

NIST IR 8477-Based Set Theory Relationship Mapping (STRM)

Reference document: Secure Controls Framework (SCF) version 2026.1
 STRM Guidance: <https://securecontrolsframework.com/start-here/set-theory-relationship-mapping-strm/>

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<https://webstore.iec.ch/en/publication/33615>
<https://content.securecontrolsframework.com/strm/scf-strm-general-iec-62443-4-1-2018.pdf>

FDE #	FDE Name	Focal Document Element (FDE) Description	STRM Rationale	STRM Relationship	SCF Control	SCF #	Secure Controls Framework (SCF) Control Description	Strength of Relationship	Notes
SM-2	Identification of responsibilities	For specific requirement details, buy a licensed copy of the Focal Document at: https://webstore.iec.ch/en/publication/33615	Functional	Intersects With	Defined Roles & Responsibilities	HRS-03	Mechanisms exist to define cybersecurity roles & responsibilities for all personnel.	8	
SM-3	Identification of applicability	For specific requirement details, buy a licensed copy of the Focal Document at: https://webstore.iec.ch/en/publication/33615	Functional	Intersects With	Asset Scope Classification	AST-04.1	Mechanisms exist to determine security, compliance and resilience control applicability by identifying, assigning and documenting the appropriate asset scope categorization for all Technology Assets, Applications and/or Services (TAAS) and personnel (internal and third-parties).	8	
SM-4	Security expertise	For specific requirement details, buy a licensed copy of the Focal Document at: https://webstore.iec.ch/en/publication/33615	Functional	Intersects With	Role-Based Security, Compliance & Resilience Training	SAT-03	Mechanisms exist to provide role-based security, compliance and resilience-related training: (1) Before authorizing access to the system or performing assigned duties; (2) When required by system changes; and (3) Annually thereafter.	8	
SM-5	Process scoping	For specific requirement details, buy a licensed copy of the Focal Document at: https://webstore.iec.ch/en/publication/33615	Functional	Intersects With	Compliance Scope	CPL-01.2	Mechanisms exist to document and validate the scope of security, compliance and resilience controls that are determined to meet statutory, regulatory and/or contractual compliance obligations.	8	
SM-6	File integrity	For specific requirement details, buy a licensed copy of the Focal Document at: https://webstore.iec.ch/en/publication/33615	Functional	Intersects With	Endpoint File Integrity Monitoring (FIM)	END-06	Mechanisms exist to utilize File Integrity Monitor (FIM), or similar technologies, to detect and report on unauthorized changes to selected files and configuration settings.	8	
SM-7	Development environment security	For specific requirement details, buy a licensed copy of the Focal Document at: https://webstore.iec.ch/en/publication/33615	Functional	Intersects With	Secure Development Environments	TDA-07	Mechanisms exist to maintain a segmented development network to ensure a secure development environment.	8	
SM-8	Controls for private keys	For specific requirement details, buy a licensed copy of the Focal Document at: https://webstore.iec.ch/en/publication/33615	Functional	Intersects With	Approved Code	TDA-20.4	Mechanisms exist to govern the approval of binaries and code for production use.	3	
SM-9	Security requirements for externally provided components	For specific requirement details, buy a licensed copy of the Focal Document at: https://webstore.iec.ch/en/publication/33615	Functional	Intersects With	Security, Compliance & Resilience Testing Throughout Development	TDA-09	Mechanisms exist to require system developers/integrators consult with security, compliance and/or resilience personnel to: (1) Create and implement a Security Testing and Evaluation (ST&E) plan, or similar capability; (2) Implement a verifiable flaw remediation process to correct weaknesses and deficiencies identified during the control testing and evaluation process; and (3) Document the results.	8	
SM-10	Custom developed components from third-party suppliers	For specific requirement details, buy a licensed copy of the Focal Document at: https://webstore.iec.ch/en/publication/33615	Functional	Intersects With	Security, Compliance & Resilience Testing Throughout Development	TDA-09	Mechanisms exist to require system developers/integrators consult with security, compliance and/or resilience personnel to: (1) Create and implement a Security Testing and Evaluation (ST&E) plan, or similar capability; (2) Implement a verifiable flaw remediation process to correct weaknesses and deficiencies identified during the control testing and evaluation process; and (3) Document the results.	8	
SM-10(a)	N/A	For specific requirement details, buy a licensed copy of the Focal Document at: https://webstore.iec.ch/en/publication/33615	Functional	Intersects With	Security, Compliance & Resilience Testing Throughout Development	TDA-09	Mechanisms exist to require system developers/integrators consult with security, compliance and/or resilience personnel to: (1) Create and implement a Security Testing and Evaluation (ST&E) plan, or similar capability; (2) Implement a verifiable flaw remediation process to correct weaknesses and deficiencies identified during the control testing and evaluation process; and (3) Document the results.	5	
SM-10(b)	N/A	For specific requirement details, buy a licensed copy of the Focal Document at: https://webstore.iec.ch/en/publication/33615	Functional	Intersects With	Security, Compliance & Resilience Testing Throughout Development	TDA-09	Mechanisms exist to require system developers/integrators consult with security, compliance and/or resilience personnel to: (1) Create and implement a Security Testing and Evaluation (ST&E) plan, or similar capability; (2) Implement a verifiable flaw remediation process to correct weaknesses and deficiencies identified during the control testing and evaluation process; and (3) Document the results.	5	
SM-11	Assessing and addressing security-related issues	For specific requirement details, buy a licensed copy of the Focal Document at: https://webstore.iec.ch/en/publication/33615	Functional	Intersects With	Minimum Viable Product (MVP) Security Requirements	TDA-02	Mechanisms exist to design, develop and produce Technology Assets, Applications and/or Services (TAAS) in such a way that risk-based technical and functional specifications ensure Minimum Viable Product (MVP) criteria establish an appropriate level of security and resiliency based on applicable risks and threats.	8	
SM-11(a)	N/A	For specific requirement details, buy a licensed copy of the Focal Document at: https://webstore.iec.ch/en/publication/33615	Functional	Intersects With	Product Testing & Reviews	TDA-02.10	Mechanisms exist to regularly review Technology Assets, Applications and/or Services (TAAS) for an appropriate level of security and resiliency based on applicable risks and threats.	5	
SM-11(b)	N/A	For specific requirement details, buy a licensed copy of the Focal Document at: https://webstore.iec.ch/en/publication/33615	Functional	Intersects With	Product Testing & Reviews	TDA-02.10	Mechanisms exist to regularly review Technology Assets, Applications and/or Services (TAAS) for an appropriate level of security and resiliency based on applicable risks and threats.	5	
SM-11(c)	N/A	For specific requirement details, buy a licensed copy of the Focal Document at: https://webstore.iec.ch/en/publication/33615	Functional	Intersects With	Product Testing & Reviews	TDA-02.10	Mechanisms exist to regularly review Technology Assets, Applications and/or Services (TAAS) for an appropriate level of security and resiliency based on applicable risks and threats.	5	
SM-11(d)	N/A	For specific requirement details, buy a licensed copy of the Focal Document at: https://webstore.iec.ch/en/publication/33615	Functional	Intersects With	Product Testing & Reviews	TDA-02.10	Mechanisms exist to regularly review Technology Assets, Applications and/or Services (TAAS) for an appropriate level of security and resiliency based on applicable risks and threats.	5	
SM-11(e)	N/A	For specific requirement details, buy a licensed copy of the Focal Document at: https://webstore.iec.ch/en/publication/33615	Functional	Intersects With	Product Testing & Reviews	TDA-02.10	Mechanisms exist to regularly review Technology Assets, Applications and/or Services (TAAS) for an appropriate level of security and resiliency based on applicable risks and threats.	5	
SM-12	Process verification	For specific requirement details, buy a licensed copy of the Focal Document at: https://webstore.iec.ch/en/publication/33615	Functional	Intersects With	Product Testing & Reviews	TDA-02.10	Mechanisms exist to regularly review Technology Assets, Applications and/or Services (TAAS) for an appropriate level of security and resiliency based on applicable risks and threats.	8	
SM-13	Continuous improvement	For specific requirement details, buy a licensed copy of the Focal Document at: https://webstore.iec.ch/en/publication/33615	Functional	Intersects With	Threat Modeling	TDA-06.2	Mechanisms exist to perform threat modeling and other secure design techniques, to ensure that threats to software and solutions are identified and accounted for.	5	
SR-1	Product security context	For specific requirement details, buy a licensed copy of the Focal Document at: https://webstore.iec.ch/en/publication/33615	Functional	Intersects With	Minimum Viable Product (MVP) Security Requirements	TDA-02	Mechanisms exist to design, develop and produce Technology Assets, Applications and/or Services (TAAS) in such a way that risk-based technical and functional specifications ensure Minimum Viable Product (MVP) criteria establish an appropriate level of security and resiliency based on applicable risks and threats.	5	
SR-2	Threat model	For specific requirement details, buy a licensed copy of the Focal Document at: https://webstore.iec.ch/en/publication/33615	Functional	Intersects With	Threat Modeling	TDA-06.2	Mechanisms exist to perform threat modeling and other secure design techniques, to ensure that threats to software and solutions are identified and accounted for.	5	
SR-2(a)	N/A	For specific requirement details, buy a licensed copy of the Focal Document at: https://webstore.iec.ch/en/publication/33615	Functional	Intersects With	Threat Modeling	TDA-06.2	Mechanisms exist to perform threat modeling and other secure design techniques, to ensure that threats to software and solutions are identified and accounted for.	5	
SR-2(b)	N/A	For specific requirement details, buy a licensed copy of the Focal Document at: https://webstore.iec.ch/en/publication/33615	Functional	Intersects With	Threat Modeling	TDA-06.2	Mechanisms exist to perform threat modeling and other secure design techniques, to ensure that threats to software and solutions are identified and accounted for.	5	
SR-2(c)	N/A	For specific requirement details, buy a licensed copy of the Focal Document at: https://webstore.iec.ch/en/publication/33615	Functional	Intersects With	Threat Modeling	TDA-06.2	Mechanisms exist to perform threat modeling and other secure design techniques, to ensure that threats to software and solutions are identified and accounted for.	5	
SR-2(d)	N/A	For specific requirement details, buy a licensed copy of the Focal Document at: https://webstore.iec.ch/en/publication/33615	Functional	Intersects With	Threat Modeling	TDA-06.2	Mechanisms exist to perform threat modeling and other secure design techniques, to ensure that threats to software and solutions are identified and accounted for.	5	
SR-2(e)	N/A	For specific requirement details, buy a licensed copy of the Focal Document at: https://webstore.iec.ch/en/publication/33615	Functional	Intersects With	Threat Modeling	TDA-06.2	Mechanisms exist to perform threat modeling and other secure design techniques, to ensure that threats to software and solutions are identified and accounted for.	5	
SR-2(f)	N/A	For specific requirement details, buy a licensed copy of the Focal Document at: https://webstore.iec.ch/en/publication/33615	Functional	Intersects With	Threat Modeling	TDA-06.2	Mechanisms exist to perform threat modeling and other secure design techniques, to ensure that threats to software and solutions are identified and accounted for.	5	
SR-2(g)	N/A	For specific requirement details, buy a licensed copy of the Focal Document at: https://webstore.iec.ch/en/publication/33615	Functional	Intersects With	Threat Modeling	TDA-06.2	Mechanisms exist to perform threat modeling and other secure design techniques, to ensure that threats to software and solutions are identified and accounted for.	5	
SR-2(h)	N/A	For specific requirement details, buy a licensed copy of the Focal Document at: https://webstore.iec.ch/en/publication/33615	Functional	Intersects With	Threat Modeling	TDA-06.2	Mechanisms exist to perform threat modeling and other secure design techniques, to ensure that threats to software and solutions are identified and accounted for.	5	
SR-2(i)	N/A	For specific requirement details, buy a licensed copy of the Focal Document at: https://webstore.iec.ch/en/publication/33615	Functional	Intersects With	Threat Modeling	TDA-06.2	Mechanisms exist to perform threat modeling and other secure design techniques, to ensure that threats to software and solutions are identified and accounted for.	5	
SR-2(j)	N/A	For specific requirement details, buy a licensed copy of the Focal Document at: https://webstore.iec.ch/en/publication/33615	Functional	Intersects With	Threat Modeling	TDA-06.2	Mechanisms exist to perform threat modeling and other secure design techniques, to ensure that threats to software and solutions are identified and accounted for.	5	
SR-2(k)	N/A	For specific requirement details, buy a licensed copy of the Focal Document at: https://webstore.iec.ch/en/publication/33615	Functional	Intersects With	Threat Modeling	TDA-06.2	Mechanisms exist to perform threat modeling and other secure design techniques, to ensure that threats to software and solutions are identified and accounted for.	5	
SR-2(l)	N/A	For specific requirement details, buy a licensed copy of the Focal Document at: https://webstore.iec.ch/en/publication/33615	Functional	Intersects With	Threat Modeling	TDA-06.2	Mechanisms exist to perform threat modeling and other secure design techniques, to ensure that threats to software and solutions are identified and accounted for.	5	
SR-2(m)	N/A	For specific requirement details, buy a licensed copy of the Focal Document at: https://webstore.iec.ch/en/publication/33615	Functional	Intersects With	Threat Modeling	TDA-06.2	Mechanisms exist to perform threat modeling and other secure design techniques, to ensure that threats to software and solutions are identified and accounted for.	5	
SR-3	Product security requirements	For specific requirement details, buy a licensed copy of the Focal Document at: https://webstore.iec.ch/en/publication/33615	Functional	Intersects With	Functional Properties	TDA-04.1	Mechanisms exist to require software developers to provide information describing the functional properties of the security, compliance and resilience controls to be utilized within Technology Assets, Applications and/or Services (TAAS) in sufficient detail to permit analysis and testing of the controls.	5	
SR-4	Product security requirements content	For specific requirement details, buy a licensed copy of the Focal Document at: https://webstore.iec.ch/en/publication/33615	Functional	Intersects With	Minimum Viable Product (MVP) Security Requirements	TDA-02	Mechanisms exist to design, develop and produce Technology Assets, Applications and/or Services (TAAS) in such a way that risk-based technical and functional specifications ensure Minimum Viable Product (MVP) criteria establish an appropriate level of security and resiliency based on applicable risks and threats.	5	
SR-4(a)	N/A	For specific requirement details, buy a licensed copy of the Focal Document at: https://webstore.iec.ch/en/publication/33615	Functional	Intersects With	Minimum Viable Product (MVP) Security Requirements	TDA-02	Mechanisms exist to design, develop and produce Technology Assets, Applications and/or Services (TAAS) in such a way that risk-based technical and functional specifications ensure Minimum Viable Product (MVP) criteria establish an appropriate level of security and resiliency based on applicable risks and threats.	5	
SR-4(b)	N/A	For specific requirement details, buy a licensed copy of the Focal Document at: https://webstore.iec.ch/en/publication/33615	Functional	Intersects With	Minimum Viable Product (MVP) Security Requirements	TDA-02	Mechanisms exist to design, develop and produce Technology Assets, Applications and/or Services (TAAS) in such a way that risk-based technical and functional specifications ensure Minimum Viable Product (MVP) criteria establish an appropriate level of security and resiliency based on applicable risks and threats.	5	
SR-5	Security requirements review	For specific requirement details, buy a licensed copy of the Focal Document at: https://webstore.iec.ch/en/publication/33615	Functional	Intersects With	Security, Compliance & Resilience Representatives For Product Changes	TDA-02.7	Mechanisms exist to include appropriate security, compliance and resilience representatives in the product feature and/or functionality change control review process.	5	
SR-5(a)	N/A	For specific requirement details, buy a licensed copy of the Focal Document at: https://webstore.iec.ch/en/publication/33615	Functional	Intersects With	Security, Compliance & Resilience Representatives For Product Changes	TDA-02.7	Mechanisms exist to include appropriate security, compliance and resilience representatives in the product feature and/or functionality change control review process.	5	

FDE #	FDE Name	Focal Document Element (FDE) Description	STRM Rationale	STRM Relationship	SCF Control	SCF #	Secure Controls Framework (SCF) Control Description	Strength of Relationship	Notes
SG-4(d)	N/A	For specific requirement details, buy a licensed copy of the Focal Document at: https://webstore.iec.ch/en/publication/33615	Functional	Intersects With	Documentation Requirements	TDA-04	Mechanisms exist to obtain, protect and distribute administrator documentation for Technology Assets, Applications and/or Services (TAAS) that describe: (1) Secure configuration, installation and operation of the TAAS; (2) Effective use and maintenance of security features/functions; and (3) Known vulnerabilities regarding configuration and use of administrative (e.g., privileged) functions.	3	
SG-5	Secure operation guidelines	For specific requirement details, buy a licensed copy of the Focal Document at: https://webstore.iec.ch/en/publication/33615	Functional	Intersects With	Documentation Requirements	TDA-04	Mechanisms exist to obtain, protect and distribute administrator documentation for Technology Assets, Applications and/or Services (TAAS) that describe: (1) Secure configuration, installation and operation of the TAAS; (2) Effective use and maintenance of security features/functions; and (3) Known vulnerabilities regarding configuration and use of administrative (e.g., privileged) functions.	3	
SG-5(a)	N/A	For specific requirement details, buy a licensed copy of the Focal Document at: https://webstore.iec.ch/en/publication/33615	Functional	Intersects With	Documentation Requirements	TDA-04	Mechanisms exist to obtain, protect and distribute administrator documentation for Technology Assets, Applications and/or Services (TAAS) that describe: (1) Secure configuration, installation and operation of the TAAS; (2) Effective use and maintenance of security features/functions; and (3) Known vulnerabilities regarding configuration and use of administrative (e.g., privileged) functions.	3	
SG-5(b)	N/A	For specific requirement details, buy a licensed copy of the Focal Document at: https://webstore.iec.ch/en/publication/33615	Functional	Intersects With	Documentation Requirements	TDA-04	Mechanisms exist to obtain, protect and distribute administrator documentation for Technology Assets, Applications and/or Services (TAAS) that describe: (1) Secure configuration, installation and operation of the TAAS; (2) Effective use and maintenance of security features/functions; and (3) Known vulnerabilities regarding configuration and use of administrative (e.g., privileged) functions.	3	
SG-6	Account management guidelines	For specific requirement details, buy a licensed copy of the Focal Document at: https://webstore.iec.ch/en/publication/33615	Functional	Intersects With	Documentation Requirements	TDA-04	Mechanisms exist to obtain, protect and distribute administrator documentation for Technology Assets, Applications and/or Services (TAAS) that describe: (1) Secure configuration, installation and operation of the TAAS; (2) Effective use and maintenance of security features/functions; and (3) Known vulnerabilities regarding configuration and use of administrative (e.g., privileged) functions.	3	
SG-6(a)	N/A	For specific requirement details, buy a licensed copy of the Focal Document at: https://webstore.iec.ch/en/publication/33615	Functional	Intersects With	Documentation Requirements	TDA-04	Mechanisms exist to obtain, protect and distribute administrator documentation for Technology Assets, Applications and/or Services (TAAS) that describe: (1) Secure configuration, installation and operation of the TAAS; (2) Effective use and maintenance of security features/functions; and (3) Known vulnerabilities regarding configuration and use of administrative (e.g., privileged) functions.	3	
SG-6(b)	N/A	For specific requirement details, buy a licensed copy of the Focal Document at: https://webstore.iec.ch/en/publication/33615	Functional	Intersects With	Documentation Requirements	TDA-04	Mechanisms exist to obtain, protect and distribute administrator documentation for Technology Assets, Applications and/or Services (TAAS) that describe: (1) Secure configuration, installation and operation of the TAAS; (2) Effective use and maintenance of security features/functions; and (3) Known vulnerabilities regarding configuration and use of administrative (e.g., privileged) functions.	3	
SG-7	Documentation review	For specific requirement details, buy a licensed copy of the Focal Document at: https://webstore.iec.ch/en/publication/33615	Functional	Intersects With	Product Management	TDA-01.1	Mechanisms exist to design and implement product management processes to proactively govern the design, development and production of Technology Assets, Applications and/or Services (TAAS) across the System Development Life Cycle (SDLC) to: (1) Improve functionality; (2) Enhance security and resiliency capabilities; (3) Correct security deficiencies; and (4) Conform with applicable statutory, regulatory and/or contractual obligations.	3	
SG-7(a)	N/A	For specific requirement details, buy a licensed copy of the Focal Document at: https://webstore.iec.ch/en/publication/33615	Functional	Intersects With	Product Management	TDA-01.1	Mechanisms exist to design and implement product management processes to proactively govern the design, development and production of Technology Assets, Applications and/or Services (TAAS) across the System Development Life Cycle (SDLC) to: (1) Improve functionality; (2) Enhance security and resiliency capabilities; (3) Correct security deficiencies; and (4) Conform with applicable statutory, regulatory and/or contractual obligations.	3	
SG-7(b)	N/A	For specific requirement details, buy a licensed copy of the Focal Document at: https://webstore.iec.ch/en/publication/33615	Functional	Intersects With	Product Management	TDA-01.1	Mechanisms exist to design and implement product management processes to proactively govern the design, development and production of Technology Assets, Applications and/or Services (TAAS) across the System Development Life Cycle (SDLC) to: (1) Improve functionality; (2) Enhance security and resiliency capabilities; (3) Correct security deficiencies; and (4) Conform with applicable statutory, regulatory and/or contractual obligations.	3	
SG-7(c)	N/A	For specific requirement details, buy a licensed copy of the Focal Document at: https://webstore.iec.ch/en/publication/33615	Functional	Intersects With	Product Management	TDA-01.1	Mechanisms exist to design and implement product management processes to proactively govern the design, development and production of Technology Assets, Applications and/or Services (TAAS) across the System Development Life Cycle (SDLC) to: (1) Improve functionality; (2) Enhance security and resiliency capabilities; (3) Correct security deficiencies; and (4) Conform with applicable statutory, regulatory and/or contractual obligations.	3	