office, the Deputy Under Secretary of the Air Force for International Affairs (SAF/IA), and SAF/SQ to engage with coalition partners to drive synergies between efforts and provide inputs to the Office of the Under Secretary of Defense for Acquisition and Sustainment on exportation of key technology and IP.

A2.2.1.5. Work with SF/S2 and the intelligence community to avoid strategic surprise from external technology developments and create courses of action to address emerging threats.

A2.2.1.6. Advise appropriate Secretariat offices on the priorities for allocation of overall USSF and RDT&E funding and resources and advise SF/CTIO on the Program Objective Memorandum process for the S&T portion of the USSF budget.

A2.2.1.7. Advise AFRL and Space Systems Command (SSC) on the SF/S5/8 Planning and Programming strategy in order to align their detailed technology maturation and transition roadmaps.

A2.2.1.8. Provide the Deputy Chief of Space Operations for Personnel (SF/S1), through coordination with Assistant Secretary of the Air Force (Science, Technology, and Engineering) (SAF/AQR) and/or Assistant Secretary of the Air Force (Acquisition Career Management) (SAF/AQH), guidance to align scientific and engineering career management and development policies and programs with needs of technical workforce.

A2.2.1.9. Execute the S&T Corporate Process as Chairperson of the S&T Applied Technology Council.

A2.2.2. Directorate of Innovation and Digital Transformation (SF/CTIO/IDT). The Directorate of Innovation and Digital Transformation serves as the central lead for digital innovation and modernization efforts across the USSF. This includes serving as the catalyst for the USSF to adopt the mindset of becoming a digital service accountable for making data-driven decisions. This directorate will:

A2.2.2.1. Integrate process innovations, new technology applications, and digital solutions, using internal and external thinking, into a service transformation strategy.

A2.2.2.2. Establish strategy to upgrade USSF-wide systems and capabilities to continue developing the USSF as a digital service.

A2.2.2.3. Establish and manage formal processes to identify ideas for innovation and continuous digital transformation from across USSF and develop a prioritized pipeline of initiatives.

A2.2.2.4. Advocate for funding as well as direct pilots and demonstrations of innovation, continuous improvement, and modernization initiatives needed for building and advancing digital headquarters, workforce, engineering, and operations.

A2.2.2.5. Oversee USSF-wide digital transformation portfolios and provide guidance to field commands on acquiring and developing innovative solutions to align activities with transformation strategy.

A2.2.2.6. Collaborate with SAF/SB on developing policies and processes to advance small business programs and accelerators to facilitate transition of innovations to operators and decision makers.

A2.2.2.7. Coordinate with SAF/SQ to develop and enforce policies to foster collaboration and establishment of necessary IP standards.

A2.2.2.8. Serve as champion for innovation and disruptive digital technologies across USSF, by building internal and external USSF relationships to identify, incubate, and integrate innovations, including disruptive technology.

A2.2.2.9. Obtain industry-leading expertise to address CSO-directed and other high priority actions to address urgent and/or space enterprise challenges.

A2.2.2.10. Provide guidance to SF/S1 on training needed to drive adoption of digital technology and digital tools and standup USSF as a digital service.

A2.2.3. Directorate of Digital Infrastructure, Data, and Data Analytics (SF/CTIO/IDA). The Directorate of IDA is accountable for ensuring the workforce has a reliable digital infrastructure, IT, and communications backbone to enable mission accomplishment and effectively deliver services across the USSF which will ensure optimal user experiences with both mission and administrative systems. This may require establishing support agreements with other DAF organizations, which will provide the majority of the infrastructure and service needs. When capability requirements go beyond DAF-provided capabilities, SF/CTIO/IDA will work closely with the Office of the Chief Information Officer (SAF/CN) to develop alternative sourcing strategies to secure USSF dedicated mission services and oversee successful delivery to the end-user consistent with applicable DAF guidance and instructions when acquiring infrastructure assets or services. In this capacity, SF/IDA will develop digital standards and governance for USSF mission networks and systems. Additionally, the Director of SF/IDA is the USSF focal point to make data discoverable, make data understood, ensure data accuracy and origin, ensure data interoperability, improve timeliness of analysis and data-driven processes, maximize data visibility, accessibility, understandability, connectivity, trustworthiness, interoperability, and security. These initiatives will be done in consultation with the S9, Director for Studies, Analyses and Assessments (SAF/SA), and SAF/CN. Finally, SF/CTIO/IDA will be the USSF focal point for Artificial Intelligence and Machine Learning activities. This directorate will:

A2.2.3.1. Consolidate requirements for USSF-wide tech stack for mission and administrative systems.

A2.2.3.2. Develop USSF-wide strategy, governance, and standards to deliver the necessary digital infrastructure and digital environment to enable USSF's workforce to accomplish the mission and increase standardization where possible.

A2.2.3.3. As a member of the Enterprise IT Council, collaborate with SAF/CN and SF/CTIO/IDT to identify gaps in digital infrastructure and services and drive acquisition of needed capacity and capabilities.

A2.2.3.4. Establish service agreements with DAF addressing the full range of USSF IT and digital environment needs.

A2.2.3.5. Oversee successful delivery of digital infrastructure and services to the USSF.

A2.2.3.6. Oversee implementation of DAF cybersecurity policy through development of USSF specific guidance in coordination with SAF/CN.

A2.2.3.7. Coordinate with SF/IDT and SAF/CN to ensure Guardians have the infrastructure, services, and tools required to meet their mission needs.

A2.2.3.8. Collect and consolidate, from Field Commands, input for the Presidential Budget Review for IT expenses and report to SAF/CN.

A2.2.3.9. Manage the USSF IT portfolio and update IT investments via the IT Investment Portfolio Suite.

A2.2.3.10. Advance USSF-wide data architecture and policies to ensure mission and administrative data is visible, accessible, understandable, linked, trustworthy, interoperable, and secure, to support all USSF data needs.

A2.2.3.11. Work with the Directorate of Analysis (SF/CTIO/S9) to ensure analysts have tools needed to support CSO and Space Staff mission and increase timeliness of processes through automation.

A2.2.3.12. Coordinate with SF/CTIO/S9, SF/CTIO/IDT, SAF/SA, SAF/CN, and other stakeholders to drive development of a global data and analytics platform which:

A2.2.3.12.1. Creates a unified data catalogue, dictionary, and library and a single portal to access all analytic tools.

A2.2.3.12.2. Maximizes utility and use of data and analytics.

A2.2.3.13. Coordinate with the SF/S5/8 to review functional specifications of new data systems to ensure compatibility with USSF data architecture.

A2.2.3.14. Coordinate with SAF/SA, SAF/CN and SF/CTIO/IDT to ensure USSF data infrastructure and service needs are met and addressed within the larger DAF processes.

A2.2.3.15. Champion initiatives to instill tight coordination between data management professionals, analysts, operators, and decision makers.

A2.2.3.16. Coordinate with SAF/CN and the Administrative Assistant to the Secretary of the Air Force (SAF/AA) to establish policy and standards for protecting USSF data and software, including related IP.

A2.2.4. Directorate of Analysis (SF/CTIO/S9). The Directorate for Analysis within the Chief Technology & Innovation Office (SF/CTIO/S9) supports the CSO and SecAF in organizing, training, and equipping the USSF by delivering analytic insights that are fact-based, data-driven and informed by the CSO's strategy and guidance. A lean, efficient organization, SF/CTIO/S9 supports the Space Staff in a distributed manner, collaboratively leading, integrating, and synchronizing efforts across the space portfolio to ensure studies, analyses, and assessments are credible, relevant and timely. To support the CSO, SF/CTIO/S9 will focus on three key areas: Supporting DAF and USSF senior leadership to include working with the Office of the Secretary of Defense (OSD), the Joint Staff, other Services, and the DAF



Secretariat; directly supporting the USSF Headquarters L2 leaders and staffs with embedded analysts; and coordinating with and synchronizing across the greater USSF and space analytic community.

The SF/CTIO/S9 will:

A2.2.4.1. Provide analysis support to the SecAF and the CSO by:

A2.2.4.1.1. Establishing policy, processes, and methodologies to organize analysis efforts across the USSF.

A2.2.4.1.2. Acting as a USSF focal point for analytic related issues, including coordinating analysis efforts across the Space Staff, Field Commands, Field Operating Agencies, Direct Reporting Units, Space Warfighting Analysis Center (SWAC), Deltas, and partners and Services external to the DAF.

A2.2.4.1.3. Representing USSF analyses at senior-level boards, steering groups, and other analytic venues such as the Joint Force Operating Scenario committees, working groups, and the Space Analytic Consortium (SpAC).

A2.2.4.1.4. Developing, executing, and maintaining USSF-wide analytic strategy by:

A2.2.4.1.4.1. Establishing and chairing the USSF's analytic leadership steering group.

A2.2.4.1.4.2. Aligning, integrating, and synchronizing the USSF's analytic enterprise efforts to produce independent, objective, and relevant analysis-based insights and assessments.

A2.2.4.1.4.3. Piloting advanced analytics tools and drive adoption of tools to advance the USSF analysis enterprise.

A2.2.4.1.4.4. Driving the establishment of requirements for global data and analytics platforms to create a single portal to access all data and analytic tools.

A2.2.4.1.4.5. Providing oversight of USSF prioritization of analytic efforts and input DAF prioritization of analytics efforts.

A2.2.4.1.5. Working with SAF/SA to advance space modeling, simulation, and analysis by ensuring:

A2.2.4.1.5.1. Space systems, capabilities, effects, etc. are understood, addressed, and accurately portrayed in DAF, DoD, and Joint Service models to support campaign, mission, functional, and operational simulations and analysis.

A2.2.4.1.5.2. The space portfolio is properly represented in studies involving all-domain, joint operations

A2.2.4.1.5.3. Proper space representation in:

A2.2.4.1.5.3.1. OSD Cost Assessment and Program Evaluation analytic efforts to include OSD Analytic Working Group, strategic portfolio reviews and issue teams.

A2.2.4.1.5.3.2. Appropriate Deputies Management Action Group products and meetings

A2.2.4.1.5.3.3. OSD Program Resource Management Group

A2.2.4.1.5.3.4. RAND's Project Air Force.

A2.2.4.1.5.4. Coordinating with the DAF Chief Modeling and Simulation Officer to ensure USSF equities and requirements are understood and addressed in the building of the DAF Modeling and Simulation ecosystem.

A2.2.4.1.5.5. Providing timely and relevant analysis to support USSF equities in discussions related to special access program investment decisions.

A2.2.4.2. Directly support the Space Staff L2s with embedded analysis teams:

A2.2.4.2.1. Deputy Chief of Space Operations for Human Capital (SF/S1 – informally referred to as the Chief Human Capital Officer (SF/CHCO)). Provide analytical support to the Chief Human Capital Officer and the SF/CHCO staff on matters of manpower and personnel. Additionally, provide analytic support across other directorates in the S1 including civilian manpower and personnel as well as other required analysis and data visualizations.

S9 analysts will support military and civilian force management policy by:

A2.2.4.2.1.1. Providing personnel inventory projections across the Future Years Defense Program that support achieving statutory end strength requirements through analysis of losses, accessions, lateral entry, and promotions for military personnel.

A2.2.4.2.1.2. Recommending to the SF/CHCO staff the annual accession numbers by specialty for officers and enlisted to sustain career field health requirements established by the unit manning document.

A2.2.4.2.1.3. Providing analysis to shape the officer promotion plan in accordance with current statutory requirements by competitive category and grade and provide visualizations that support these recommendations.

A2.2.4.2.1.4. Providing guidance to align career management and development policies and programs with the needs of the analytic workforce.

A2.2.4.2.1.5. Providing guidance for analytic workforce on professional development, training, and certifications.

A2.2.4.2.1.6. Developing, maintaining, and maturing a suite of dynamic dashboards to summarize the USSF military and civilian workforce across various attributes that include rank, age, specialty, education level, and other diversity statistics of interest, accessible via DAF- or USSF-hosted web portals.

A2.2.4.2.2. Deputy Chief of Space Operations for Operations, Cyber and Nuclear (SF/COO – informally referred to as the Chief Operations Officer). Provide analytical support to the Chief Operations Officer and the SF/COO staff to transition to and support Digital Operations.

S9 analysts will:

A2.2.4.2.2.1. Perform enterprise-level operational and readiness assessments.

A2.2.4.2.2.2. Analyze operational impacts of the space portfolio.

A2.2.4.2.2.3. Analytically support operational planning, exercises/wargaming, and the requirements process.

A2.2.4.2.2.4. Conduct analytics/analysis for the Space Force Watch Center and Crisis Action Team.

A2.2.4.2.3. Deputy Chief of Space Operations for Strategy, Plans, Programs, and Requirements (SF/S5/8 – informally referred to as the Chief Strategy and Resources Officer (SF/CSRO)). Provide analytical support to the Chief Strategy and Resources Officer and the SF/CSRO staff. Act as analytic experts to support USSF strategy, requirements, and Planning, Programming, Budgeting and Execution processes.

S9 analysts will:

A2.2.4.2.3.1. Coordinate the integration of strategic planning studies across the USSF and DAF analysis enterprise (SWAC, Space Operations Command, SSC, and SAF/SA).

A2.2.4.2.3.2. Lead the USSF in enterprise analysis across mission areas to deliver accurate and on-time analysis in order to inform planning and programming resourcing decisions in support of processes such as the President's Budget Review.

A2.2.4.2.3.3. Use insights based on modeling, simulations, exercises, and wargaming to help inform strategy/resource decisions by assessing risks, defining emergent strategies, identifying, analyzing and tracking strategic metrics, developing dashboards, and assessing progress to achieve the strategy.

A2.2.4.2.3.4. Develop and maintain risk "sight picture" of investments/priorities across field commands and working with the SWAC on force design and the requirements process (Joint Capabilities Integration and Development System, Capability Based Assessments, and Analysis of Alternatives).

A2.2.4.2.4. Chief Technology and Innovation Office (SF/CTIO). Provide analytical support to the Chief Technology and Innovation Officer and the SF/CTIO staff. Support the transition of USSF from industrial-age business processes, operations, acquisition, talent management, and decision-making into a streamlined, forward-thinking, and agile digital Service.

S9 analysts will:

A2.2.4.2.4.1. Provide advanced analytic research, practices, tools, and methodologies for application in the areas of Digital Headquarters, Digital Operations, and Digital Workforce Development, as well as to advance the USSF digital environment and data management domains.

A2.2.4.2.4.2. Support the strategic, operational, and tactical analysis, and integration necessary for the Directorate of Science, Technology, and Research (SF/CTIO/STR) to advance science and technology efforts to support the Space-

Force-After-Next in 2060 and beyond.

A2.2.4.3. Provide USSF relevant analysis to support the larger space analysis community while ensuring space equities and priorities are addressed by:

A2.2.4.3.1. Developing USSF analysis policy and guidance to promote effective Space Staff and Field Command analysis product development.

A2.2.4.3.2. Identifying technologies, tools, shared capabilities, and best practices needed across USSF analysis community.

A2.2.4.3.3. Ensuring analytics are part of USSF-wide training activities to ensure members of the USSF are familiar with tools, techniques, and process of data analysis and the use of analytics for effective visualization.

A2.2.4.3.4. Representing the USSF within analysis bodies, analysis activities, processes and governance structures.