Set Theory Relationship Mapping (STRM)

Reference Document : Secure Controls Framework (SCF) version 2024.4
Focal Document: HISO 10029:2022 NZ Health Information Security Framework (HISF)
Focal Document URL: https://www.tewhatuora.govt.nz/publications/health-information-security-framework/
STRM URL: https://securecontrolsframework.com/content/strm/scf-strm-nz-hisf-2022.pdf

Set Theory Relationship Mapping (STRM) is well-suited for mapping between sets of elements that exist in two distinct concepts that are mostly the same as each other (e.g., cybersecurity & data privacy requirements). STRM also allows the strength of the mapping to be captured.

STRM relies on a justification for the relationship claim. There are three (3) options for the rationale, which is a high-level context within which the two concepts are related:

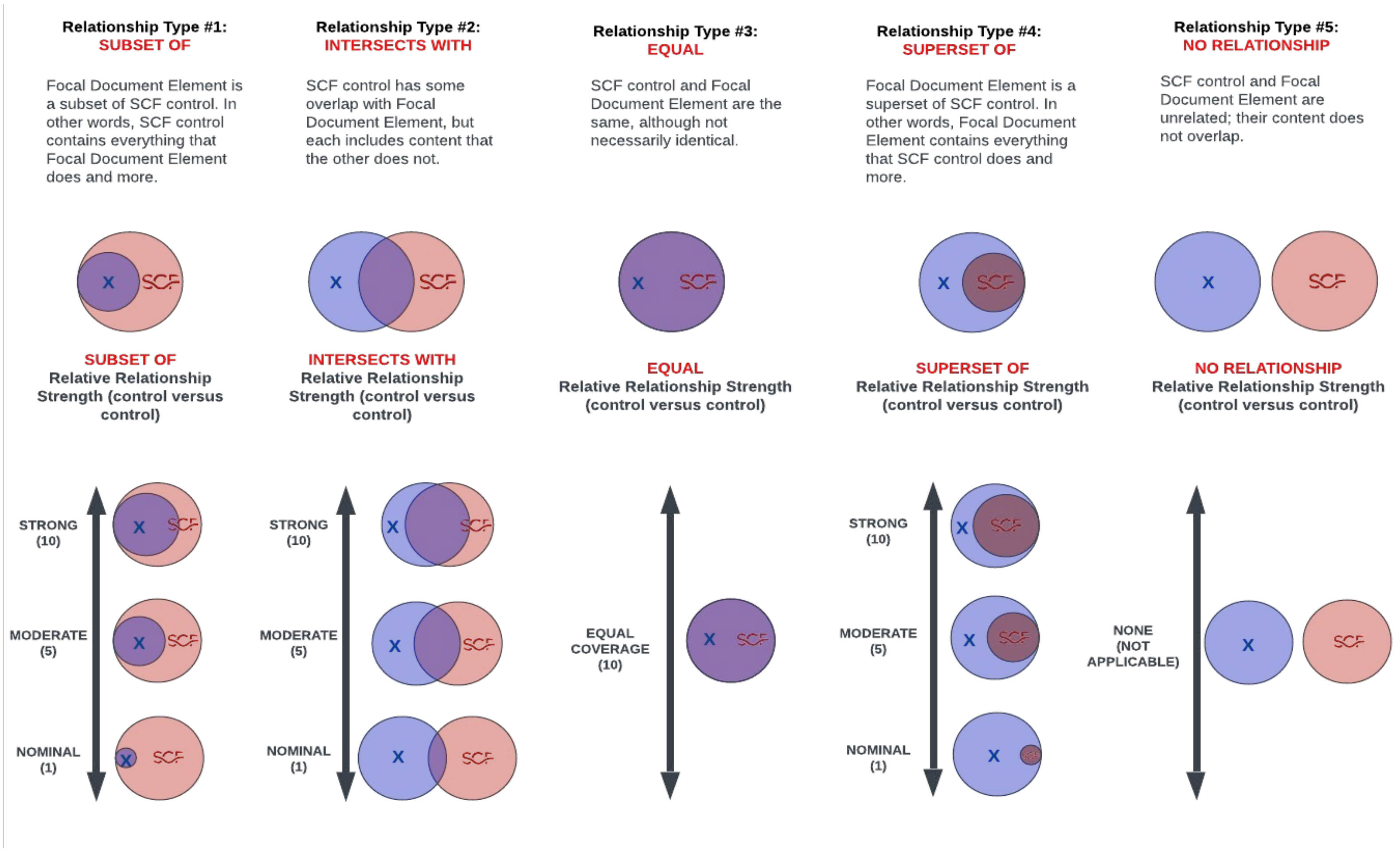
1. **Syntactic**: How similar is the wording that expresses the two concepts? This is a word-for-word analysis of the relationship, not an interpretation of the language.
2. **Semantic**: How similar are the meanings of the two concepts? This involves some interpretation of each concept's language.
3. **Functional**: How similar are the results of executing the two concepts? This involves understanding what will happen if the two concepts are implemented, performed, or otherwise executed.

Based on NIST IR 8477, STRM supports five (5) five relationship types to describe the logical similarity between two distinct concepts:

1. **Subset Of**
2. **Intersects With**
3. **Equal**
4. **Superset Of**
5. **No Relationship**

SCF **Reference Document**

Law, Regulation or Framework **Focal Document**



Relationship Type #1: SUBSET OF

Focal Document Element is a subset of SCF control. In other words, SCF control contains everything that Focal Document Element does and more.

Relationship Type #2: INTERSECTS WITH

SCF control has some overlap with Focal Document Element, but each includes content that the other does not.

Relationship Type #3: EQUAL

SCF control and Focal Document Element are the same, although not necessarily identical.

Relationship Type #4: SUPERSET OF

Focal Document Element is a superset of SCF control. In other words, Focal Document Element contains everything that SCF control does and more.

Relationship Type #5: NO RELATIONSHIP

SCF control and Focal Document Element are unrelated; their content does not overlap.

X
SCF
SUBSET OF Relative Relationship Strength (control versus control)
INTERSECTS WITH Relative Relationship Strength (control versus control)
EQUAL Relative Relationship Strength (control versus control)
SUPERSET OF Relative Relationship Strength (control versus control)
NO RELATIONSHIP Relative Relationship Strength (control versus control)
STRONG (10)
MODERATE (5)
NOMINAL (1)
EQUAL COVERAGE (10)
NONE (NOT APPLICABLE)

FDE #	FDE Name	Focal Document Element (FDE) Description	STRM Rationale	STRM Relationship	SCF Control	SCF #	Secure Controls Framework (SCF) Control Description	Strength of Relationship (optional)	Notes (optional)
HSUP01	Information Security Policy - Policies for information security	The organisation has a clear information security policy, acceptable use policy, topic-specific policies and procedures to maintain information security.	Functional	Intersects With	Publishing Cybersecurity & Data Protection Documentation	GOV-02	Mechanisms exist to establish, maintain and disseminate cybersecurity & data protection policies, standards and procedures.	5	
			Functional	Intersects With	Rules of Behavior	HRS-05.1	Mechanisms exist to define acceptable and unacceptable rules of behavior for the use of technologies, including consequences for unacceptable behavior.	5	
			Functional	Intersects With	Standardized Operating Procedures (SOP)	OPS-01.1	Mechanisms exist to identify and document Standardized Operating Procedures (SOP), or similar documentation, to enable the proper execution of day-to-day / assigned tasks.	5	
HSUP02	Human Resource Security - Terms and conditions of employment	Security roles and responsibilities of personnel are included within job descriptions.	Functional	Subset Of	Human Resources Security Management	HRS-01	Mechanisms exist to facilitate the implementation of personnel security controls.	10	
			Functional	Intersects With	Roles & Responsibilities	HRS-03	Mechanisms exist to define cybersecurity roles & responsibilities for all personnel.	5	
HSUP03	Human Resource Security - Terms and conditions of employment	A breach of information by personnel is considered a security policy violation. Consequences of a security policy violation leads to a disciplinary process.	Functional	Intersects With	Personnel Sanctions	HRS-07	Mechanisms exist to sanction personnel failing to comply with established security policies, standards and procedures.	5	
			Functional	Intersects With	Workplace Investigations	HRS-07.1	Mechanisms exist to conduct employee misconduct investigations when there is reasonable assurance that a policy has been violated.	5	
HSUP04	Human Resource Security - Onboarding, offboarding and role change	There are documented procedures for providing and revoking logical, and physical access when personnel join, have a role change or leave the organisation.	Functional	Intersects With	User Provisioning & De-Provisioning	IAC-07	Mechanisms exist to utilize a formal user registration and de-registration process that governs the assignment of access rights.	5	
			Functional	Intersects With	Change of Roles & Duties	IAC-07.1	Mechanisms exist to revoke user access rights following changes in personnel roles and duties, if no longer necessary or permitted.	5	
			Functional	Intersects With	Termination of Employment	IAC-07.2	Mechanisms exist to revoke user access rights in a timely manner, upon termination of employment or contract.	5	
			Functional	Intersects With	Role-Based Access Control (RBAC)	IAC-08	Mechanisms exist to enforce a Role-Based Access Control (RBAC) policy over users and resources that applies need-to-know and fine-grained access control for sensitive/regulated data access.	5	
			Functional	Intersects With	Physical Access Authorizations	PES-02	Physical access control mechanisms exist to maintain a current list of personnel with authorized access to organizational facilities (except for those areas within the facility officially designated as publicly accessible).	5	
			Functional	Intersects With	Role-Based Physical Access	PES-02.1	Physical access control mechanisms exist to authorize physical access to facilities based on the position or role of the individual.	5	
HSUP05	Asset Lifecycle Security - Information and associated assets	Asset management process(es) are in place.	Functional	Subset Of	Asset Governance	AST-01	Mechanisms exist to facilitate an IT Asset Management (ITAM) program to implement and manage asset management controls.	10	
HSUP06	Asset Lifecycle Security - Media Equipment Management, Decommissioning and Disposal	Processes are in place for media equipment management, decommissioning and secure disposal.	Functional	Equal	Secure Disposal, Destruction or Re-Use of Equipment	AST-09	Mechanisms exist to securely dispose of, destroy or repurpose system components using organization-defined techniques and methods to prevent information being recovered from these components.	10	
HSUP07	Information Security Incident Management - Planning and preparation	An information security incident management process is in place.	Functional	Intersects With	Incident Handling	IRO-02	Mechanisms exist to cover: (1) Preparation; (2) Automated event detection or manual incident report intake; (3) Analysis; (4) Containment; (5) Eradication; and (6) Recovery.	5	
			Functional	Intersects With	Incident Response Plan (IRP)	IRO-04	Mechanisms exist to maintain and make available a current and viable Incident Response Plan (IRP) to all stakeholders.	5	
HSUP08	Business Continuity and Disaster Recovery Management - Information security during disruption	Organisations have a documented, approved, business continuity and disaster recovery management, operational resilience policies and procedures in place.	Functional	Subset Of	Business Continuity Management System (BCMS)	BCD-01	Mechanisms exist to facilitate the implementation of contingency planning controls to help ensure resilient assets and services (e.g., Continuity of Operations Plan (COOP) or Business Continuity & Disaster Recovery (BC/DR) playbooks).	10	
HSUP09	Identity and Access Management - Access control	Establish, document, approve, and implement rules to control physical and logical access to information and its assets.	Functional	Intersects With	Access Enforcement	IAC-20	Mechanisms exist to enforce Logical Access Control (LAC) permissions that conform to the principle of "least privilege."	5	
			Functional	Intersects With	Access To Information Systems	PES-03.4	Physical access control mechanisms exist to enforce physical access to critical information systems or sensitive/regulated data, in addition to the physical access controls for the facility.	5	
HSUP10	Information Security Governance - Ownership of Information Security	The organisation's Board or information security steering committee is accountable for information security governance.	Functional	Intersects With	Steering Committee & Program Oversight	GOV-01.1	Mechanisms exist to coordinate cybersecurity, data protection and business alignment through a steering committee or advisory board, comprised of key cybersecurity, data privacy and business executives, which meets formally and on a regular basis.	5	
			Functional	Intersects With	Status Reporting To Governing Body	GOV-01.2	Mechanisms exist to provide governance oversight reporting and recommendations to those entrusted to make executive decisions about matters considered material to the organization's cybersecurity & data protection program.	5	
HSUP11	Physical and Environmental Security - Policies and Procedures	A documented policy and supporting procedures for maintaining physical security within the organisation is in place.	Functional	Subset Of	Physical & Environmental Protections	PES-01	Mechanisms exist to facilitate the operation of physical and environmental protection controls.	10	
			Functional	Intersects With	Site Security Plan (SitePlan)	PES-01.1	Mechanisms exist to document a Site Security Plan (SitePlan) for each server and communications room to summarize the implemented security controls to protect physical access to technology assets, as well as applicable risks and threats.	5	
HSUP12	Physical and Environmental Security - Clear Desk and Clear Screen Procedure	A documented and approved procedure to remove papers and removable storage from easily accessible areas is to be implemented.	Functional	Subset Of	Data Protection	DCH-01	Mechanisms exist to facilitate the implementation of data protection controls.	10	
			Functional	Intersects With	Sensitive / Regulated Data Protection	DCH-01.2	Mechanisms exist to protect sensitive/regulated data wherever it is stored.	5	
			Functional	Intersects With	Removable Media Security	DCH-12	Mechanisms exist to restrict removable media in accordance with data handling and acceptable usage parameters.	5	
HSUP13	Cloud Security - Cloud security policy & cloud security agreement (CSA)	Organisations have planned maintenance of information and services that are being provided to their customers via cloud services as per documented policies and agreements.	Functional	Subset Of	Maintenance Operations	MNT-01	Mechanisms exist to develop, disseminate, review & update procedures to facilitate the implementation of maintenance controls across the enterprise.	10	
HSUP14	Systems Acquisition, Development and Maintenance - Security while developing applications, products or services	Information systems are securely designed, and appropriate controls are implemented.	Functional	Intersects With	System Hardening Through Baseline Configurations	CFG-02	Mechanisms exist to develop, document and maintain secure baseline configurations for technology platforms that are consistent with industry-accepted system hardening standards.	5	
			Functional	Intersects With	Operationalizing Cybersecurity & Data Protection Practices	GOV-15	Mechanisms exist to compel data and/or process owners to operationalize cybersecurity & data privacy practices for each system, application and/or service under their control.	5	
			Functional	Subset Of	Secure Engineering Principles	SEA-01	Mechanisms exist to facilitate the implementation of industry-recognized cybersecurity & data privacy practices in the specification, design, development, implementation and modification of systems and services.	10	
HSUP15	Information Backups - Policy and procedures	A backup and recovery procedure is in place.	Functional	Intersects With	Data Backups	BCD-11	Mechanisms exist to create recurring backups of data, software and/or system images, as well as verify the integrity of these backups, to ensure the availability of the data to satisfying Recovery Time Objectives (RTOs) and Recovery Point Objectives (RPOs).	5	
			Functional	Intersects With	Information System Recovery & Reconstitution	BCD-12	Mechanisms exist to ensure the secure recovery and reconstitution of systems to a known state after a disruption, compromise or failure.	5	
			Functional	Intersects With	Data Backups	BCD-11	Mechanisms exist to create recurring backups of data, software and/or system images, as well as verify the integrity of these backups, to ensure the availability of the data to satisfying Recovery Time Objectives (RTOs) and Recovery Point Objectives (RPOs).	5	
			Functional	Intersects With	Information System Recovery & Reconstitution	BCD-12	Mechanisms exist to ensure the secure recovery and reconstitution of systems to a known state after a disruption, compromise or failure.	5	
HSUP16	Change Management - Policy and procedures	A documented process is in place for performing changes to new and existing systems or services.	Functional	Subset Of	Change Management Program	CHG-01	Mechanisms exist to facilitate the implementation of a change management program.	10	
			Functional	Intersects With	Configuration Change Control	CHG-02	Mechanisms exist to govern the technical configuration change control processes.	5	
			Functional	Subset Of	Vulnerability & Patch Management Program (VPMP)	VPM-01	Mechanisms exist to facilitate the implementation and monitoring of vulnerability management controls.	10	

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HSUP17	Patch and Vulnerability Management - Policy and procedures	There is a documented and approved process for identifying vulnerabilities and updating patches on the organisation's systems, applications, tools, services etc.	Functional	Intersects With	Vulnerability Remediation Process	VPM-02	Mechanisms exist to ensure that vulnerabilities are properly identified, tracked and remediated.	5	
			Functional	Intersects With	Software & Firmware Patching	VPM-05	Mechanisms exist to conduct software patching for all deployed operating systems, applications and firmware.	5	
HSUP18	Human Resource Security - Terms and conditions of employment	Organisations, at a minimum, screen all personnel by verifying their identity, previous employment, applicable professional qualifications and criminal backgrounds before confirmation of employment.	Functional	Equal	Personnel Screening	HRS-04	Mechanisms exist to manage personnel security risk by screening individuals prior to authorizing access.	10	
HSUP19	Human Resource Security - Roles and responsibilities	Organisations are to ensure: a) information security responsibilities are clearly defined and assigned b) a governance body or steering committee overseeing information security activities is in place c) there is at least one individual responsible for maintaining information security within the organisation.	Functional	Intersects With	Steering Committee & Program Oversight	GOV-01.1	Mechanisms exist to coordinate cybersecurity, data protection and business alignment through a steering committee or advisory board, comprised of key cybersecurity, data privacy and business executives, which meets formally and on a regular basis.	5	
			Functional	Intersects With	Assigned Cybersecurity & Data Protection Responsibilities	GOV-04	Mechanisms exist to assign one or more qualified individuals with the mission and resources to centrally-manage, coordinate, develop, implement and maintain an enterprise-wide cybersecurity & data protection program.	5	
			Functional	Intersects With	Stakeholder Accountability Structure	GOV-04.1	Mechanisms exist to enforce an accountability structure so that appropriate teams and individuals are empowered, responsible and trained for mapping, measuring and managing data and technology-related risks.	5	
HSUP20	Human Resource Security - Training Requirements	There has been an assessment of information security training needs and a training plan is put in place.	Functional	Subset Of	Cybersecurity & Data Privacy-Minded Workforce	SAT-01	Mechanisms exist to facilitate the implementation of security workforce development and awareness controls.	10	
HSUP21	Information Security Incident Management - Roles and Responsibilities	Organisations are to have roles and responsibilities determined to carry out the incident management process.	Functional	Equal	Defined Roles & Responsibilities	HRS-03	Mechanisms exist to define cybersecurity roles & responsibilities for all personnel.	10	
HSUP22	Business Continuity and Disaster Recovery Management - ICT readiness for business continuity	Establish criteria for developing business continuity, disaster recovery, operational resilience strategies, and capabilities based on disruption and impact to the organisation.	Functional	Subset Of	Business Continuity Management System (BCMS)	BCD-01	Mechanisms exist to facilitate the implementation of contingency planning controls to help ensure resilient assets and services (e.g., Continuity of Operations Plan (COOP) or Business Continuity & Disaster Recovery (BC/DR) playbooks).	10	
			Functional	Intersects With	Recovery Time / Point Objectives (RTO / RPO)	BCD-01.4	Mechanisms exist to facilitate recovery operations in accordance with Recovery Time Objectives (RTOs) and Recovery Point Objectives (RPOs).	5	
HSUP23	Information Security Governance - Roles and responsibilities	Roles and responsibilities are defined and documented for planning, implementing, operating, assessing, and reporting on the organisation's information security requirements.	Functional	Intersects With	Assigned Cybersecurity & Data Protection Responsibilities	GOV-04	Mechanisms exist to assign one or more qualified individuals with the mission and resources to centrally-manage, coordinate, develop, implement and maintain an enterprise-wide cybersecurity & data protection program.	5	
			Functional	Intersects With	Stakeholder Accountability Structure	GOV-04.1	Mechanisms exist to enforce an accountability structure so that appropriate teams and individuals are empowered, responsible and trained for mapping, measuring and managing data and technology-related risks.	5	
HSUP24	Information Security Governance - Information security in project management	Organisations are to integrate information security into project management.	Functional	Intersects With	Operationalizing Cybersecurity & Data Protection Practices	GOV-15	Mechanisms exist to compel data and/or process owners to operationalize cybersecurity & data privacy practices for each system, application and/or service under their control.	5	
			Functional	Intersects With	Cybersecurity & Data Privacy In Project Management	PRM-04	Mechanisms exist to assess cybersecurity & data privacy controls in system project development to determine the extent to which the controls are implemented correctly, operating as intended and producing the desired outcome with respect to meeting the requirements.	5	
HSUP25	Compliance - Compliance requirements	Relevant legal, regulatory, and contractual requirements are identified and implemented.	Functional	Subset Of	Statutory, Regulatory & Contractual Compliance	CPL-01	Mechanisms exist to facilitate the identification and implementation of relevant statutory, regulatory and contractual controls.	10	
HSUP26	Cloud Security - Cloud security risk assessment and assurance	A risk assessment methodology and cloud assurance activities that support the use of cloud technologies are in place.	Functional	Subset Of	Risk Management Program	RSK-01	Mechanisms exist to facilitate the implementation of strategic, operational and tactical risk management controls.	10	
HSUP27	Systems Acquisition, Development and Maintenance - Business, customer and security requirements	Business, customer, and security requirements are identified, documented, and approved when developing or acquiring applications.	Functional	Intersects With	Stakeholder Identification & Involvement	AST-01.2	Mechanisms exist to identify and involve pertinent stakeholders of critical systems, applications and services to support the ongoing secure management of those assets.	5	
			Functional	Intersects With	Cybersecurity & Data Privacy Requirements Definition	PRM-05	Mechanisms exist to identify critical system components and functions by performing a criticality analysis for critical systems, system components or services at pre-defined decision points in the Secure Development Life Cycle (SDLC).	5	
			Functional	Intersects With	Business Process Definition	PRM-06	Mechanisms exist to define business processes with consideration for cybersecurity & data privacy that determines: (1) The resulting risk to organizational operations, assets, individuals and other organizations; and (2) Information protection needs arising from the defined business processes and revises the processes as necessary, until an achievable set of protection needs is obtained.	5	
HSUP28	Risk Management - Risk Assessments	Risk assessments are performed on new, existing systems, and applications to understand the risks posed to the organisation while using them.	Functional	Equal	Risk Assessment	RSK-04	Mechanisms exist to conduct recurring assessments of risk that includes the likelihood and magnitude of harm, from unauthorized access, use, disclosure, disruption, modification or destruction of the organization's systems and data.	10	
HSUP29	Change Management - Security testing	The proposed changes are to be analysed for potential security threats and their impact on the organisation and their customers.	Functional	Equal	Security Impact Analysis for Changes	CHG-03	Mechanisms exist to analyze proposed changes for potential security impacts, prior to the implementation of the change.	10	
HSUP30	Asset Lifecycle Security - Information and associated assets	The organisation's information and associated assets are appropriately protected, used, and handled based on their importance.	Functional	Subset Of	Data Protection	DCH-01	Mechanisms exist to facilitate the implementation of data protection controls.	10	
			Functional	Intersects With	Data & Asset Classification	DCH-02	Mechanisms exist to ensure data and assets are categorized in accordance with applicable statutory, regulatory and contractual requirements.	5	
			Functional	Subset Of	Endpoint Security	END-01	Mechanisms exist to facilitate the implementation of endpoint security controls.	10	
HSUP31	Business Continuity and Disaster Recovery Management - Information security during disruption	In the event of a disruption or failure, critical information or services are identified, and measures are taken for the continuity of services.	Functional	Intersects With	Resume All Missions & Business Functions	BCD-02.1	Mechanisms exist to resume all missions and business functions within Recovery Time Objectives (RTOs) of the contingency plan's activation.	5	
			Functional	Intersects With	Continue Essential Mission & Business Functions	BCD-02.2	Mechanisms exist to continue essential missions and business functions with little or no loss of operational continuity and sustain that continuity until full system restoration at primary processing and/or storage sites.	5	
HSUP32	Cryptography - Use of cryptography	Rules for effective use of cryptography, including encryption, and key management are defined and implemented.	Functional	Subset Of	Use of Cryptographic Controls	CRY-01	Mechanisms exist to facilitate the implementation of cryptographic protections controls using known public standards and trusted cryptographic technologies.	10	
HSUP33	Identity and Access Management - Identity Management	The complete lifecycle of the account(s) being used to access, process, or manage information and services is managed.	Functional	Equal	Account Management	IAC-15	Mechanisms exist to proactively govern account management of individual, group, system, service, application, guest and temporary accounts.	10	
HSUP34	Identity and Access Management - Information Authentication	User accounts are authenticated and circumventing the authentication process is prevented.	Functional	Equal	Authenticate, Authorize and Audit (AAA)	IAC-01.2	Mechanisms exist to strictly govern the use of Authenticate, Authorize and Audit (AAA) solutions, both on-premises and those hosted by an External Service Provider (ESP).	10	
HSUP35	Identity and Access Management - Access Rights	Access to information and its associated assets is defined and authorised according to the business, customer and security requirements by adhering to the organisation's identity and access management policy or procedures.	Functional	Intersects With	Account Management	IAC-15	Mechanisms exist to proactively govern account management of individual, group, system, service, application, guest and temporary accounts.	5	
			Functional	Intersects With	User Provisioning & De-Provisioning	IAC-07	Mechanisms exist to utilize a formal user registration and de-registration process that governs the assignment of access rights.	5	
HSUP36	Identity and Access Management - Privileged Access Rights	Organisations are to ensure that only authorised users, software components and services are provided with privileged access rights.	Functional	Equal	Privileged Account Management (PAM)	IAC-16	Mechanisms exist to restrict and control privileged access rights for users and services.	10	
HSUP37	Identity and Access Management - Access to source code	Access to source code, development tools, and software libraries are restricted, appropriately managed, and maintained.	Functional	Intersects With	Role-Based Access Control (RBAC)	IAC-08	Mechanisms exist to enforce a Role-Based Access Control (RBAC) policy over users and resources that applies need-to-know and fine-grained access control for sensitive/regulated data access.	5	
			Functional	Intersects With	Access to Program Source Code	TDA-20	Mechanisms exist to limit privileges to change software resident within software libraries.	5	
HSUP38	Information Security Governance - Performance	Metrics affecting the organisation's cyber security posture are regularly reported to the Board, and any decisions made are clearly documented	Functional	Intersects With	Status Reporting To Governing Body	GOV-01.2	Mechanisms exist to provide governance oversight reporting and recommendations to those entrusted to make executive decisions about matters considered material to the organization's cybersecurity & data protection program.	5	

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	Measurement	reported to the Board, and any decisions made are clearly documented.	Functional	Intersects With	Measures of Performance	GOV-05	Mechanisms exist to develop, report and monitor cybersecurity & data privacy program measures of performance.	5	
HSUP39	Physical and Environmental Security - Maintenance of Physical and Environmental Security	Update, protect and maintain the devices installed as physical security safeguards including the utilities.	Functional	Subset Of	Physical & Environmental Protections	PES-01	Mechanisms exist to facilitate the operation of physical and environmental protection controls.	10	
HSUP40	Physical and Environmental Security - Visitor Management System	Secure areas of the organisation are protected from unauthorised personnel.	Functional	Intersects With	Physical Access Control	PES-03	Physical access control mechanisms exist to enforce physical access authorizations for all physical access points (including designated entry/exit points) to facilities (excluding those areas within the facility officially designated as publicly accessible).	5	
			Functional	Intersects With	Physical Security of Offices, Rooms & Facilities	PES-04	Mechanisms exist to identify systems, equipment and respective operating environments that require limited physical access so that appropriate physical access controls are designed and implemented for offices, rooms and facilities.	5	
HSUP41	Remote Working - Remote Working Requirements	Secure mechanisms are available and supported by a documented policy or guidelines to connect to the organisation's or customer's network.	Functional	Intersects With	Identification & Authentication for Third Party Systems & Services	IAC-05	Mechanisms exist to identify and authenticate third-party systems and services.	5	
			Functional	Subset Of	Network Security Controls (NSC)	NET-01	Mechanisms exist to develop, govern & update procedures to facilitate the implementation of Network Security Controls (NSC).	10	
HSUP42	Web Security - Security of Web Applications	Security controls are implemented if the organisation is developing the web applications to protect them and their customers from potential cyber-attacks.	Functional	Subset Of	Technology Development & Acquisition	TDA-01	Mechanisms exist to facilitate the implementation of tailored development and acquisition strategies, contract tools and procurement methods to meet unique business needs.	10	
			Functional	Intersects With	Product Management	TDA-01.1	Mechanisms exist to design and implement product management processes to update products, including systems, software and services, to improve functionality and correct security deficiencies.	5	
			Functional	Intersects With	Secure Coding	TDA-06	Mechanisms exist to develop applications based on secure coding principles.	5	
HSUP43	Cloud Security - Cloud Security Architecture	The organisation's architectural strategy supports the adoption of cloud technologies.	Functional	Equal	Cloud Security Architecture	CLD-02	Mechanisms exist to ensure the cloud security architecture supports the organization's technology strategy to securely design, configure and maintain cloud employments.	10	
HSUP44	Cloud Security - Use of application & programming interface (API)	Organisations are to make use of developed and configured APIs for secure transfer of information between different cloud components.	Functional	Equal	Application & Program Interface (API) Security	CLD-04	Mechanisms exist to ensure support for secure interoperability between components with Application & Program Interfaces (APIs).	10	
HSUP45	Cloud Security - Cloud security controls	Organisations are to ensure that appropriate controls are implemented to protect information in a multi-tenant cloud environment.	Functional	Equal	Multi-Tenant Environments	CLD-06	Mechanisms exist to ensure multi-tenant owned or managed assets (physical and virtual) are designed and governed such that provider and customer (tenant) user access is appropriately segmented from other tenant users.	10	
HSUP46	Communications Security - Network security	Networks and network devices that are used within the organisation are to be securely managed.	Functional	Subset Of	Asset Governance	AST-01	Mechanisms exist to facilitate an IT Asset Management (ITAM) program to implement and manage asset management controls.	10	
			Functional	Intersects With	System Hardening Through Baseline Configurations	CFG-02	Mechanisms exist to develop, document and maintain secure baseline configurations for technology platforms that are consistent with industry-accepted system hardening standards.	5	
			Functional	Subset Of	Network Security Controls (NSC)	NET-01	Mechanisms exist to develop, govern & update procedures to facilitate the implementation of Network Security Controls (NSC).	10	
HSUP47	Communications Security - Segregation of networks	The systems and applications that are used to process, store, or transmit information are connected to a separate, dedicated network.	Functional	Intersects With	Isolation of Information System Components	NET-03.7	Mechanisms exist to employ boundary protections to isolate systems, services and processes that support critical missions and/or business functions.	5	
			Functional	Intersects With	Network Segmentation (macrosegementation)	NET-06	Mechanisms exist to ensure network architecture utilizes network segmentation to isolate systems, applications and services that protections from other network resources.	5	
HSUP48	Information Backups - Information backup	Backup copies of information, software, services provided, and relevant systems are protected and maintained in accordance with the backup and recovery procedures.	Functional	Intersects With	Data Backups	BCD-11	Mechanisms exist to create recurring backups of data, software and/or system images, as well as verify the integrity of these backups, to ensure the availability of the data to satisfying Recovery Time Objectives (RTOs) and Recovery Point Objectives (RPOs).	5	
			Functional	Intersects With	Backup Modification and/or Destruction	BCD-11.10	Mechanisms exist to restrict access to modify and/or delete backups to privileged users with assigned data backup and recovery operations roles.	5	
HSUP49	Information Backups - Backup restoration	Backups are tested for their restoration in accordance with the documented backup and recovery procedures. Organisations are able to access restored backups as well.	Functional	Equal	Testing for Reliability & Integrity	BCD-11.1	Mechanisms exist to routinely test backups that verify the reliability of the backup process, as well as the integrity and availability of the data.	10	
HSUP50	Change Management - Separate production and non-production environments	Organisations developing inhouse systems, applications, or services are to maintain separate production and non-production environments.	Functional	Equal	Separation of Development, Testing and Operational Environments	TDA-08	Mechanisms exist to manage separate development, testing and operational environments to reduce the risks of unauthorized access or changes to the operational environment and to ensure no impact to production systems.	10	
HSUP51	Patch and Vulnerability Management - Patch and vulnerabilities remediation	Identified vulnerabilities or unpatched systems, services or applications are properly identified, tracked, and remediated.	Functional	Intersects With	Vulnerability Remediation Process	VPM-02	Mechanisms exist to ensure that vulnerabilities are properly identified, tracked and remediated.	5	
			Functional	Intersects With	Vulnerability Scanning	VPM-06	Mechanisms exist to detect vulnerabilities and configuration errors by routine vulnerability scanning of systems and applications.	5	
HSUP52	Configuration Management - Secure configuration	Organisations have a standardised baseline configuration in place for new and existing systems, services, and applications.	Functional	Equal	System Hardening Through Baseline Configurations	CFG-02	Mechanisms exist to develop, document and maintain secure baseline configurations for technology platforms that are consistent with industry-accepted system hardening standards.	10	
HSUP53	Capacity Management - Capacity management	The capacity requirements for maintenance of information processing facilities, communication, and environmental support during contingency operations are met.	Functional	Subset Of	Business Continuity Management System (BCMS)	BCD-01	Mechanisms exist to facilitate the implementation of contingency planning controls to help ensure resilient assets and services (e.g., Continuity of Operations Plan (COOP) or Business Continuity & Disaster Recovery (BC/DR) playbooks).	10	
			Functional	Subset Of	Capacity & Performance Management	CAP-01	Mechanisms exist to facilitate the implementation of capacity management controls to ensure optimal system performance to meet expected and anticipated future capacity requirements.	10	
HSUP54	Endpoint Security - Malware protection	Information, services, and applications on organisation systems and associated assets are protected against malware.	Functional	Equal	Malicious Code Protection (Anti-Malware)	END-04	Mechanisms exist to utilize antimalware technologies to detect and eradicate malicious code.	10	
HSUP55	Data Leakage Prevention - Data leakage prevention	Organisations are to detect and prevent data leakage through the unauthorised disclosure and siphoning of information by individuals, systems, or services.	Functional	Intersects With	Monitoring For Information Disclosure	MON-11	Mechanisms exist to monitor for evidence of unauthorized exfiltration or disclosure of non-public information.	5	
			Functional	Intersects With	Data Loss Prevention (DLP)	NET-17	Automated mechanisms exist to implement Data Loss Prevention (DLP) to protect sensitive information as it is stored, transmitted and processed.	5	
HSUP56	Business Continuity and Disaster Recovery Management - ICT readiness for business continuity	The lessons learned from business continuity and disaster recovery testing are reflected in the established and implemented information security controls.	Functional	Equal	Contingency Plan Root Cause Analysis (RCA) & Lessons Learned	BCD-05	Mechanisms exist to conduct a Root Cause Analysis (RCA) and "lessons learned" activity every time the contingency plan is activated.	10	
HSUP57	Physical and Environmental Security - Monitoring of physical and environmental security mechanisms	Installed physical and environmental security mechanisms are monitored for potential security incidents.	Functional	Equal	Monitoring Physical Access	PES-05	Physical access control mechanisms exist to monitor for, detect and respond to physical security incidents.	10	
HSUP58	Compliance - Review of compliance requirements	Regular reviews are performed to confirm that the legal, regulatory, statutory, and contractual requirements are met.	Functional	Intersects With	Cybersecurity & Data Protection Controls Oversight	CPL-02	Mechanisms exist to provide a cybersecurity & data protection controls oversight function that reports to the organization's executive leadership.	5	
			Functional	Intersects With	Internal Audit Function	CPL-02.1	Mechanisms exist to implement an internal audit function that is capable of providing senior organization management with insights into the appropriateness of the organization's technology and information governance processes.	5	
			Functional	Intersects With	Periodic Review & Update of Cybersecurity & Data Protection Program	GOV-03	Mechanisms exist to review the cybersecurity & data privacy program, including policies, standards and procedures, at planned intervals or if significant changes occur to ensure their continuing suitability, adequacy and effectiveness.	5	
HSUP59	Systems Acquisition, Development and Maintenance - Independent reviews	Independent security reviews are defined and implemented before any new or major upgrades on systems are moved to the production environment.	Functional	Subset Of	Information Assurance (IA) Operations	IAO-01	Mechanisms exist to facilitate the implementation of cybersecurity & data privacy assessment and authorization controls.	10	
			Functional	Intersects With	Assessments	IAO-02	Mechanisms exist to formally assess the cybersecurity & data privacy controls in systems, applications and services through Information Assurance Program (IAP) activities to determine the extent to which the controls are implemented correctly, operating as intended and producing the desired outcome with respect to meeting expected requirements.	5	
HSUP60	Information Backups -	Authorised personnel or teams are alerted upon unsuccessful backups	Functional	Intersects With	Data Backups	BCD-11	Mechanisms exist to create recurring backups of data, software and/or system images, as well as verify the integrity of these backups, to ensure the availability of the data to satisfying Recovery Time Objectives (RTOs) and Recovery Point Objectives (RPOs).	5	
			Functional	Intersects With	Testing for Reliability & Integrity	BCD-11.1	Mechanisms exist to routinely test backups that verify the reliability of the backup process, as well as the integrity and availability of the data.	5	

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HSUP60	Monitoring of backups	Authorised personnel or teams are alerted upon unsuccessful backups.	Functional	Intersects With	Automated Alerts	MON-01.12	Mechanisms exist to automatically alert incident response personnel to inappropriate or anomalous activities that have potential security incident implications.	5	
			Functional	Intersects With	System Generated Alerts	MON-01.4	Mechanisms exist to generate, monitor, correlate and respond to alerts from physical, cybersecurity, data privacy and supply chain activities to achieve integrated situational awareness.	5	
HSUP61	Logging and Monitoring - Logging and monitoring	The activities performed on the information processing systems, services, and applications are logged and stored as per the organisation's (and the customer's) logging and auditing requirements.	Functional	Subset Of	Continuous Monitoring	MON-01	Mechanisms exist to facilitate the implementation of enterprise-wide monitoring controls.	10	
			Functional	Intersects With	Content of Event Logs	MON-03	Mechanisms exist to configure systems to produce event logs that contain sufficient information to, at a minimum: (1) Establish what type of event occurred; (2) When (date and time) the event occurred; (3) Where the event occurred; (4) The source of the event; (5) The outcome (success or failure) of the event; and (6) The identity of any user/subject associated with the event.	5	
			Functional	Intersects With	Audit Trails	MON-03.2	Mechanisms exist to link system access to individual users or service accounts.	5	
HSUP62	Logging and Monitoring - Clock synchronisation	The information processing systems, applications, devices, and services are synchronised to an approved time source.	Functional	Equal	Synchronization With Authoritative Time Source	MON-07.1	Mechanisms exist to synchronize internal system clocks with an authoritative time source.	10	
HSUP63	Human Resource Security - Terms and conditions of employment	Breach of employment and supplier agreements are enforced.	Functional	Intersects With	Personnel Sanctions	HRS-07	Mechanisms exist to sanction personnel failing to comply with established security policies, standards and procedures.	5	
			Functional	Intersects With	Third-Party Contract Requirements	TPM-05	Mechanisms exist to require contractual requirements for cybersecurity & data privacy requirements with third-parties, reflecting the organization's needs to protect its systems, processes and data.	5	
HSUP64	Asset Lifecycle Security - Information and associated assets	Misuse of the organisation's assets is investigated, and documented procedures are followed as stated in the acceptable use policy, contractor agreements, or service agreements.	Functional	Intersects With	Personnel Sanctions	HRS-07	Mechanisms exist to sanction personnel failing to comply with established security policies, standards and procedures.	5	
			Functional	Intersects With	Workplace Investigations	HRS-07.1	Mechanisms exist to conduct employee misconduct investigations when there is reasonable assurance that a policy has been violated.	5	
			Functional	Intersects With	Monitoring for Third-Party Information Disclosure	TPM-07	Mechanisms exist to monitor for evidence of unauthorized exfiltration or disclosure of organizational information.	5	
			Functional	Intersects With	Review of Third-Party Services	TPM-08	Mechanisms exist to monitor, regularly review and assess External Service Providers (ESPs) for compliance with established contractual requirements for cybersecurity & data privacy controls.	5	
HML01	Information security policy - Policies for information security	A clear information security policy, acceptable use policy, topic-specific policies and procedures are in place to maintain information security.	Functional	Equal	Publishing Cybersecurity & Data Protection Documentation	GOV-02	Mechanisms exist to establish, maintain and disseminate cybersecurity & data protection policies, standards and procedures.	10	
HSUP65	Information Security Incident Management - Learning from information security incident	Organisations report all security incidents and near misses to their senior management or to the Board by a nominated Information Security Officer. All customer-related incidents are to be notified to the customer as per agreed timelines.	Functional	Intersects With	Status Reporting To Governing Body	GOV-01.2	Mechanisms exist to provide governance oversight reporting and recommendations to those entrusted to make executive decisions about matters considered material to the organization's cybersecurity & data protection program.	5	
			Functional	Intersects With	Incident Stakeholder Reporting	IRO-10	Mechanisms exist to timely-report incidents to applicable: (1) Internal stakeholders; (2) Affected clients & third-parties; and (3) Regulatory authorities.	5	
HSUP66	Information Security Incident Management - Collection of evidence	Evidence gathered as part of the incident management process is appropriately protected.	Functional	Subset Of	Data Protection	DCH-01	Mechanisms exist to facilitate the implementation of data protection controls.	10	
			Functional	Intersects With	Sensitive / Regulated Data Protection	DCH-01.2	Mechanisms exist to protect sensitive/regulated data wherever it is stored.	5	
			Functional	Intersects With	Chain of Custody & Forensics	IRO-08	Mechanisms exist to perform digital forensics and maintain the integrity of the chain of custody, in accordance with applicable laws, regulations and industry-recognized secure practices.	5	
HHSP01	Information security policy - Policies for information security	A clear information security policy, acceptable use policy and topic-specific policies and procedures are in place.	Functional	Equal	Publishing Cybersecurity & Data Protection Documentation	GOV-02	Mechanisms exist to establish, maintain and disseminate cybersecurity & data protection policies, standards and procedures.	10	
HHSP02	Human resource security - Terms and conditions of employment	Hospitals processing and storing health information include the security roles and responsibilities of personnel within job descriptions.	Functional	Equal	Defined Roles & Responsibilities	HRS-03	Mechanisms exist to define cybersecurity roles & responsibilities for all personnel.	10	
HHSP03	Human resource security - Terms and conditions of employment	A breach of information security, including health information by personnel, is considered a security policy violation. Consequences of a security policy violation leads to a disciplinary process.	Functional	Intersects With	Personnel Sanctions	HRS-07	Mechanisms exist to sanction personnel failing to comply with established security policies, standards and procedures.	5	
			Functional	Intersects With	Workplace Investigations	HRS-07.1	Mechanisms exist to conduct employee misconduct investigations when there is reasonable assurance that a policy has been violated.	5	
HHSP04	Human resource security - Onboarding, offboarding and role change	Procedures for providing and revoking logical and physical access when personnel join, have a role change, or leave the hospital are in place.	Functional	Intersects With	User Provisioning & De-Provisioning	IAC-07	Mechanisms exist to utilize a formal user registration and de-registration process that governs the assignment of access rights.	5	
			Functional	Intersects With	Change of Roles & Duties	IAC-07.1	Mechanisms exist to revoke user access rights following changes in personnel roles and duties, if no longer necessary or permitted.	5	
			Functional	Intersects With	Termination of Employment	IAC-07.2	Mechanisms exist to revoke user access rights in a timely manner, upon termination of employment or contract.	5	
			Functional	Intersects With	Physical Access Authorizations	PES-02	Physical access control mechanisms exist to maintain a current list of personnel with authorized access to organizational facilities (except for those areas within the facility officially designated as publicly accessible).	5	
HHSP05	Asset lifecycle security - Health information and associated assets	Asset management process(es) is in place.	Functional	Subset Of	Asset Governance	AST-01	Mechanisms exist to facilitate an IT Asset Management (ITAM) program to implement and manage asset management controls.	10	
HHSP06	Asset lifecycle security - Media equipment management, decommissioning and disposal	Processes are in place for media equipment management, decommissioning and secure disposal.	Functional	Equal	Secure Disposal, Destruction or Re-Use of Equipment	AST-09	Mechanisms exist to securely dispose of, destroy or repurpose system components using organization-defined techniques and methods to prevent information being recovered from these components.	10	
HHSP07	Health information security incident management - Planning and preparation	A health information security incident management process is in place.	Functional	Intersects With	Incident Handling	IRO-02	Mechanisms exist to cover: (1) Preparation; (2) Automated event detection or manual incident report intake; (3) Analysis; (4) Containment; (5) Eradication; and (6) Recovery.	5	
			Functional	Intersects With	Incident Response Plan (IRP)	IRO-04	Mechanisms exist to maintain and make available a current and viable Incident Response Plan (IRP) to all stakeholders.	5	
HHSP08	Business continuity and disaster recovery management - Information security during disruption	Documented, approved, business continuity and disaster recovery management, operational resilience policies and procedures are established.	Functional	Subset Of	Business Continuity Management System (BCMS)	BCD-01	Mechanisms exist to facilitate the implementation of contingency planning controls to help ensure resilient assets and services (e.g., Continuity of Operations Plan (COOP) or Business Continuity & Disaster Recovery (BC/DR) playbooks).	10	
HHSP09	Supplier management - Policy for suppliers	The information security requirements for managing the risks while a supplier is accessing health information are identified and communicated.	Functional	Equal	Third-Party Contract Requirements	TPM-05	Mechanisms exist to require contractual requirements for cybersecurity & data privacy requirements with third-parties, reflecting the organization's needs to protect its systems, processes and data.	10	
HHSP10	Identity and access management - Access control	Establish, document, approve, and implement rules to control physical and logical access to health information and its assets.	Functional	Intersects With	Access Enforcement	IAC-20	Mechanisms exist to enforce Logical Access Control (LAC) permissions that conform to the principle of "least privilege."	5	
			Functional	Intersects With	Access To Information Systems	PES-03.4	Physical access control mechanisms exist to enforce physical access to critical information systems or sensitive/regulated data, in addition to the physical access controls for the facility.	5	
HHSP11	Medical devices - Purchase or lease	Hospitals are to include cyber security in procurement planning and decisions.	Functional	Intersects With	Operationalizing Cybersecurity & Data Protection Practices	GOV-15	Mechanisms exist to compel data and/or process owners to operationalize cybersecurity & data privacy practices for each system, application and/or service under their control.	5	
			Functional	Intersects With	Cybersecurity & Data Privacy In Project Management	PRM-04	Mechanisms exist to assess cybersecurity & data privacy controls in system project development to determine the extent to which the controls are implemented correctly, operating as intended and producing the desired outcome with respect to meeting the requirements.	5	
			Functional	Intersects With	Cybersecurity & Data Privacy Requirements Definition	PRM-05	Mechanisms exist to identify critical system components and functions by performing a criticality analysis for critical systems, system components or services at pre-defined decision points in the Secure Development Life Cycle (SDLC).	5	

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HHSP12	Information Security Governance - Ownership of information security	The Board is accountable for hospitals information security governance.	Functional	Equal	Steering Committee & Program Oversight	GOV-01.1	Mechanisms exist to coordinate cybersecurity, data protection and business alignment through a steering committee or advisory board, comprised of key cybersecurity, data privacy and business executives, which meets formally and on a regular basis.	10	
HHSP13	Physical and environmental security - Policies and procedures	A documented policy and supporting procedures for maintaining physical security within the hospital is in place.	Functional	Equal	Site Security Plan (SitePlan)	PES-01.1	Mechanisms exist to document a Site Security Plan (SitePlan) for each server and communications room to summarize the implemented security controls to protect physical access to technology assets, as well as applicable risks and threats.	10	
HHSP14	Physical and environmental security - Clear desk and clear screen policy	A documented and approved procedure to remove papers and removable storage from easily accessible areas is implemented.	Functional	Subset Of	Data Protection	DCH-01	Mechanisms exist to facilitate the implementation of data protection controls.	10	
			Functional	Intersects With	Sensitive / Regulated Data Protection	DCH-01.2	Mechanisms exist to protect sensitive/regulated data wherever it is stored.	5	
			Functional	Intersects With	Removable Media Security	DCH-12	Mechanisms exist to restrict removable media in accordance with data handling and acceptable usage parameters.	5	
HHSP15	Cloud security - Cloud security policy & cloud security agreement (CSA)	Hospitals have planned maintenance of health information via cloud services as documented in policies and agreements.	Functional	Subset Of	Maintenance Operations	MNT-01	Mechanisms exist to develop, disseminate, review & update procedures to facilitate the implementation of maintenance controls across the enterprise.	10	
HHSP16	System acquisition, development and maintenance - Security while developing applications, products or services	Health information systems are securely designed, and appropriate controls are implemented.	Functional	Intersects With	Operationalizing Cybersecurity & Data Protection Practices	GOV-15	Mechanisms exist to compel data and/or process owners to operationalize cybersecurity & data privacy practices for each system, application and/or service under their control.	5	
			Functional	Subset Of	Secure Engineering Principles	SEA-01	Mechanisms exist to facilitate the implementation of industry-recognized cybersecurity & data privacy practices in the specification, design, development, implementation and modification of systems and services.	10	
HHSP17	Information backups - Policies and procedures	A backup and recovery procedure is in place.	Functional	Intersects With	Data Backups	BCD-11	Mechanisms exist to create recurring backups of data, software and/or system images, as well as verify the integrity of these backups, to ensure the availability of the data to satisfying Recovery Time Objectives (RTOs) and Recovery Point Objectives (RPOs).	5	
			Functional	Intersects With	Information System Recovery & Reconstitution	BCD-12	Mechanisms exist to ensure the secure recovery and reconstitution of systems to a known state after a disruption, compromise or failure.	5	
HHSP18	Change Management - Policies and procedures	A documented process is in place for performing changes to new and existing systems or services related to health information.	Functional	Subset Of	Change Management Program	CHG-01	Mechanisms exist to facilitate the implementation of a change management program.	10	
			Functional	Intersects With	Configuration Change Control	CHG-02	Mechanisms exist to govern the technical configuration change control processes.	5	
HHSP19	Patch and vulnerability management - Policies and procedures	A documented process is in place for identifying vulnerabilities and updating patches on the hospitals systems, services and applications.	Functional	Subset Of	Vulnerability & Patch Management Program (VPMP)	VPM-01	Mechanisms exist to facilitate the implementation and monitoring of vulnerability management controls.	10	
			Functional	Intersects With	Vulnerability Remediation Process	VPM-02	Mechanisms exist to ensure that vulnerabilities are properly identified, tracked and remediated.	5	
			Functional	Intersects With	Software & Firmware Patching	VPM-05	Mechanisms exist to conduct software patching for all deployed operating systems, applications and firmware.	5	
HHSP20	Human resource security - Terms and conditions of employment	Hospitals, at a minimum, screen all personnel by verifying their identity, previous employment, applicable health professional qualifications and criminal backgrounds before confirmation of employment.	Functional	Equal	Personnel Screening	HRS-04	Mechanisms exist to manage personnel security risk by screening individuals prior to authorizing access.	10	
HHSP21	Human resource security - Roles and responsibilities	Hospitals processing health information are to ensure: a: information security responsibilities are clearly defined and assigned b: a governance body overseeing health information security activities is in place c: at least one individual is responsible for health information security.	Functional	Intersects With	Assigned Cybersecurity & Data Protection Responsibilities	GOV-04	Mechanisms exist to assign one or more qualified individuals with the mission and resources to centrally-manage, coordinate, develop, implement and maintain an enterprise-wide cybersecurity & data protection program.	5	
			Functional	Intersects With	Stakeholder Accountability Structure	GOV-04.1	Mechanisms exist to enforce an accountability structure so that appropriate teams and individuals are empowered, responsible and trained for mapping, measuring and managing data and technology-related risks.	5	
			Functional	Intersects With	Authoritative Chain of Command	GOV-04.2	Mechanisms exist to establish an authoritative chain of command with clear lines of communication to remove ambiguity from individuals and teams related to managing data and technology-related risks.	5	
HHSP22	Human resource security - Training requirements	There has been an assessment of information security training needs and a training plan is put in place.	Functional	Subset Of	Cybersecurity & Data Privacy-Minded Workforce	SAT-01	Mechanisms exist to facilitate the implementation of security workforce development and awareness controls.	10	
HHSP23	Health information security incident management - Roles and responsibilities	Hospitals processing and storing health information have roles and responsibilities determined for carrying out the incident management process.	Functional	Equal	Defined Roles & Responsibilities	HRS-03	Mechanisms exist to define cybersecurity roles & responsibilities for all personnel.	10	
HHSP24	Business continuity and disaster recovery management - ICT readiness for business continuity	Establish criteria for developing business continuity, disaster recovery, operational resilience strategies, and capabilities based on disruption impacts and risk to hospitals.	Functional	Subset Of	Business Continuity Management System (BCMS)	BCD-01	Mechanisms exist to facilitate the implementation of contingency planning controls to help ensure resilient assets and services (e.g., Continuity of Operations Plan (COOP) or Business Continuity & Disaster Recovery (BC/DR) playbooks).	10	
			Functional	Intersects With	Recovery Time / Point Objectives (RTO / RPO)	BCD-01.4	Mechanisms exist to facilitate recovery operations in accordance with Recovery Time Objectives (RTOs) and Recovery Point Objectives (RPOs).	5	
HHSP25	Supplier management - Supply chain risks	Suppliers are systematically evaluated, and their information security activities are reviewed before and after onboarding of their systems and services.	Functional	Subset Of	Third-Party Management	TPM-01	Mechanisms exist to facilitate the implementation of third-party management controls.	10	
			Functional	Intersects With	Third-Party Risk Assessments & Approvals	TPM-04.1	Mechanisms exist to conduct a risk assessment prior to the acquisition or outsourcing of technology-related services.	5	
			Functional	Intersects With	Review of Third-Party Services	TPM-08	Mechanisms exist to monitor, regularly review and assess External Service Providers (ESPs) for compliance with established contractual requirements for cybersecurity & data privacy controls.	5	
HHSP26	Medical devices - Medical device scanning	Vulnerability scanning on medical devices is only performed when they are in a test environment not connected for patient care.	Functional	Intersects With	Compensating Countermeasures	RSK-06.2	Mechanisms exist to identify and implement compensating countermeasures to reduce risk and exposure to threats.	5	
			Functional	Subset Of	Vulnerability & Patch Management Program (VPMP)	VPM-01	Mechanisms exist to facilitate the implementation and monitoring of vulnerability management controls.	10	
			Functional	Intersects With	Vulnerability Scanning	VPM-06	Mechanisms exist to detect vulnerabilities and configuration errors by routine vulnerability scanning of systems and applications.	5	
HHSP27	Information Security Governance - Roles and responsibilities	Roles and responsibilities are defined and documented for planning, implementing, operating, assessing, and reporting on the hospitals information security requirements.	Functional	Intersects With	Assigned Cybersecurity & Data Protection Responsibilities	GOV-04	Mechanisms exist to assign one or more qualified individuals with the mission and resources to centrally-manage, coordinate, develop, implement and maintain an enterprise-wide cybersecurity & data protection program.	5	
			Functional	Intersects With	Stakeholder Accountability Structure	GOV-04.1	Mechanisms exist to enforce an accountability structure so that appropriate teams and individuals are empowered, responsible and trained for mapping, measuring and managing data and technology-related risks.	5	
HHSP28	Information Security Governance - Information security in project management	Hospitals are to integrate information security into project management.	Functional	Intersects With	Operationalizing Cybersecurity & Data Protection Practices	GOV-15	Mechanisms exist to compel data and/or process owners to operationalize cybersecurity & data privacy practices for each system, application and/or service under their control.	5	
			Functional	Intersects With	Cybersecurity & Data Privacy In Project Management	PRM-04	Mechanisms exist to assess cybersecurity & data privacy controls in system project development to determine the extent to which the controls are implemented correctly, operating as intended and producing the desired outcome with respect to meeting the requirements.	5	
			Functional	Intersects With	Cybersecurity & Data Privacy Requirements Definition	PRM-05	Mechanisms exist to identify critical system components and functions by performing a criticality analysis for critical systems, system components or services at pre-defined decision points in the Secure Development Life Cycle (SDLC).	5	
HHSP29	Compliance - Compliance requirements	Relevant legal, regulatory and contractual requirements are identified and implemented.	Functional	Subset Of	Statutory, Regulatory & Contractual Compliance	CPL-01	Mechanisms exist to facilitate the identification and implementation of relevant statutory, regulatory and contractual controls.	10	
HHSP30	Cloud security - Cloud security risk assessment and assurance	A risk assessment methodology and cloud assurance activities that support the use of cloud technologies are in place.	Functional	Subset Of	Risk Management Program	RSK-01	Mechanisms exist to facilitate the implementation of strategic, operational and tactical risk management controls.	10	
	System acquisition		Functional	Intersects With	Cybersecurity & Data Privacy In Project Management	PRM-04	Mechanisms exist to assess cybersecurity & data privacy controls in system project development to determine the extent to which the controls are implemented correctly, operating as intended and producing the desired outcome with respect to meeting the requirements.	5	

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HHSP31	System acquisition, development and maintenance - Business and security requirements	Health information business security requirements are identified, documented and approved when developing or acquiring applications.	Functional	Intersects With	Cybersecurity & Data Privacy Requirements Definition	PRM-05	Mechanisms exist to identify critical system components and functions by performing a criticality analysis for critical systems, system components or services at pre-defined decision points in the Secure Development Life Cycle (SDLC).	5	
			Functional	Intersects With	Minimum Viable Product (MVP) Security Requirements	TDA-02	Mechanisms exist to ensure risk-based technical and functional specifications are established to define a Minimum Viable Product (MVP).	5	
HHSP32	Risk management - Risk assessments	Risk assessments are performed on new and existing systems and applications that manage health information to understand and manage the risks posed to the hospital while using them.	Functional	Equal	Risk Assessment	RSK-04	Mechanisms exist to conduct recurring assessments of risk that includes the likelihood and magnitude of harm, from unauthorized access, use, disclosure, disruption, modification or destruction of the organization's systems and data.	10	
HHSP33	Change Management - Security testing	The proposed changes are to be analysed for potential security threats and their impact to the hospital.	Functional	Equal	Security Impact Analysis for Changes	CHG-03	Mechanisms exist to analyze proposed changes for potential security impacts, prior to the implementation of the change.	10	
HHSP34	Asset lifecycle security - Health information and associated assets	Health information and associated assets are appropriately protected, used, and handled based on their importance.	Functional	Subset Of	Data Protection	DCH-01	Mechanisms exist to facilitate the implementation of data protection controls.	10	
			Functional	Subset Of	Endpoint Security	END-01	Mechanisms exist to facilitate the implementation of endpoint security controls.	10	
HHSP35	Business continuity and disaster recovery management - Information security during disruption	In the event of a disruption or failure, critical health information and/or services are identified, and measures are taken for the continuity of services.	Functional	Intersects With	Resume All Missions & Business Functions	BCD-02.1	Mechanisms exist to resume all missions and business functions within Recovery Time Objectives (RTOs) of the contingency plan's activation.	5	
			Functional	Intersects With	Continue Essential Mission & Business Functions	BCD-02.2	Mechanisms exist to continue essential missions and business functions with little or no loss of operational continuity and sustain that continuity until full system restoration at primary processing and/or storage sites.	5	
HHSP36	Supplier management - Information security within supplier agreements	The hospitals information security requirements are to be included in the agreements with the suppliers.	Functional	Equal	Third-Party Contract Requirements	TPM-05	Mechanisms exist to require contractual requirements for cybersecurity & data privacy requirements with third-parties, reflecting the organization's needs to protect its systems, processes and data.	10	
HHSP37	Cryptography - Use of cryptography	Rules for effective use of cryptography including encryption and key management are defined and implemented.	Functional	Subset Of	Use of Cryptographic Controls	CRY-01	Mechanisms exist to facilitate the implementation of cryptographic protections controls using known public standards and trusted cryptographic technologies.	10	
HHSP38	Identity and access management - Identity management	The complete lifecycle of user account(s) being used to access, process, or manage health information is managed.	Functional	Equal	Account Management	IAC-15	Mechanisms exist to proactively govern account management of individual, group, system, service, application, guest and temporary accounts.	10	
HHSP39	Identity and access management - Information authentication	User accounts are authenticated and circumventing the authentication process is prevented.	Functional	Equal	Authenticate, Authorize and Audit (AAA)	IAC-01.2	Mechanisms exist to strictly govern the use of Authenticate, Authorize and Audit (AAA) solutions, both on-premises and those hosted by an External Service Provider (ESP).	10	
HHSP40	Identity and access management - Access rights	Access to health information and its associated assets is defined and authorised according to the business and security requirements and adhere to the hospitals identity and access management policy or procedures.	Functional	Intersects With	Access Enforcement	IAC-20	Mechanisms exist to enforce Logical Access Control (LAC) permissions that conform to the principle of "least privilege."	5	
			Functional	Intersects With	Role-Based Access Control (RBAC)	IAC-08	Mechanisms exist to enforce a Role-Based Access Control (RBAC) policy over users and resources that applies need-to-know and fine-grained access control for sensitive/regulated data access.	5	
HHSP41	Identity and access management - Privileged access rights	Hospitals are to ensure that only authorised users, software components and services are provided with privileged access rights.	Functional	Equal	Privileged Account Management (PAM)	IAC-16	Mechanisms exist to restrict and control privileged access rights for users and services.	10	
HHSP42	Identity and access management - Access to source code	Access to source code, development tools, and software libraries are restricted, appropriately managed, and maintained.	Functional	Intersects With	Role-Based Access Control (RBAC)	IAC-08	Mechanisms exist to enforce a Role-Based Access Control (RBAC) policy over users and resources that applies need-to-know and fine-grained access control for sensitive/regulated data access.	5	
			Functional	Intersects With	Access to Program Source Code	TDA-20	Mechanisms exist to limit privileges to change software resident within software libraries.	5	
HHSP43	Medical devices - Protecting medical devices	Where possible, production and legacy medical devices are on a separate network.	Functional	Intersects With	Isolation of Information System Components	NET-03.7	Mechanisms exist to employ boundary protections to isolate systems, services and processes that support critical missions and/or business functions.	5	
			Functional	Intersects With	Compensating Countermeasures	RSK-06.2	Mechanisms exist to identify and implement compensating countermeasures to reduce risk and exposure to threats.	5	
			Functional	Intersects With	Unsupported Systems	TDA-17	Mechanisms exist to prevent unsupported systems by: (1) Replacing systems when support for the components is no longer available from the developer, vendor or manufacturer; and (2) Requiring justification and documented approval for the continued use of unsupported system components required to satisfy mission/business needs.	5	
HHSP44	Medical devices - Maintenance	All medical devices are maintained as per the latest updates from the manufacturers and current industry/regulatory standards.	Functional	Equal	Stable Versions	VPM-04.1	Mechanisms exist to install the latest stable version of any software and/or security-related updates on all applicable systems.	10	
HHSP45	Medical devices - Dispose or return lease	Medical devices with patient health information are digitally sanitised before their disposal or when they are being returned.	Functional	Equal	Secure Disposal, Destruction or Re-Use of Equipment	AST-09	Mechanisms exist to securely dispose of, destroy or repurpose system components using organization-defined techniques and methods to prevent information being recovered from these components.	10	
HHSP46	Information Security Governance - Performance measurement	Metrics affecting the hospitals cyber security posture are regularly reported to the Board, and any decisions made are clearly documented.	Functional	Intersects With	Status Reporting To Governing Body	GOV-01.2	Mechanisms exist to provide governance oversight reporting and recommendations to those entrusted to make executive decisions about matters considered material to the organization's cybersecurity & data protection program.	5	
			Functional	Intersects With	Measures of Performance	GOV-05	Mechanisms exist to develop, report and monitor cybersecurity & data privacy program measures of performance.	5	
HHSP47	Physical and environmental security - Maintenance of physical and environmental security	Update, protect and maintain the devices installed as physical security safeguards including the utilities.	Functional	Subset Of	Physical & Environmental Protections	PES-01	Mechanisms exist to facilitate the operation of physical and environmental protection controls.	10	
HHSP48	Physical and environmental security - Visitor management system	Secure areas of the hospital are protected from unauthorised personnel.	Functional	Intersects With	Physical Access Control	PES-03	Physical access control mechanisms exist to enforce physical access authorizations for all physical access points (including designated entry/exit points) to facilities (excluding those areas within the facility officially designated as publicly accessible).	5	
			Functional	Intersects With	Physical Security of Offices, Rooms & Facilities	PES-04	Mechanisms exist to identify systems, equipment and respective operating environments that require limited physical access so that appropriate physical access controls are designed and implemented for offices, rooms and facilities.	5	
HHSP49	Remote working - Remote working requirements	Secure mechanisms are available and supported by a documented policy or guidelines to connect to the hospital network and access health information.	Functional	Intersects With	Identification & Authentication for Third Party Systems & Services	IAC-05	Mechanisms exist to identify and authenticate third-party systems and services.	5	
			Functional	Subset Of	Network Security Controls (NSC)	NET-01	Mechanisms exist to develop, govern & update procedures to facilitate the implementation of Network Security Controls (NSC).	10	
HHSP50	Web security - Security of web applications	Security controls are implemented while developing the web applications to protect hospitals from potential cyber-attacks.	Functional	Subset Of	Technology Development & Acquisition	TDA-01	Mechanisms exist to facilitate the implementation of tailored development and acquisition strategies, contract tools and procurement methods to meet unique business needs.	10	
			Functional	Intersects With	Product Management	TDA-01.1	Mechanisms exist to design and implement product management processes to update products, including systems, software and services, to improve functionality and correct security deficiencies.	5	
			Functional	Intersects With	Secure Coding	TDA-06	Mechanisms exist to develop applications based on secure coding principles.	5	
HHSP51	Cloud security - Cloud security architecture	The hospital's architectural strategy supports the adoption of cloud technologies.	Functional	Equal	Cloud Security Architecture	CLD-02	Mechanisms exist to ensure the cloud security architecture supports the organization's technology strategy to securely design, configure and maintain cloud employments.	10	
HHSP52	Cloud security - Use of application & programming interface (API)	Hospitals are to make use of developed and configured APIs for secure transfer of health information between different cloud components.	Functional	Equal	Application & Program Interface (API) Security	CLD-04	Mechanisms exist to ensure support for secure interoperability between components with Application & Program Interfaces (APIs).	10	
HHSP53	Cloud security - Cloud security controls	Hospitals are to ensure that appropriate controls are implemented to protect health information in a multi-tenant cloud environment.	Functional	Equal	Multi-Tenant Environments	CLD-06	Mechanisms exist to ensure multi-tenant owned or managed assets (physical and virtual) are designed and governed such that provider and customer (tenant) user access is appropriately segmented from other tenant users.	10	
HHSP54	Communications security - Network security	Networks and network devices used within hospitals or supporting hospitals systems and applications are securely managed.	Functional	Subset Of	Asset Governance	AST-01	Mechanisms exist to facilitate an IT Asset Management (ITAM) program to implement and manage asset management controls.	10	
			Functional	Intersects With	System Hardening Through Baseline Configurations	CFG-02	Mechanisms exist to develop, document and maintain secure baseline configurations for technology platforms that are consistent with industry-accepted system hardening standards.	5	
			Functional	Subset Of	Network Security Controls (NSC)	NET-01	Mechanisms exist to develop, govern & update procedures to facilitate the implementation of Network Security Controls (NSC).	10	
HHSP55	Communications security -	The systems and applications used to process, store or transmit health	Functional	Intersects With	Isolation of Information System Components	NET-03.7	Mechanisms exist to employ boundary protections to isolate systems, services and processes that support critical missions and/or business functions.	5	

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HHSP55	Segregation of networks	information are connected to a separate, dedicated network.	Functional	Intersects With	Network Segmentation (macrosegementation)	NET-06	Mechanisms exist to ensure network architecture utilizes network segmentation to isolate systems, applications and services that protections from other network resources.	5	
HHSP56	Information backups - Information backup	Backup copies of health information, software and systems are protected and maintained in accordance with the backup and recovery procedures.	Functional	Subset Of	Business Continuity Management System (BCMS)	BCD-01	Mechanisms exist to facilitate the implementation of contingency planning controls to help ensure resilient assets and services (e.g., Continuity of Operations Plan (COOP) or Business Continuity & Disaster Recovery (BC/DR) playbooks).	10	
			Functional	Intersects With	Data Backups	BCD-11	Mechanisms exist to create recurring backups of data, software and/or system images, as well as verify the integrity of these backups, to ensure the availability of the data to satisfying Recovery Time Objectives (RTOs) and Recovery Point Objectives (RPOs).	5	
			Functional	Intersects With	Data Backups	BCD-11	Mechanisms exist to create recurring backups of data, software and/or system images, as well as verify the integrity of these backups, to ensure the availability of the data to satisfying Recovery Time Objectives (RTOs) and Recovery Point Objectives (RPOs).	5	
			Functional	Intersects With	Backup Modification and/or Destruction	BCD-11.10	Mechanisms exist to restrict access to modify and/or delete backups to privileged users with assigned data backup and recovery operations roles.	5	
HHSP57	Information backups - Backup restoration	Health information backups are tested for their restoration in accordance with the documented backup and recovery procedures. Hospitals are able to access restored backups as well.	Functional	Equal	Testing for Reliability & Integrity	BCD-11.1	Mechanisms exist to routinely test backups that verify the reliability of the backup process, as well as the integrity and availability of the data.	10	
HHSP58	Change Management - Separate production and non-production environments	Hospitals developing inhouse systems and applications are to maintain separate production and non-production environments.	Functional	Equal	Separation of Development, Testing and Operational Environments	TDA-08	Mechanisms exist to manage separate development, testing and operational environments to reduce the risks of unauthorized access or changes to the operational environment and to ensure no impact to production systems.	10	
HHSP59	Patch and vulnerability management - Patch and vulnerabilities remediation	Identified vulnerabilities or unpatched systems, services or applications within the hospital are properly identified, tracked and remediated.	Functional	Intersects With	Vulnerability Remediation Process	VPM-02	Mechanisms exist to ensure that vulnerabilities are properly identified, tracked and remediated.	5	
			Functional	Intersects With	Vulnerability Scanning	VPM-06	Mechanisms exist to detect vulnerabilities and configuration errors by routine vulnerability scanning of systems and applications.	5	
HHSP60	Configuration management - Secure configuration	Hospitals have a standardised baseline configuration in place for new and existing operating systems, services and applications.	Functional	Equal	System Hardening Through Baseline Configurations	CFG-02	Mechanisms exist to develop, document and maintain secure baseline configurations for technology platforms that are consistent with industry-accepted system hardening standards.	10	
HHSP61	Capacity management - Capacity management	The capacity requirements for maintenance of information processing facilities, communication and environmental support during contingency operations are met.	Functional	Subset Of	Business Continuity Management System (BCMS)	BCD-01	Mechanisms exist to facilitate the implementation of contingency planning controls to help ensure resilient assets and services (e.g., Continuity of Operations Plan (COOP) or Business Continuity & Disaster Recovery (BC/DR) playbooks).	10	
			Functional	Subset Of	Capacity & Performance Management	CAP-01	Mechanisms exist to facilitate the implementation of capacity management controls to ensure optimal system performance to meet expected and anticipated future capacity requirements.	10	
HHSP62	Endpoint security - Malware protection	Health information on hospital systems and associated assets are protected against malware.	Functional	Equal	Malicious Code Protection (Anti-Malware)	END-04	Mechanisms exist to utilize antimalware technologies to detect and eradicate malicious code.	10	
HHSP63	Data leakage prevention - Data leakage prevention	Hospitals detect and prevent data leakage through the unauthorised disclosure and siphoning of information by individuals, systems or services.	Functional	Intersects With	Monitoring For Information Disclosure	MON-11	Mechanisms exist to monitor for evidence of unauthorized exfiltration or disclosure of non-public information.	5	
			Functional	Intersects With	Data Loss Prevention (DLP)	NET-17	Automated mechanisms exist to implement Data Loss Prevention (DLP) to protect sensitive information as it is stored, transmitted and processed.	5	
HHSP64	Business continuity and disaster recovery management - ICT readiness for business continuity	The lessons learned from business continuity and disaster recovery testing are reflected in the established and implemented information security controls.	Functional	Equal	Contingency Plan Root Cause Analysis (RCA) & Lessons Learned	BCD-05	Mechanisms exist to conduct a Root Cause Analysis (RCA) and "lessons learned" activity every time the contingency plan is activated.	10	
HHSP65	Medical devices - Compliance activities	Medical devices are compliant with relevant standards, and the identified risks are documented within the medical device risk register.	Functional	Intersects With	System Hardening Through Baseline Configurations	CFG-02	Mechanisms exist to develop, document and maintain secure baseline configurations for technology platforms that are consistent with industry-accepted system hardening standards.	5	
			Functional	Intersects With	Risk Register	RSK-04.1	Mechanisms exist to maintain a risk register that facilitates monitoring and reporting of risks.	5	
			Functional	Intersects With	Compensating Countermeasures	RSK-06.2	Mechanisms exist to identify and implement compensating countermeasures to reduce risk and exposure to threats.	5	
HHSP66	Physical and environmental security - Monitoring of physical and environmental security mechanisms	Installed physical and environmental security mechanisms are monitored for potential security incidents.	Functional	Equal	Monitoring Physical Access	PES-05	Physical access control mechanisms exist to monitor for, detect and respond to physical security incidents.	10	
HHSP67	Compliance - Review of compliance requirements	Regular reviews are performed to confirm that the legal, regulatory, statutory, and contractual requirements are met.	Functional	Intersects With	Cybersecurity & Data Protection Controls Oversight	CPL-02	Mechanisms exist to provide a cybersecurity & data protection controls oversight function that reports to the organization's executive leadership.	5	
			Functional	Intersects With	Internal Audit Function	CPL-02.1	Mechanisms exist to implement an internal audit function that is capable of providing senior organization management with insights into the appropriateness of the organization's technology and information governance processes.	5	
			Functional	Intersects With	Periodic Review & Update of Cybersecurity & Data Protection Program	GOV-03	Mechanisms exist to review the cybersecurity & data privacy program, including policies, standards and procedures, at planned intervals or if significant changes occur to ensure their continuing suitability, adequacy and effectiveness.	5	
HHSP68	System acquisition, development and maintenance - Independent reviews	Independent security reviews are defined and implemented before any new or major upgrades on systems are moved to the production environment.	Functional	Subset Of	Information Assurance (IA) Operations	IAO-01	Mechanisms exist to facilitate the implementation of cybersecurity & data privacy assessment and authorization controls.	10	
			Functional	Intersects With	Assessments	IAO-02	Mechanisms exist to formally assess the cybersecurity & data privacy controls in systems, applications and services through Information Assurance Program (IAP) activities to determine the extent to which the controls are implemented correctly, operating as intended and producing the desired outcome with respect to meeting expected requirements.	5	
HHSP69	Information backups - Monitoring of backups	Authorised personnel or teams are alerted upon unsuccessful or incomplete backups.	Functional	Intersects With	Data Backups	BCD-11	Mechanisms exist to create recurring backups of data, software and/or system images, as well as verify the integrity of these backups, to ensure the availability of the data to satisfying Recovery Time Objectives (RTOs) and Recovery Point Objectives (RPOs).	5	
			Functional	Intersects With	Testing for Reliability & Integrity	BCD-11.1	Mechanisms exist to routinely test backups that verify the reliability of the backup process, as well as the integrity and availability of the data.	5	
			Functional	Intersects With	Automated Alerts	MON-01.12	Mechanisms exist to automatically alert incident response personnel to inappropriate or anomalous activities that have potential security incident implications.	5	
			Functional	Intersects With	System Generated Alerts	MON-01.4	Mechanisms exist to generate, monitor, correlate and respond to alerts from physical, cybersecurity, data privacy and supply chain activities to achieve integrated situational awareness.	5	
HHSP70	Logging and monitoring - Logging and monitoring	The activities performed on the health information processing systems, services and applications are logged and stored as per the hospitals logging and auditing requirements.	Functional	Subset Of	Continuous Monitoring	MON-01	Mechanisms exist to facilitate the implementation of enterprise-wide monitoring controls.	10	
			Functional	Intersects With	Content of Event Logs	MON-03	Mechanisms exist to configure systems to produce event logs that contain sufficient information to, at a minimum: (1) Establish what type of event occurred; (2) When (date and time) the event occurred; (3) Where the event occurred; (4) The source of the event; (5) The outcome (success or failure) of the event; and (6) The identity of any user/subject associated with the event.	5	
			Functional	Intersects With	Audit Trails	MON-03.2	Mechanisms exist to link system access to individual users or service accounts.	5	
HHSP71	Logging and monitoring - Clock synchronisation	The health information processing systems, services and applications are synchronised to an approved time source.	Functional	Equal	Synchronization With Authoritative Time Source	MON-07.1	Mechanisms exist to synchronize internal system clocks with an authoritative time source.	10	
HHSP72	Human resource security - Terms and conditions of employment	Breach of employment agreements and supplier agreements are enforced.	Functional	Intersects With	Personnel Sanctions	HRS-07	Mechanisms exist to sanction personnel failing to comply with established security policies, standards and procedures.	5	
			Functional	Intersects With	Third-Party Contract Requirements	TPM-05	Mechanisms exist to require contractual requirements for cybersecurity & data privacy requirements with third-parties, reflecting the organization's needs to protect its systems, processes and data.	5	
HHSP73	Asset lifecycle security - Health information and associated assets	Misuse of the hospitals assets is investigated, and documented procedures are followed as stated in the acceptable use policy, contractor agreements or service agreements.	Functional	Intersects With	Personnel Sanctions	HRS-07	Mechanisms exist to sanction personnel failing to comply with established security policies, standards and procedures.	5	
			Functional	Intersects With	Workplace Investigations	HRS-07.1	Mechanisms exist to conduct employee misconduct investigations when there is reasonable assurance that a policy has been violated.	5	
			Functional	Intersects With	Monitoring for Third-Party Information Disclosure	TPM-07	Mechanisms exist to monitor for evidence of unauthorized exfiltration or disclosure of organizational information.	5	

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			Functional	Intersects With	Review of Third-Party Services	TPM-08	Mechanisms exist to monitor, regularly review and assess External Service Providers (ESPs) for compliance with established contractual requirements for cybersecurity & data privacy controls.	5	
HHSP74	Health information security incident management - Collection of evidence	Evidence gathered as part of the health incident management process is appropriately protected.	Functional	Subset Of	Data Protection	DCH-01	Mechanisms exist to facilitate the implementation of data protection controls.	10	
			Functional	Intersects With	Sensitive / Regulated Data Protection	DCH-01.2	Mechanisms exist to protect sensitive/regulated data wherever it is stored.	5	
			Functional	Intersects With	Chain of Custody & Forensics	IRO-08	Mechanisms exist to perform digital forensics and maintain the integrity of the chain of custody, in accordance with applicable laws, regulations and industry-recognized secure practices.	5	
HHSP75	Health information security incident management - Learning from a health information security incident	Hospitals report all security incidents and near misses to the hospital's senior management or to the Board by a nominated Information Security Officer.	Functional	Intersects With	Status Reporting To Governing Body	GOV-01.2	Mechanisms exist to provide governance oversight reporting and recommendations to those entrusted to make executive decisions about matters considered material to the organization's cybersecurity & data protection program.	5	
			Functional	Intersects With	Incident Stakeholder Reporting	IRO-10	Mechanisms exist to timely-report incidents to applicable: (1) Internal stakeholders; (2) Affected clients & third-parties; and (3) Regulatory authorities.	5	
HML02	Human resource security - Terms and conditions of employment	Security roles and responsibilities of personnel are included within job descriptions.	Functional	Subset Of	Human Resources Security Management	HRS-01	Mechanisms exist to facilitate the implementation of personnel security controls.	10	
			Functional	Intersects With	Defined Roles & Responsibilities	HRS-03	Mechanisms exist to define cybersecurity roles & responsibilities for all personnel.	5	
HML03	Human resource security - Terms and conditions of employment	A breach of information security, including information by personnel, is considered a security policy violation. Consequences of a security policy violation leads to a disciplinary process.	Functional	Intersects With	Personnel Sanctions	HRS-07	Mechanisms exist to sanction personnel failing to comply with established security policies, standards and procedures.	5	
			Functional	Intersects With	Workplace Investigations	HRS-07.1	Mechanisms exist to conduct employee misconduct investigations when there is reasonable assurance that a policy has been violated.	5	
HML04	Human resource security - Onboarding, offboarding and role change	Procedures for providing and revoking logical and physical access when personnel join, have a role change or leave the organisation are in place.	Functional	Intersects With	User Provisioning & De-Provisioning	IAC-07	Mechanisms exist to utilize a formal user registration and de-registration process that governs the assignment of access rights.	5	
			Functional	Intersects With	Change of Roles & Duties	IAC-07.1	Mechanisms exist to revoke user access rights following changes in personnel roles and duties, if no longer necessary or permitted.	5	
			Functional	Intersects With	Termination of Employment	IAC-07.2	Mechanisms exist to revoke user access rights in a timely manner, upon termination of employment or contract.	5	
			Functional	Intersects With	Physical Access Authorizations	PES-02	Physical access control mechanisms exist to maintain a current list of personnel with authorized access to organizational facilities (except for those areas within the facility officially designated as publicly accessible).	5	
HML05	Asset lifecycle security - Information and associated assets	Asset management process(es) is in place.	Functional	Subset Of	Asset Governance	AST-01	Mechanisms exist to facilitate an IT Asset Management (ITAM) program to implement and manage asset management controls.	10	
HML06	Asset lifecycle security - Media equipment management, decommissioning and disposal	Processes are in place for media equipment management, decommissioning and secure disposal.	Functional	Equal	Secure Disposal, Destruction or Re-Use of Equipment	AST-09	Mechanisms exist to securely dispose of, destroy or repurpose system components using organization-defined techniques and methods to prevent information being recovered from these components.	10	
HML07	Information security incident management - Planning and preparation	An information security incident management process is in place.	Functional	Intersects With	Incident Handling	IRO-02	Mechanisms exist to cover: (1) Preparation; (2) Automated event detection or manual incident report intake; (3) Analysis; (4) Containment; (5) Eradication; and (6) Recovery.	5	
			Functional	Intersects With	Incident Response Plan (IRP)	IRO-04	Mechanisms exist to maintain and make available a current and viable Incident Response Plan (IRP) to all stakeholders.	5	
HML08	Business continuity and disaster recovery management - Information security during disruption	Documented, approved, business continuity and disaster recovery management, operational resilience policies and procedures are established.	Functional	Subset Of	Business Continuity Management System (BCMS)	BCD-01	Mechanisms exist to facilitate the implementation of contingency planning controls to help ensure resilient assets and services (e.g., Continuity of Operations Plan (COOP) or Business Continuity & Disaster Recovery (BC/DR) playbooks).	10	
HML09	Supplier management - Policy for suppliers	The information security requirements for managing the risks while a supplier is accessing information are to be identified and communicated.	Functional	Equal	Third-Party Contract Requirements	TPM-05	Mechanisms exist to require contractual requirements for cybersecurity & data privacy requirements with third-parties, reflecting the organization's needs to protect its systems, processes and data.	10	
HML10	Identity and access management - Access control	Establish, document, approve, and implement rules to control physical and logical access to information and its assets.	Functional	Intersects With	Access Enforcement	IAC-20	Mechanisms exist to enforce Logical Access Control (LAC) permissions that conform to the principle of "least privilege."	5	
			Functional	Intersects With	Access To Information Systems	PES-03.4	Physical access control mechanisms exist to enforce physical access to critical information systems or sensitive/regulated data, in addition to the physical access controls for the facility.	5	
HML11	Medical devices - Purchase or lease	Organisations are to include cyber security in procurement planning and decisions.	Functional	Intersects With	Operationalizing Cybersecurity & Data Protection Practices	GOV-15	Mechanisms exist to compel data and/or process owners to operationalize cybersecurity & data privacy practices for each system, application and/or service under their control.	5	
			Functional	Intersects With	Cybersecurity & Data Privacy In Project Management	PRM-04	Mechanisms exist to assess cybersecurity & data privacy controls in system project development to determine the extent to which the controls are implemented correctly, operating as intended and producing the desired outcome with respect to meeting the requirements.	5	
HML12	Information security governance - Ownership of information security	The organisation's Board or information security steering committee is accountable for organisations information security governance.	Functional	Intersects With	Steering Committee & Program Oversight	GOV-01.1	Mechanisms exist to coordinate cybersecurity, data protection and business alignment through a steering committee or advisory board, comprised of key cybersecurity, data privacy and business executives, which meets formally and on a regular basis.	5	
			Functional	Intersects With	Status Reporting To Governing Body	GOV-01.2	Mechanisms exist to provide governance oversight reporting and recommendations to those entrusted to make executive decisions about matters considered material to the organization's cybersecurity & data protection program.	5	
HML13	Physical and environmental security - Policies and procedures	A documented policy and supporting procedures for maintaining physical security within the organisation is in place.	Functional	Equal	Site Security Plan (SitePlan)	PES-01.1	Mechanisms exist to document a Site Security Plan (SitePlan) for each server and communications room to summarize the implemented security controls to protect physical access to technology assets, as well as applicable risks and threats.	10	
HML14	Physical and environmental security - Clear desk and clear screen policy	A documented and approved procedure to remove papers and removable storage from easily accessible areas is implemented.	Functional	Subset Of	Data Protection	DCH-01	Mechanisms exist to facilitate the implementation of data protection controls.	10	
			Functional	Intersects With	Sensitive / Regulated Data Protection	DCH-01.2	Mechanisms exist to protect sensitive/regulated data wherever it is stored.	5	
			Functional	Intersects With	Removable Media Security	DCH-12	Mechanisms exist to restrict removable media in accordance with data handling and acceptable usage parameters.	5	
HML15	Cloud security - Cloud security policy & cloud security agreement (CSA)	Organisations have planned maintenance of information via cloud services as per documented policies and agreements.	Functional	Subset Of	Maintenance Operations	MNT-01	Mechanisms exist to develop, disseminate, review & update procedures to facilitate the implementation of maintenance controls across the enterprise.	10	
HML16	System acquisition, development and maintenance - Security while developing applications, products or services	Information systems are securely designed, and appropriate controls are implemented.	Functional	Intersects With	System Hardening Through Baseline Configurations	CFG-02	Mechanisms exist to develop, document and maintain secure baseline configurations for technology platforms that are consistent with industry-accepted system hardening standards.	5	
			Functional	Intersects With	Operationalizing Cybersecurity & Data Protection Practices	GOV-15	Mechanisms exist to compel data and/or process owners to operationalize cybersecurity & data privacy practices for each system, application and/or service under their control.	5	
			Functional	Subset Of	Secure Engineering Principles	SEA-01	Mechanisms exist to facilitate the implementation of industry-recognized cybersecurity & data privacy practices in the specification, design, development, implementation and modification of systems and services.	10	
HML17	Information backups - Policies and procedures	A backup and recovery procedure is in place.	Functional	Intersects With	Data Backups	BCD-11	Mechanisms exist to create recurring backups of data, software and/or system images, as well as verify the integrity of these backups, to ensure the availability of the data to satisfying Recovery Time Objectives (RTOs) and Recovery Point Objectives (RPOs).	5	

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			Functional	Intersects With	Information System Recovery & Reconstitution	BCD-12	Mechanisms exist to ensure the secure recovery and reconstitution of systems to a known state after a disruption, compromise or failure.	5	
HML18	Change management - Policies and procedures	A documented process is in place for performing changes to new and existing systems or services related to information.	Functional	Subset Of	Change Management Program	CHG-01	Mechanisms exist to facilitate the implementation of a change management program.	10	
			Functional	Intersects With	Configuration Change Control	CHG-02	Mechanisms exist to govern the technical configuration change control processes.	5	
HML19	Patch and vulnerability management - Policies and procedures	A documented process is in place for identifying vulnerabilities and updating patches on the organisations systems, applications, tools, services etc.	Functional	Subset Of	Vulnerability & Patch Management Program (VPMP)	VPM-01	Mechanisms exist to facilitate the implementation and monitoring of vulnerability management controls.	10	
			Functional	Intersects With	Vulnerability Remediation Process	VPM-02	Mechanisms exist to ensure that vulnerabilities are properly identified, tracked and remediated.	5	
			Functional	Intersects With	Software & Firmware Patching	VPM-05	Mechanisms exist to conduct software patching for all deployed operating systems, applications and firmware.	5	
HML20	Human resource security - Terms and conditions of employment	Organisations, at a minimum, screen all personnel by verifying their identity, previous employment, applicable health professional qualifications and criminal backgrounds before confirmation of employment.	Functional	Equal	Personnel Screening	HRS-04	Mechanisms exist to manage personnel security risk by screening individuals prior to authorizing access.	10	
HML21	Human resource security - Roles and responsibilities	Organisations are to ensure: a) information security responsibilities are clearly defined and assigned b) a governance body or steering committee overseeing information security activities is in place c) there is at least one individual responsible for maintaining information security within the organisation.	Functional	Intersects With	Steering Committee & Program Oversight	GOV-01.1	Mechanisms exist to coordinate cybersecurity, data protection and business alignment through a steering committee or advisory board, comprised of key cybersecurity, data privacy and business executives, which meets formally and on a regular basis.	5	
			Functional	Intersects With	Assigned Cybersecurity & Data Protection Responsibilities	GOV-04	Mechanisms exist to assign one or more qualified individuals with the mission and resources to centrally-manage, coordinate, develop, implement and maintain an enterprise-wide cybersecurity & data protection program.	5	
			Functional	Intersects With	Stakeholder Accountability Structure	GOV-04.1	Mechanisms exist to enforce an accountability structure so that appropriate teams and individuals are empowered, responsible and trained for mapping, measuring and managing data and technology-related risks.	5	
HML22	Human resource security - Training requirements	There has been an assessment of information security training needs and a training plan is put in place.	Functional	Subset Of	Cybersecurity & Data Privacy-Minded Workforce	SAT-01	Mechanisms exist to facilitate the implementation of security workforce development and awareness controls.	10	
HML23	Information security incident management - Roles and responsibilities	Organisations are to have roles and responsibilities determined to carry out the incident management process.	Functional	Equal	Defined Roles & Responsibilities	HRS-03	Mechanisms exist to define cybersecurity roles & responsibilities for all personnel.	10	
HML24	Business continuity and disaster recovery management - ICT readiness for business continuity	Establish criteria for developing business continuity, disaster recovery, operational resilience strategies, and capabilities are to be determined based on disruption and impact to the organisation.	Functional	Subset Of	Business Continuity Management System (BCMS)	BCD-01	Mechanisms exist to facilitate the implementation of contingency planning controls to help ensure resilient assets and services (e.g., Continuity of Operations Plan (COOP) or Business Continuity & Disaster Recovery (BC/DR) playbooks).	10	
			Functional	Intersects With	Recovery Time / Point Objectives (RTO / RPO)	BCD-01.4	Mechanisms exist to facilitate recovery operations in accordance with Recovery Time Objectives (RTOs) and Recovery Point Objectives (RPOs).	5	
HML25	Supplier management - Supply chain risks	Suppliers are to be systematically evaluated, and their information security activities are reviewed before and after onboarding of their systems and services.	Functional	Subset Of	Third-Party Management	TPM-01	Mechanisms exist to facilitate the implementation of third-party management controls.	10	
			Functional	Intersects With	Third-Party Risk Assessments & Approvals	TPM-04.1	Mechanisms exist to conduct a risk assessment prior to the acquisition or outsourcing of technology-related services.	5	
			Functional	Intersects With	Review of Third-Party Services	TPM-08	Mechanisms exist to monitor, regularly review and assess External Service Providers (ESPs) for compliance with established contractual requirements for cybersecurity & data privacy controls.	5	
HML26	Medical devices - Medical device scanning	Vulnerability scanning on medical devices is only performed when they are in a test environment not connected for patient care.	Functional	Intersects With	Compensating Countermeasures	RSK-06.2	Mechanisms exist to identify and implement compensating countermeasures to reduce risk and exposure to threats.	5	
			Functional	Subset Of	Vulnerability & Patch Management Program (VPMP)	VPM-01	Mechanisms exist to facilitate the implementation and monitoring of vulnerability management controls.	10	
			Functional	Intersects With	Vulnerability Scanning	VPM-06	Mechanisms exist to detect vulnerabilities and configuration errors by routine vulnerability scanning of systems and applications.	5	
HML27	Information security governance - Roles and responsibilities	Roles and responsibilities are defined and documented for planning, implementing, operating, assessing, and reporting on the organisations information security requirements.	Functional	Intersects With	Assigned Cybersecurity & Data Protection Responsibilities	GOV-04	Mechanisms exist to assign one or more qualified individuals with the mission and resources to centrally-manage, coordinate, develop, implement and maintain an enterprise-wide cybersecurity & data protection program.	5	
			Functional	Intersects With	Stakeholder Accountability Structure	GOV-04.1	Mechanisms exist to enforce an accountability structure so that appropriate teams and individuals are empowered, responsible and trained for mapping, measuring and managing data and technology-related risks.	5	
HML28	Information security governance - Information security in project management	Organisations are to integrate information security into project management.	Functional	Intersects With	Operationalizing Cybersecurity & Data Protection Practices	GOV-15	Mechanisms exist to compel data and/or process owners to operationalize cybersecurity & data privacy practices for each system, application and/or service under their control.	5	
			Functional	Intersects With	Cybersecurity & Data Privacy In Project Management	PRM-04	Mechanisms exist to assess cybersecurity & data privacy controls in system project development to determine the extent to which the controls are implemented correctly, operating as intended and producing the desired outcome with respect to meeting the requirements.	5	
HML29	Compliance - Compliance requirements	Relevant legal, regulatory and contractual requirements are identified and implemented.	Functional	Subset Of	Statutory, Regulatory & Contractual Compliance	CPL-01	Mechanisms exist to facilitate the identification and implementation of relevant statutory, regulatory and contractual controls.	10	
HML30	Cloud security - Cloud security risk assessment and assurance	A risk assessment methodology and cloud assurance activities that support the use of cloud technologies are in place.	Functional	Subset Of	Risk Management Program	RSK-01	Mechanisms exist to facilitate the implementation of strategic, operational and tactical risk management controls.	10	
HML31	System acquisition, development and maintenance - Business and security requirements	Business and security requirements are identified, documented and approved when developing or acquiring applications.	Functional	Intersects With	Cybersecurity & Data Privacy In Project Management	PRM-04	Mechanisms exist to assess cybersecurity & data privacy controls in system project development to determine the extent to which the controls are implemented correctly, operating as intended and producing the desired outcome with respect to meeting the requirements.	5	
			Functional	Intersects With	Cybersecurity & Data Privacy Requirements Definition	PRM-05	Mechanisms exist to identify critical system components and functions by performing a criticality analysis for critical systems, system components or services at pre-defined decision points in the Secure Development Life Cycle (SDLC).	5	
			Functional	Intersects With	Minimum Viable Product (MVP) Security Requirements	TDA-02	Mechanisms exist to ensure risk-based technical and functional specifications are established to define a Minimum Viable Product (MVP).	5	
HML32	Risk management - Risk assessments	Risk assessments are performed on new and existing systems and applications that manage information to understand the risks posed to the organisation while using them.	Functional	Equal	Risk Assessment	RSK-04	Mechanisms exist to conduct recurring assessments of risk that includes the likelihood and magnitude of harm, from unauthorized access, use, disclosure, disruption, modification or destruction of the organization's systems and data.	10	
HML33	Change management - Security testing	The proposed changes are to be analysed for potential security threats and their impact on the organisation.	Functional	Equal	Security Impact Analysis for Changes	CHG-03	Mechanisms exist to analyze proposed changes for potential security impacts, prior to the implementation of the change.	10	
HML34	Asset lifecycle security - Information and associated assets	Information and associated assets are appropriately protected, used, and handled based on their importance.	Functional	Equal	Data & Asset Classification	DCH-02	Mechanisms exist to ensure data and assets are categorized in accordance with applicable statutory, regulatory and contractual requirements.	10	
HML35	Business continuity and disaster recovery management - Information security during disruption	In the event of a disruption or failure, critical information or services are identified, and measures are taken for the continuity of services.	Functional	Intersects With	Resume All Missions & Business Functions	BCD-02.1	Mechanisms exist to resume all missions and business functions within Recovery Time Objectives (RTOs) of the contingency plan's activation.	5	
			Functional	Intersects With	Continue Essential Mission & Business Functions	BCD-02.2	Mechanisms exist to continue essential missions and business functions with little or no loss of operational continuity and sustain that continuity until full system restoration at primary processing and/or storage sites.	5	
HML36	Supplier management - Information security within supplier agreements	The organisation's information security requirements are to be included in the agreements with the suppliers.	Functional	Equal	Third-Party Contract Requirements	TPM-05	Mechanisms exist to require contractual requirements for cybersecurity & data privacy requirements with third-parties, reflecting the organization's needs to protect its systems, processes and data.	10	
HML37	Cryptography - Use of cryptography	Rules for effective use of cryptography including encryption and key management are defined and implemented.	Functional	Subset Of	Use of Cryptographic Controls	CRY-01	Mechanisms exist to facilitate the implementation of cryptographic protections controls using known public standards and trusted cryptographic technologies.	10	
HML38	Identity and access management - Identity management	The complete lifecycle of the account(s) being used to access, process, or manage information and services is managed.	Functional	Equal	Account Management	IAC-15	Mechanisms exist to proactively govern account management of individual, group, system, service, application, guest and temporary accounts.	10	
HML39	Identity and access management - Information authentication	User accounts are authenticated and circumventing the authentication process is prevented.	Functional	Equal	Authenticate, Authorize and Audit (AAA)	IAC-01.2	Mechanisms exist to strictly govern the use of Authenticate, Authorize and Audit (AAA) solutions, both on-premises and those hosted by an External Service Provider (ESP).	10	

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HML40	Identity and access management - Access rights	Access to information and its associated assets is defined and authorised according to the business and security requirements and adhere to the organisation's identity and access management policy or procedures.	Functional	Intersects With	Access Enforcement	IAC-20	Mechanisms exist to enforce Logical Access Control (LAC) permissions that conform to the principle of "least privilege."	5	
			Functional	Intersects With	Role-Based Access Control (RBAC)	IAC-08	Mechanisms exist to enforce a Role-Based Access Control (RBAC) policy over users and resources that applies need-to-know and fine-grained access control for sensitive/regulated data access.	5	
HML41	Identity and access management - Privileged access rights	Organisations are to ensure that only authorised users, software components and services are provided with privileged access rights.	Functional	Equal	Privileged Account Management (PAM)	IAC-16	Mechanisms exist to restrict and control privileged access rights for users and services.	10	
HML42	Identity and access management - Access to source code	Access to source code, development tools, and software libraries are restricted, appropriately managed, and maintained.	Functional	Intersects With	Role-Based Access Control (RBAC)	IAC-08	Mechanisms exist to enforce a Role-Based Access Control (RBAC) policy over users and resources that applies need-to-know and fine-grained access control for sensitive/regulated data access.	5	
			Functional	Intersects With	Access to Program Source Code	TDA-20	Mechanisms exist to limit privileges to change software resident within software libraries.	5	
HML43	Medical devices - Protecting medical devices	Where possible, production and legacy medical devices are on a separate network.	Functional	Intersects With	Isolation of Information System Components	NET-03.7	Mechanisms exist to employ boundary protections to isolate systems, services and processes that support critical missions and/or business functions.	5	
			Functional	Intersects With	Compensating Countermeasures	RSK-06.2	Mechanisms exist to identify and implement compensating countermeasures to reduce risk and exposure to threats.	5	
			Functional	Intersects With	Unsupported Systems	TDA-17	Mechanisms exist to prevent unsupported systems by: (1) Replacing systems when support for the components is no longer available from the developer, vendor or manufacturer; and (2) Requiring justification and documented approval for the continued use of unsupported system components required to satisfy mission/business needs.	5	
HML44	Medical devices - Maintenance	All medical devices are maintained as per the latest updates from the manufacturers and current industry/regulatory standards.	Functional	Equal	Stable Versions	VPM-04.1	Mechanisms exist to install the latest stable version of any software and/or security-related updates on all applicable systems.	10	
HML45	Medical devices - Dispose or return lease	Medical devices with patient information are digitally sanitised before their disposal or when they are being returned.	Functional	Equal	Secure Disposal, Destruction or Re-Use of Equipment	AST-09	Mechanisms exist to securely dispose of, destroy or repurpose system components using organization-defined techniques and methods to prevent information being recovered from these components.	10	
HML46	Information security governance - Performance measurement	Metrics affecting the organisations cyber security posture are regularly reported to the Board, and any decisions made are clearly documented.	Functional	Intersects With	Status Reporting To Governing Body	GOV-01.2	Mechanisms exist to provide governance oversight reporting and recommendations to those entrusted to make executive decisions about matters considered material to the organization's cybersecurity & data protection program.	5	
			Functional	Intersects With	Measures of Performance	GOV-05	Mechanisms exist to develop, report and monitor cybersecurity & data privacy program measures of performance.	5	
HML47	Physical and environmental security - Maintenance of physical and environmental security	Update, protect and maintain the devices installed as physical security safeguards including the utilities.	Functional	Subset Of	Physical & Environmental Protections	PES-01	Mechanisms exist to facilitate the operation of physical and environmental protection controls.	10	
HML48	Physical and environmental security - Visitor management system	Secure areas of the organisation are protected from unauthorised personnel.	Functional	Intersects With	Physical Access Control	PES-03	Physical access control mechanisms exist to enforce physical access authorizations for all physical access points (including designated entry/exit points) to facilities (excluding those areas within the facility officially designated as publicly accessible).	5	
			Functional	Intersects With	Physical Security of Offices, Rooms & Facilities	PES-04	Mechanisms exist to identify systems, equipment and respective operating environments that require limited physical access so that appropriate physical access controls are designed and implemented for offices, rooms and facilities.	5	
HML49	Remote working - Remote working requirements	Secure mechanisms are available and supported by a documented policy or guidelines to connect to the organisations network.	Functional	Intersects With	Identification & Authentication for Third Party Systems & Services	IAC-05	Mechanisms exist to identify and authenticate third-party systems and services.	5	
			Functional	Subset Of	Network Security Controls (NSC)	NET-01	Mechanisms exist to develop, govern & update procedures to facilitate the implementation of Network Security Controls (NSC).	10	
HML50	Web security - Security of web applications	Security controls are implemented if the organisation is developing the web applications to protect them from potential cyber-attacks.	Functional	Subset Of	Technology Development & Acquisition	TDA-01	Mechanisms exist to facilitate the implementation of tailored development and acquisition strategies, contract tools and procurement methods to meet unique business needs.	10	
			Functional	Intersects With	Product Management	TDA-01.1	Mechanisms exist to design and implement product management processes to update products, including systems, software and services, to improve functionality and correct security deficiencies.	5	
			Functional	Intersects With	Secure Coding	TDA-06	Mechanisms exist to develop applications based on secure coding principles.	5	
HML51	Cloud security - Cloud security architecture	The organisation's architectural strategy supports the adoption of cloud technologies.	Functional	Equal	Cloud Security Architecture	CLD-02	Mechanisms exist to ensure the cloud security architecture supports the organization's technology strategy to securely design, configure and maintain cloud employments.	10	
HML52	Cloud security - Use of application & programming interface (API)	Organisations are to make use of developed and configured APIs for secure transfer of information between different cloud components.	Functional	Equal	Application & Program Interface (API) Security	CLD-04	Mechanisms exist to ensure support for secure interoperability between components with Application & Program Interfaces (APIs).	10	
HML53	Cloud security - Cloud security controls	Organisations are to ensure that appropriate controls are implemented to protect information in a multi-tenant cloud environment.	Functional	Equal	Multi-Tenant Environments	CLD-06	Mechanisms exist to ensure multi-tenant owned or managed assets (physical and virtual) are designed and governed such that provider and customer (tenant) user access is appropriately segmented from other tenant users.	10	
HML54	Communications security - Network security	Networks and network devices supporting the organisations systems and applications are to be securely managed.	Functional	Subset Of	Asset Governance	AST-01	Mechanisms exist to facilitate an IT Asset Management (ITAM) program to implement and manage asset management controls.	10	
			Functional	Intersects With	System Hardening Through Baseline Configurations	CFG-02	Mechanisms exist to develop, document and maintain secure baseline configurations for technology platforms that are consistent with industry-accepted system hardening standards.	5	
			Functional	Subset Of	Network Security Controls (NSC)	NET-01	Mechanisms exist to develop, govern & update procedures to facilitate the implementation of Network Security Controls (NSC).	10	
HML55	Communications security - Segregation of networks	The systems and applications that are used to process, store or transmit information are connected to a separate, dedicated network.	Functional	Intersects With	Isolation of Information System Components	NET-03.7	Mechanisms exist to employ boundary protections to isolate systems, services and processes that support critical missions and/or business functions.	5	
			Functional	Intersects With	Network Segmentation (macrosegementation)	NET-06	Mechanisms exist to ensure network architecture utilizes network segmentation to isolate systems, applications and services that protections from other network resources.	5	
HML56	Information backups - Information backup	Backup copies of information, software and relevant systems are protected and maintained in accordance with the backup and recovery procedures.	Functional	Intersects With	Data Backups	BCD-11	Mechanisms exist to create recurring backups of data, software and/or system images, as well as verify the integrity of these backups, to ensure the availability of the data to satisfying Recovery Time Objectives (RTOs) and Recovery Point Objectives (RPOs).	5	
			Functional	Intersects With	Backup Modification and/or Destruction	BCD-11.10	Mechanisms exist to restrict access to modify and/or delete backups to privileged users with assigned data backup and recovery operations roles.	5	
HML57	Information backups - Backup restoration	Backups are tested for their restoration in accordance with the documented backup and recovery procedures. Organisations are able to access restored backups as well.	Functional	Equal	Testing for Reliability & Integrity	BCD-11.1	Mechanisms exist to routinely test backups that verify the reliability of the backup process, as well as the integrity and availability of the data.	10	
HML58	Change management - Separate production and non-production environments	Organisations developing inhouse systems, applications or services are to maintain separate production and non-production environments.	Functional	Equal	Separation of Development, Testing and Operational Environments	TDA-08	Mechanisms exist to manage separate development, testing and operational environments to reduce the risks of unauthorized access or changes to the operational environment and to ensure no impact to production systems.	10	
HML59	Patch and vulnerability management - Patch and vulnerabilities remediation	Identified vulnerabilities or unpatched systems, services or applications within the organisation are properly identified, tracked and remediated.	Functional	Intersects With	Vulnerability Remediation Process	VPM-02	Mechanisms exist to ensure that vulnerabilities are properly identified, tracked and remediated.	5	
			Functional	Intersects With	Vulnerability Scanning	VPM-06	Mechanisms exist to detect vulnerabilities and configuration errors by routine vulnerability scanning of systems and applications.	5	
HML60	Configuration management - Secure configuration	Organisations have a standardised baseline configuration in place for new and existing systems, services and applications.	Functional	Equal	System Hardening Through Baseline Configurations	CFG-02	Mechanisms exist to develop, document and maintain secure baseline configurations for technology platforms that are consistent with industry-accepted system hardening standards.	10	
HML61	Capacity management - Capacity management	The capacity requirements for maintenance of information processing facilities, communication and environmental support during contingency operations are met.	Functional	Subset Of	Business Continuity Management System (BCMS)	BCD-01	Mechanisms exist to facilitate the implementation of contingency planning controls to help ensure resilient assets and services (e.g., Continuity of Operations Plan (COOP) or Business Continuity & Disaster Recovery (BC/DR) playbooks).	10	
			Functional	Subset Of	Capacity & Performance Management	CAP-01	Mechanisms exist to facilitate the implementation of capacity management controls to ensure optimal system performance to meet expected and anticipated future capacity requirements.	10	
HML62	Endpoint security - Malware protection	Information, services, and applications on organisation systems and associated assets are protected against malware.	Functional	Equal	Malicious Code Protection (Anti-Malware)	END-04	Mechanisms exist to utilize antimalware technologies to detect and eradicate malicious code.	10	
HML63	Business continuity and disaster recovery management ICT readiness for business continuity	The lessons learned from business continuity and disaster recovery testing are reflected in the established and implemented information security controls.	Functional	Equal	Contingency Plan Root Cause Analysis (RCA) & Lessons Learned	BCD-05	Mechanisms exist to conduct a Root Cause Analysis (RCA) and "lessons learned" activity every time the contingency plan is activated.	10	
	Medical devices - Compliance	Medical devices are compliant with relevant standards, and the identified risks	Functional	Intersects With	System Hardening Through Baseline Configurations	CFG-02	Mechanisms exist to develop, document and maintain secure baseline configurations for technology platforms that are consistent with industry-accepted system hardening standards.	5	

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HML64	Medical devices - Compliance activities	Medical devices are compliant with relevant standards, and the identified risks are documented within the medical device risk register.	Functional	Intersects With	Risk Register	RSK-04.1	Mechanisms exist to maintain a risk register that facilitates monitoring and reporting of risks.	5	
			Functional	Intersects With	Compensating Countermeasures	RSK-06.2	Mechanisms exist to identify and implement compensating countermeasures to reduce risk and exposure to threats.	5	
HML65	Physical and environmental security - Monitoring of physical and environmental security mechanisms	Installed physical and environmental security mechanisms are monitored for potential security incidents.	Functional	Equal	Monitoring Physical Access	PES-05	Physical access control mechanisms exist to monitor for, detect and respond to physical security incidents.	10	
HML66	Compliance - Review of compliance requirements	Regular reviews are performed to confirm that the legal, regulatory, statutory, and contractual requirements are met.	Functional	Intersects With	Cybersecurity & Data Protection Controls Oversight	CPL-02	Mechanisms exist to provide a cybersecurity & data protection controls oversight function that reports to the organization's executive leadership.	5	
			Functional	Intersects With	Internal Audit Function	CPL-02.1	Mechanisms exist to implement an internal audit function that is capable of providing senior organization management with insights into the appropriateness of the organization's technology and information governance processes.	5	
			Functional	Intersects With	Periodic Review & Update of Cybersecurity & Data Protection Program	GOV-03	Mechanisms exist to review the cybersecurity & data privacy program, including policies, standards and procedures, at planned intervals or if significant changes occur to ensure their continuing suitability, adequacy and effectiveness.	5	
HML67	System acquisition, development and maintenance - Independent reviews	Independent security reviews are defined and implemented before any new or major upgrades on systems are moved to the production environment.	Functional	Subset Of	Information Assurance (IA) Operations	IAO-01	Mechanisms exist to facilitate the implementation of cybersecurity & data privacy assessment and authorization controls.	10	
			Functional	Intersects With	Assessments	IAO-02	Mechanisms exist to formally assess the cybersecurity & data privacy controls in systems, applications and services through Information Assurance Program (IAP) activities to determine the extent to which the controls are implemented correctly, operating as intended and producing the desired outcome with respect to meeting expected requirements.	5	
HML68	Information backups - Monitoring of backups	Authorised personnel or teams are alerted upon unsuccessful or incomplete backups.	Functional	Intersects With	Data Backups	BCD-11	Mechanisms exist to create recurring backups of data, software and/or system images, as well as verify the integrity of these backups, to ensure the availability of the data to satisfying Recovery Time Objectives (RTOs) and Recovery Point Objectives (RPOs).	5	
			Functional	Intersects With	Testing for Reliability & Integrity	BCD-11.1	Mechanisms exist to routinely test backups that verify the reliability of the backup process, as well as the integrity and availability of the data.	5	
			Functional	Intersects With	Automated Alerts	MON-01.12	Mechanisms exist to automatically alert incident response personnel to inappropriate or anomalous activities that have potential security incident implications.	5	
			Functional	Intersects With	System Generated Alerts	MON-01.4	Mechanisms exist to generate, monitor, correlate and respond to alerts from physical, cybersecurity, data privacy and supply chain activities to achieve integrated situational awareness.	5	
HML69	Data leakage prevention - Data leakage prevention	Organisations are to detect and prevent data leakage through the unauthorised disclosure and siphoning of information by individuals, systems or services.	Functional	Intersects With	Monitoring For Information Disclosure	MON-11	Mechanisms exist to monitor for evidence of unauthorized exfiltration or disclosure of non-public information.	5	
			Functional	Intersects With	Data Loss Prevention (DLP)	NET-17	Automated mechanisms exist to implement Data Loss Prevention (DLP) to protect sensitive information as it is stored, transmitted and processed.	5	
HML70	Logging and monitoring - Logging and monitoring	The activities performed on the information processing systems, services and applications are logged and stored as per the organisations logging and auditing requirements.	Functional	Subset Of	Continuous Monitoring	MON-01	Mechanisms exist to facilitate the implementation of enterprise-wide monitoring controls.	10	
			Functional	Intersects With	Content of Event Logs	MON-03	Mechanisms exist to configure systems to produce event logs that contain sufficient information to, at a minimum: (1) Establish what type of event occurred; (2) When (date and time) the event occurred; (3) Where the event occurred; (4) The source of the event; (5) The outcome (success or failure) of the event; and (6) The identity of any user/subject associated with the event.	5	
			Functional	Intersects With	Audit Trails	MON-03.2	Mechanisms exist to link system access to individual users or service accounts.	5	
HML71	Logging and monitoring - Clock synchronisation	Information processing systems, applications, devices, and services are synchronised to an approved time source.	Functional	Equal	Synchronization With Authoritative Time Source	MON-07.1	Mechanisms exist to synchronize internal system clocks with an authoritative time source.	10	
HML72	Human resource security - Terms and conditions of employment	Breach of employment and supplier agreements are enforced.	Functional	Intersects With	Personnel Sanctions	HRS-07	Mechanisms exist to sanction personnel failing to comply with established security policies, standards and procedures.	5	
			Functional	Intersects With	Third-Party Contract Requirements	TPM-05	Mechanisms exist to require contractual requirements for cybersecurity & data privacy requirements with third-parties, reflecting the organization's needs to protect its systems, processes and data.	5	
HML73	Asset lifecycle security - Information and associated assets	Misuse of the organisations assets is investigated, and documented procedures are followed as stated in the acceptable use policy, contractor agreements or service agreements.	Functional	Intersects With	Personnel Sanctions	HRS-07	Mechanisms exist to sanction personnel failing to comply with established security policies, standards and procedures.	5	
			Functional	Intersects With	Workplace Investigations	HRS-07.1	Mechanisms exist to conduct employee misconduct investigations when there is reasonable assurance that a policy has been violated.	5	
			Functional	Intersects With	Monitoring for Third-Party Information Disclosure	TPM-07	Mechanisms exist to monitor for evidence of unauthorized exfiltration or disclosure of organizational information.	5	
			Functional	Intersects With	Review of Third-Party Services	TPM-08	Mechanisms exist to monitor, regularly review and assess External Service Providers (ESPs) for compliance with established contractual requirements for cybersecurity & data privacy controls.	5	
HML74	Information security incident management - Collection of evidence	Evidence gathered as part of the incident management process is appropriately protected.	Functional	Subset Of	Data Protection	DCH-01	Mechanisms exist to facilitate the implementation of data protection controls.	10	
			Functional	Intersects With	Sensitive / Regulated Data Protection	DCH-01.2	Mechanisms exist to protect sensitive/regulated data wherever it is stored.	5	
			Functional	Intersects With	Chain of Custody & Forensics	IRO-08	Mechanisms exist to perform digital forensics and maintain the integrity of the chain of custody, in accordance with applicable laws, regulations and industry-recognized secure practices.	5	
HML75	Information security incident management - Learning from an information security incident	Organisations report all security incidents and near misses to the organisation's senior management or to the Board by a nominated Information Security Officer.	Functional	Intersects With	Incident Stakeholder Reporting	IRO-10	Mechanisms exist to timely-report incidents to applicable: (1) Internal stakeholders; (2) Affected clients & third-parties; and (3) Regulatory authorities.	5	
			Functional	Intersects With	Status Reporting To Governing Body	GOV-01.2	Mechanisms exist to provide governance oversight reporting and recommendations to those entrusted to make executive decisions about matters considered material to the organization's cybersecurity & data protection program.	5	
HMS01	Governance - Information security roles and responsibilities	Information security roles and responsibilities are to be clearly defined.	Functional	Equal	Defined Roles & Responsibilities	HRS-03	Mechanisms exist to define cybersecurity roles & responsibilities for all personnel.	10	
HMS02	Governance - Policies for information security	A defined health information security policy is documented and approved by management.	Functional	Equal	Publishing Cybersecurity & Data Protection Documentation	GOV-02	Mechanisms exist to establish, maintain and disseminate cybersecurity & data protection policies, standards and procedures.	10	
HMS03	Asset Management - Inventory of information and assets	An inventory of assets where health information is stored, including software, endpoint devices and relevant owners are identified and maintained.	Functional	Intersects With	Asset Inventories	AST-02	Mechanisms exist to perform inventories of technology assets that: (1) Accurately reflects the current systems, applications and services in use; (2) Identifies authorized software products, including business justification details; (3) Is at the level of granularity deemed necessary for tracking and reporting; (4) Includes organization-defined information deemed necessary to achieve effective property accountability; and (5) Is available for review and audit by designated organizational personnel.	5	
			Functional	Intersects With	Sensitive Data Inventories	DCH-06.2	Mechanisms exist to maintain inventory logs of all sensitive media and conduct sensitive media inventories at least annually.	5	
HMS04	Supplier Management - Supply Chain Risk Management	All suppliers responsible for delivering health information related assets and services are to undergo periodic security assurance activities.	Functional	Equal	Review of Third-Party Services	TPM-08	Mechanisms exist to monitor, regularly review and assess External Service Providers (ESPs) for compliance with established contractual requirements for cybersecurity & data privacy controls.	10	
HMS05	Risk Management - Information Security Risk Assessment	A security risk assessment is conducted periodically, and the identified risks are managed.	Functional	Equal	Risk Assessment Update	RSK-07	Mechanisms exist to routinely update risk assessments and react accordingly upon identifying new security vulnerabilities, including using outside sources for security vulnerability information.	10	
HMS06	Information Sharing - Protection of health information	Requirements are identified, and contractual obligations are met before the information is shared with authorised parties.	Functional	Equal	Third-Party Contract Requirements	TPM-05	Mechanisms exist to require contractual requirements for cybersecurity & data privacy requirements with third-parties, reflecting the organization's needs to protect its systems, processes and data.	10	

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HMS07	Access Management - Access Control and Secure Authentication	Access to health information and endpoint devices is provided based on the legitimate business and health information security requirements and on the role of the individual.	Functional	Intersects With	Role-Based Access Control (RBAC)	IAC-08	Mechanisms exist to enforce a Role-Based Access Control (RBAC) policy over users and resources that applies need-to-know and fine-grained access control for sensitive/regulated data access.	5	
			Functional	Intersects With	Access Enforcement	IAC-20	Mechanisms exist to enforce Logical Access Control (LAC) permissions that conform to the principle of "least privilege."	5	
HMS08	Device Management - Management of Technical Vulnerabilities	Latest operating systems, hardware devices, relevant software and internet browsers are used and kept up-to-date and where applicable, licensed versions are to be used.	Functional	Equal	Stable Versions	VPM-04.1	Mechanisms exist to install the latest stable version of any software and/or security-related updates on all applicable systems.	10	
HMS09	Device Management - Installation of software on operational systems	Permissions for all personnel is restricted so that external media, unauthorised or malicious software is not installed on devices that are used to store, process or transfer health information.	Functional	Intersects With	System Hardening Through Baseline Configurations	CFG-02	Mechanisms exist to develop, document and maintain secure baseline configurations for technology platforms that are consistent with industry-accepted system hardening standards.	5	
			Functional	Intersects With	Removable Media Security	DCH-12	Mechanisms exist to restrict removable media in accordance with data handling and acceptable usage parameters.	5	
			Functional	Intersects With	Endpoint Protection Measures	END-02	Mechanisms exist to protect the confidentiality, integrity, availability and safety of endpoint devices.	5	
HMS10	Device Management - Protection against malware	Up-to-date anti-virus, anti-malware/endpoint security software is installed on all computers and servers to protect health information and endpoint devices against malicious code or software.	Functional	Equal	Malicious Code Protection (Anti-Malware)	END-04	Mechanisms exist to utilize antimalware technologies to detect and eradicate malicious code.	10	
HMS11	Device Management - Information backup	All relevant health information is backed up securely (as outlined in your documented policy) in an encrypted format and restoration is tested periodically.	Functional	Intersects With	Data Backups	BCD-11	Mechanisms exist to create recurring backups of data, software and/or system images, as well as verify the integrity of these backups, to ensure the availability of the data to satisfying Recovery Time Objectives (RTOs) and Recovery Point Objectives (RPOs).	5	
			Functional	Intersects With	Testing for Reliability & Integrity	BCD-11.1	Mechanisms exist to routinely test backups that verify the reliability of the backup process, as well as the integrity and availability of the data.	5	
			Functional	Intersects With	Cryptographic Protection	BCD-11.4	Cryptographic mechanisms exist to prevent the unauthorized disclosure and/or modification of backup information.	5	
HMS12	Device Management - User endpoint devices	Only authorised devices that are managed and have security controls in place are to be used to process health information.	Functional	Subset Of	Asset Governance	AST-01	Mechanisms exist to facilitate an IT Asset Management (ITAM) program to implement and manage asset management controls.	10	
			Functional	Intersects With	Approved Technologies	AST-01.4	Mechanisms exist to maintain a current list of approved technologies (hardware and software).	5	
HMS13	Device Management - Remote working	When personnel are working remotely, security measures are in place to protect health information which could be accessed, processed, or stored outside the organisations premises.	Functional	Intersects With	Remote Access	NET-14	Mechanisms exist to define, control and review organization-approved, secure remote access methods.	5	
			Functional	Intersects With	Work From Anywhere (WFA) - Telecommuting Security	NET-14.5	Mechanisms exist to define secure telecommuting practices and govern remote access to systems and data for remote workers.	5	
HMS14	Information Sharing - Data Leakage Prevention	Licensed and secure software, tools or services are used to manage health information.	Functional	Subset Of	Asset Governance	AST-01	Mechanisms exist to facilitate an IT Asset Management (ITAM) program to implement and manage asset management controls.	10	
			Functional	Intersects With	Software Licensing Restrictions	AST-02.7	Mechanisms exist to maintain a current list of approved technologies (hardware and software).	5	
HMS15	Network Management - Security of networks	Network services used for transmitting and receiving health information and data are kept secure, to ensure minimal security impact upon clinical practice.	Functional	Equal	Sensitive / Regulated Data Enclave (Secure Zone)	NET-06.3	Mechanisms exist to implement segmentation controls to restrict inbound and outbound connectivity for sensitive / regulated data enclaves (secure zones).	10	
HMS16	Network Management - Separation of networks	Devices processing or storing or transmitting health information are connected, where possible, to a separate network with heightened security away from other information and assets.	Functional	Equal	Isolation of Information System Components	NET-03.7	Mechanisms exist to employ boundary protections to isolate systems, services and processes that support critical missions and/or business functions.	10	
HMS17	Operations Security - Encryption	Web traffic is encrypted for public facing websites which contain health information, so that they are protected against Distributed Denial of Service (DDoS) attacks.	Functional	Intersects With	Safeguarding Data Over Open Networks	NET-12	Cryptographic mechanisms exist to implement strong cryptography and security protocols to safeguard sensitive/regulated data during transmission over open, public networks.	5	
			Functional	Intersects With	Denial of Service (DoS) Protection	NET-02.1	Automated mechanisms exist to protect against or limit the effects of denial of service attacks.	5	
HMS18	Operations Security - Logging	All health information user activities are recorded, stored for a period of time and protected for analysis in case of a security incident.	Functional	Subset Of	Continuous Monitoring	MON-01	Mechanisms exist to facilitate the implementation of enterprise-wide monitoring controls.	10	
			Functional	Intersects With	Event Log Retention	MON-10	Mechanisms exist to retain event logs for a time period consistent with records retention requirements to provide support for after-the-fact investigations of security incidents and to meet statutory, regulatory and contractual retention requirements.	5	
HMS19	Operations Security - Real time monitoring	Unusual behaviour and potential information security incidents amongst endpoints and internal and external network traffic are detected.	Functional	Intersects With	Automated Tools for Real-Time Analysis	MON-01.2	Mechanisms exist to utilize a Security Incident Event Manager (SIEM), or similar automated tool, to support near real-time analysis and incident escalation.	5	
			Functional	Intersects With	Anomalous Behavior	MON-16	Mechanisms exist to detect and respond to anomalous behavior that could indicate account compromise or other malicious activities.	5	
HMS20	Incident Management - Information security incident management planning and preparation	A documented and approved security incident management process is maintained, reviewed, and tested periodically.	Functional	Equal	Incident Response Plan (IRP)	IRO-04	Mechanisms exist to maintain and make available a current and viable Incident Response Plan (IRP) to all stakeholders.	10	
HMS21	Business Continuity Management - ICT readiness for business continuity	Availability of health information is to be maintained in the event of a service, system, or application being disrupted for a prolonged period.	Functional	Subset Of	Business Continuity Management System (BCMS)	BCD-01	Mechanisms exist to facilitate the implementation of contingency planning controls to help ensure resilient assets and services (e.g., Continuity of Operations Plan (COOP) or Business Continuity & Disaster Recovery (BC/DR) playbooks).	10	