

NIEM Cyber Domain – Overview

December 1, 2021

Introduction

- **The release of the new NIEM Cyber domain is an opportunity to establish the foundation to enable the receipt and sharing of federal and state, local, tribal, and territorial (SLTT) government cyber incident reporting data via standardized information exchanges. This foundation includes:**
 - XML structures (types, elements and codelists) for incident and breach-related data
 - Additional XML structures to support concepts from STIX
- **This briefing contains the Exchange Model of the XML structures needed to support the federal and SLTT incident reporting data exchange requirements, expressed in a series of UML diagrams.**
- **The associated definitions and implementation specifics of the structures identified in this briefing can be found in the NIEM 5.1 release of the NIEM Cyber domain.**

Exchange Model Concepts

- **Incident Discovery & Characterization**
- **Incident Artifacts**
- **Incident Severity & Impact**
- **Breach Impact**
- **Notification & Reporting**
- **Observed Data**
- **Cyber Observable Objects**
- **Response & Remediation**
- **Analysis & Strategy Revision**
- **Involved Entities**

Overview of New NIEM Cyber Domain Components

- **208 New Elements / Properties**

- 147 Simple Elements
 - 25 STIX Elements
- 61 Container Elements

- **121 New Types**

- 64 Complex Types
 - 14 STIX Types
- 57 Types for Codelists

- **29 New Codelists / Facets**

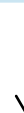
- 1 STIX Codelist

cyber:CyberIncidentType (STIX)

cyber:IncidentOpenedDate (STIX)
cyber:IncidentDiscoveryDate (STIX)
cyber:IncidentDiscoveryMethod (STIX)

cyber:IncidentDiscoveryMethodType (STIX)

cyber:IncidentDiscoveryMethodCode (STIX)
cyber:IncidentDiscoveryOtherMethodDescriptionText



Cyber Domain – Incident Discovery & Characterization

cyber:CyberIncidentType (STIX)

cyber:IncidentOpenedDate (STIX)
 cyber:IncidentDiscoveryDate (STIX)
 cyber:SecurityEventIndicator
 cyber:MajorIncident
 cyber:SignificantIncident
 cyber:IncidentDowngradedReasonText
 cyber:IncidentUpdateReasonText
 cyber:IncidentFunctionalImpactDescriptionText
 cyber:HighValueAssetIndicator
 cyber:IncidentQualifyingActivityDescriptionText
 cyber:DomainName
 cyber:ObservedData
 cyber:AttackVector
 cyber:IncidentDiscoveryMethod (STIX)
 cyber:IncidentOccurredDescriptionText
 cyber:AttackPattern
 cyber:IncidentSeverity
 cyber:DeclarationOfEmergency
 cyber:Breach
 cyber:IncidentSystemImpact
 cyber:IncidentEndpointImpact
 cyber:IncidentInfectedDevice
 cyber:IncidentImpactedPlatform
 cyber:IncidentResponse
 cyber:CourseOfAction (STIX)
 cyber:IncidentConsequenceCategoryCode
 cyber:CyberIndicatorPattern
 cyber:CyberVulnerability
 cyber:Malware
 cyber:CompromisedCommunication
 cyber:UnattributedCyberIntrusion
 cyber:InformationExchangePolicy
 cyber:CyberAnalytic
 cyber:Responder (STIX)
 cyber:IncidentNotification
 cyber:CyberInsuranceClaim
 nc:Organization
 nc:ContactInformation
 ip:Sector
 nc:CaseTrackingID

cyber:IncidentDiscoveryMethodType (STIX)

cyber:IncidentDiscoveryMethodCode (STIX)
 cyber:IncidentDiscoveryOtherMethodDescriptionText

cyber:CyberIndicatorPatternType (STIX)

cyber:CyberIndicatorPatternName (STIX)
 cyber:CyberIndicatorPatternDescriptionText (STIX)
 cyber:CyberIndicatorPatternDefensiveMeasureText
 cyber:CyberIndicatorPatternDefensiveMeasureComplianceIndicator
 cyber:KillChainPhase
 cyber:TrafficLightProtocolCode
 cyber:CyberIndicatorPatternDiamondModelClassificationCode

cyber:KillChainPhaseType (STIX)

cyber:KillChainName (STIX)
 cyber:KillChainPhaseName (STIX)

cyber:AttackPatternType (STIX)

cyber:AttackPatternName (STIX)
 cyber:AttackPatternDescriptionText (STIX)
 cyber:KillChainPhase

cyber:CyberVulnerabilityType (STIX)

cyber:VulnerabilityIsKnownIndicator
 cyber:VulnerabilityIsPublicIndicator
 cyber:CommonVulnerabilityEnumeration

cyber:MalwareType (STIX)

cyber:MalwareName (STIX)
 cyber:MalwareDescriptionText (STIX)
 cyber:MalwareAliasName

cyber:CommonVulnerabilityEnumerationType

cyber:CommonVulnerabilityEnumerationID (STIX)
 cyber:CommonVulnerabilityEnumerationDescriptionText (STIX)
 cyber:CommonVulnerabilityScoringSystemScoreNumeric (STIX)
 cyber:VulnerabilityRemoteCodeExecutableIndicator

cyber:AttackVectorType

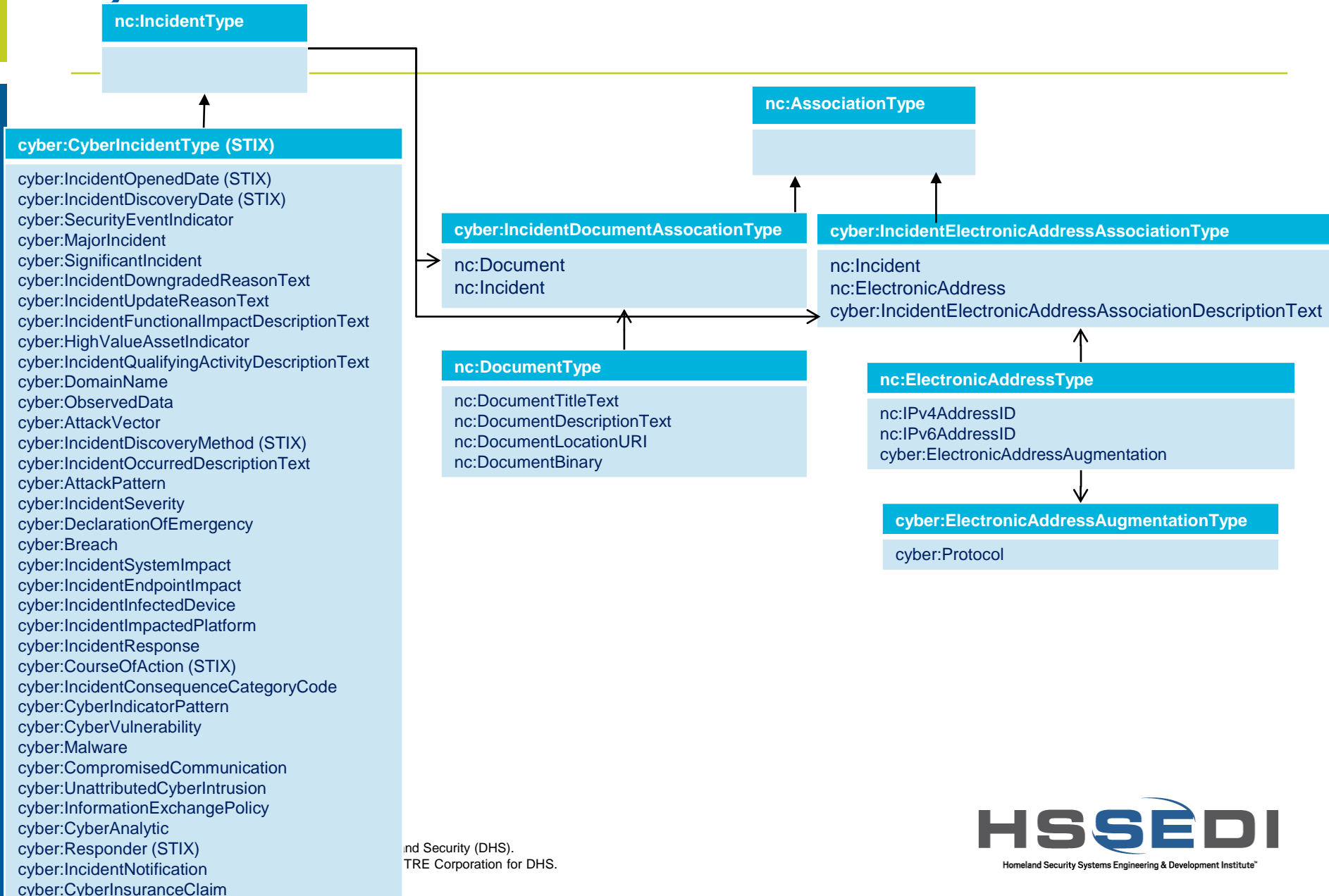
cyber:AttackVectorCategoryCode
 cyber:AttackVectorOtherDescriptionText

cyber:UnattributedCyberIntrusionType

cyber:UnattributedCyberIntrusionQuestionCategoryName
 cyber:UnattributedCyberIntrusionQuestionSubcategoryName
 cyber:UnattributedCyberIntrusionQuestionText
 cyber:UnattributedCyberIntrusionAnswerIndicator

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Cyber Domain – Incident Artifacts



Cyber Domain – Incident Severity & Impact

cyber:CyberIncidentType (STIX)

cyber:IncidentOpenedDate (STIX)
 cyber:IncidentDiscoveryDate (STIX)
 cyber:SecurityEventIndicator
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 cyber:IncidentDowngradedReasonText
 cyber:IncidentUpdateReasonText
 cyber:IncidentFunctionalImpactDescriptionText
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 cyber:IncidentQualifyingActivityDescriptionText
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 cyber:AttackVector
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 cyber:UnattributedCyberIntrusion
 cyber:InformationExchangePolicy
 cyber:CyberAnalytic
 cyber:Responder (STIX)
 cyber:IncidentNotification
 cyber:CyberInsuranceClaim
 nc:Organization
 nc:ContactInformation
 ip:Sector

ip:SectorType

ip:SectorName

cyber:IncidentSeverityType

cyber:IncidentFunctionalImpactSeverityCode
 cyber:IncidentInformationalImpactSeverityCode
 cyber:IncidentRecoverabilityAssessmentCode

cyber:IncidentSystemImpactType

cyber:SystemCategoryName
 cyber:FISMAIndicator
 nc:SystemName
 cyber:IncidentSystemJeopardyCode
 cyber:IncidentSystemImpactDescriptionText

cyber:IncidentEndpointImpactType

cyber:Endpoint
 cyber:IncidentImpactedEndpointQuantity
 cyber:IncidentImpactedUserQuantity

cyber:CompromisedCommunicationType

cyber:ObservedData
 nc:StartDate (nc:DateTime)
 nc:EndDate (nc:DateTime)

cyber:IncidentInfectedDeviceType

cyber:IncidentInfectedDeviceInitialIndicator
 cyber:Hardware
 cyber:AttackVector

cyber:PlatformType

cyber:PlatformName (STIX)
 cyber:PlatformCategoryDescriptionText
 cyber:PlatformOwnerName
 cyber:PlatformLocation
 cyber:PlatformPartText
 cyber:PlatformVendorText
 cyber:PlatformProductText
 cyber:PlatformVersionText
 cyber:PlatformUpdateText
 cyber:PlatformEditionText
 cyber:PlatformLanguageText
 cyber:PlatformSoftwareEditionText
 cyber:PlatformTargetSoftwareText
 cyber:PlatformTargetHardwareName
 cyber:PlatformOtherText

cyber:EndpointType

cyber:EndpointClassificationCategoryName
 cyber:EndpointCategoryName
 cyber:EndpointOtherDescriptionText

cyber:AttackVectorType

cyber:AttackVectorCategoryCode
 cyber:AttackVectorOtherDescriptionText

Cyber Domain – Breach Impact

cyber:CyberIncidentType (STIX)

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 cyber:IncidentDiscoveryDate (STIX)
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 cyber:IncidentUpdateReasonText
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 cyber:Malware
 cyber:CompromisedCommunication
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 cyber:InformationExchangePolicy
 cyber:CyberAnalytic
 cyber:Responder (STIX)
 cyber:IncidentNotification
 cyber:CyberInsuranceClaim
 nc:Organization
 nc:ContactInformation
 ip:Sector

cyber:BreachType

cyber:BreachCategoryCode
 cyber:BreachClassificationCategoryCode
 cyber:AccessedInformationCode
 cyber:BreachObservedData
 cyber:BreachEffect
 cyber:BreachNotification
 cyber:BreachRemediationService
 cyber:BreachExposedFile

cyber:BreachEffectType

cyber:BreachEffectCode
 cyber:BreachAlteredQuantity
 cyber:BreachAlteredQuantityCategoryCode
 cyber:BreachAccessedQuantity
 cyber:BreachAccessedQuantityCategoryCode

cyber:BreachExposedFileType

cyber:ClassifiedInformationExposure
 cyber:DataClassification
 cyber:FileCategoryName
 cyber:BreachExposedFileQuantity

cyber:ClassifiedInformationExposureType

cyber:ClassifiedInformationOriginationSystemName
 cyber:ClassifiedInformationExposureSystemName
 cyber:ClassifiedInformationExposureCauseDescriptionText

cyber:DataClassificationType

cyber:DataClassificationReferenceDescriptionText
 cyber:DataClassificationAppeal

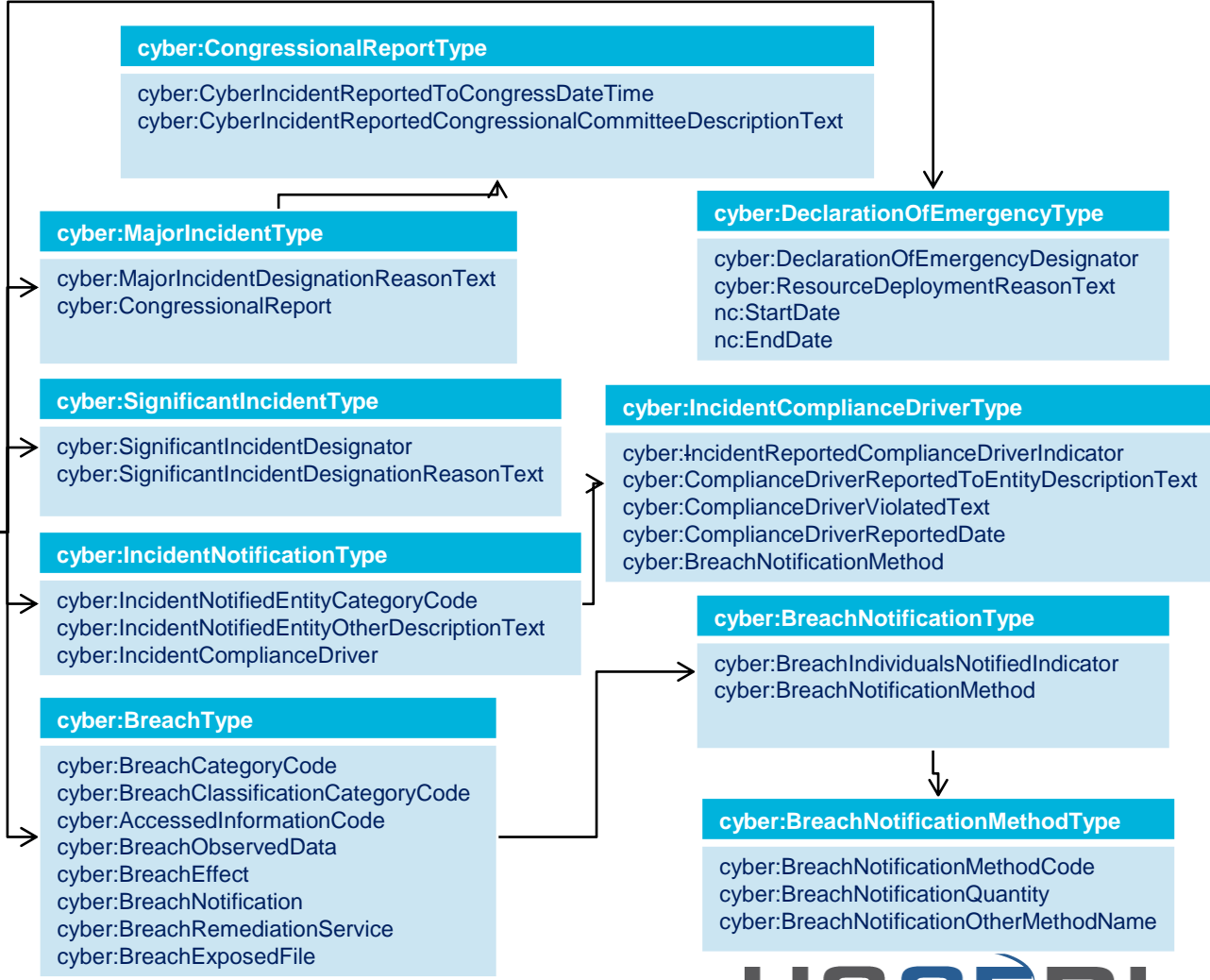
cyber:DataClassificationAppealType

cyber:DataClassificationAppealDate
 cyber:DataClassificationAppealOrganizationName
 cyber:DataClassificationAppealDecisionDescriptionText
 cyber:DataClassificationAppealDecisionDate

Cyber Domain – Notification & Reporting

cyber:CyberIncidentType (STIX)

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- cyber:MajorIncident
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- cyber:HighValueAssetIndicator
- cyber:IncidentQualifyingActivityDescriptionText
- cyber:DomainName
- cyber:ObservedData
- cyber:AttackVector
- cyber:IncidentDiscoveryMethod (STIX)
- cyber:IncidentOccurredDescriptionText
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- cyber:UnattributedCyberIntrusion
- cyber:InformationExchangePolicy
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- cyber:Responder (STIX)
- cyber:IncidentNotification
- cyber:CyberInsuranceClaim
- nc:Organization
- nc:ContactInformation
- ip:Sector



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Cyber Domain – Observed Data

cyber:CyberIncidentType (STIX)

cyber:IncidentOpenedDate (STIX)
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 cyber:SecurityEventIndicator
 cyber:MajorIncident
 cyber:SignificantIncident
 cyber:IncidentDowngradedReasonText
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 cyber:IncidentNotification
 cyber:CyberInsuranceClaim
 nc:Organization
 nc:ContactInformation
 ip:Sector

cyber:ObservedDataType (STIX)

cyber:CyberObservableObject
 cyber:FirstObservedDate (nc:DateTime) (STIX)
 cyber>LastObservedDate (nc:DateTime) (STIX)
 cyber:ObservedQuantity (STIX)

cyber:BreachType

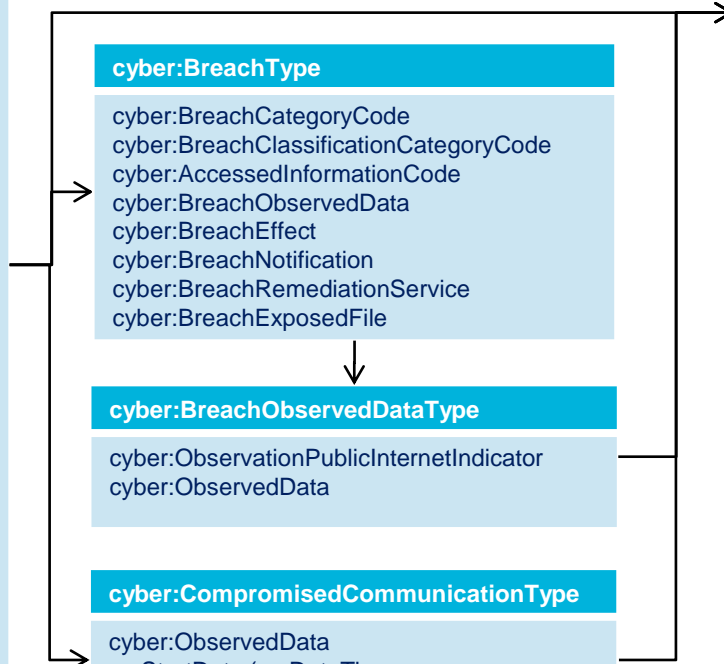
cyber:BreachCategoryCode
 cyber:BreachClassificationCategoryCode
 cyber:AccessedInformationCode
 cyber:BreachObservedData
 cyber:BreachEffect
 cyber:BreachNotification
 cyber:BreachRemediationService
 cyber:BreachExposedFile

cyber:BreachObservedDataType

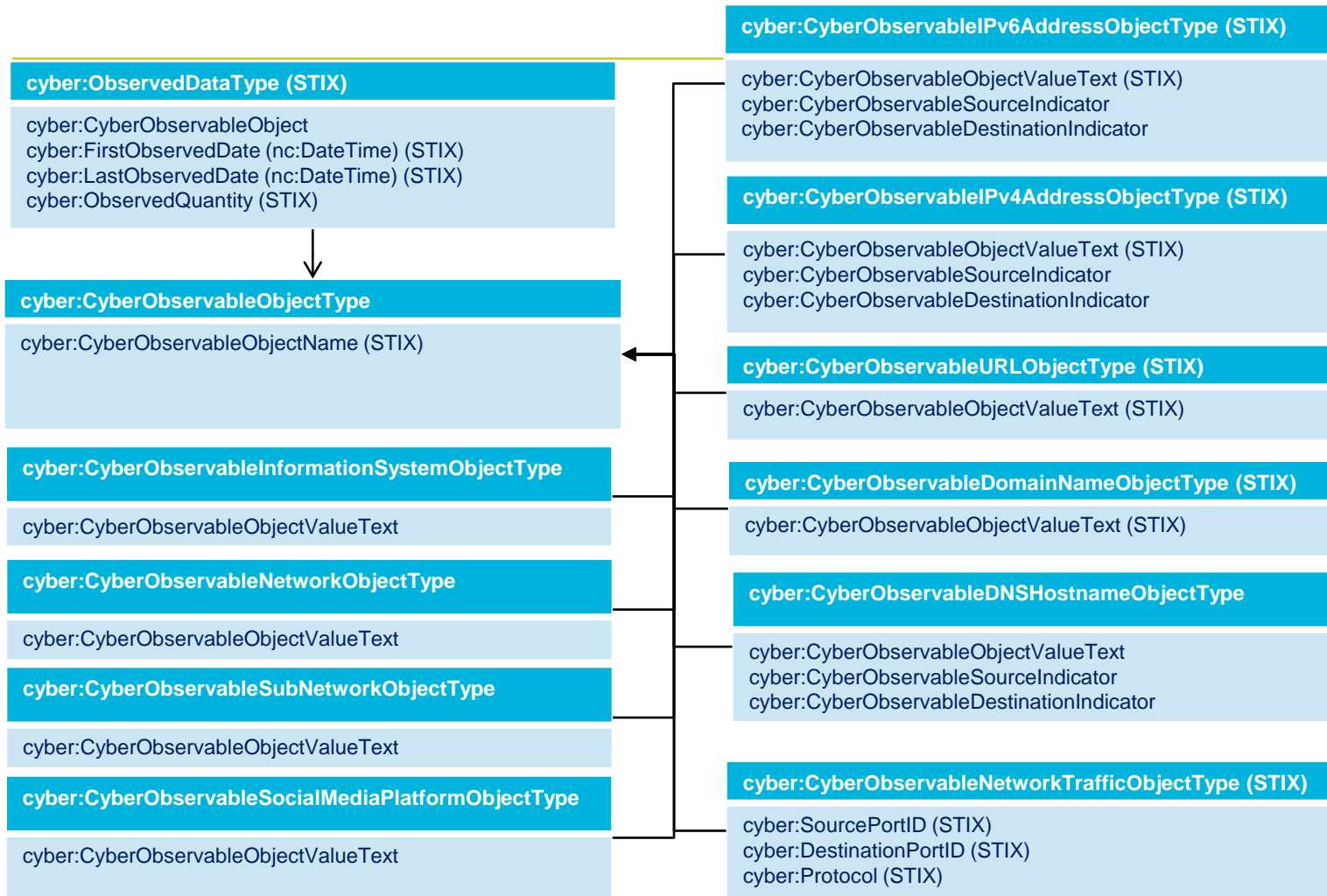
cyber:ObservationPublicInternetIndicator
 cyber:ObservedData

cyber:CompromisedCommunicationType

cyber:ObservedData
 nc:StartDate (nc:DateTime)
 nc:EndDate (nc:DateTime)
 nc:ActivityDescriptionText



Cyber Domain – Cyber Observable Objects



Cyber Domain – Response & Remediation

cyber:CyberIncidentType (STIX)

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 nc:ContactInformation
 ip:Sector
 nc:CaseTrackingID

cyber:CourseOfActionType (STIX)

cyber:CourseOfActionName
 cyber:CourseOfActionDescriptionText (STIX)

cyber:BreachType

cyber:BreachCategoryCode
 cyber:BreachClassificationCategoryCode
 cyber:AccessedInformationCode
 cyber:BreachObservedData
 cyber:BreachEffect
 cyber:BreachNotification
 cyber:BreachRemediationService
 cyber:BreachExposedFile

cyber:IncidentStrategyType

cyber:IncidentStrategyDescriptionText
 cyber:IncidentStrategySuccessIndicator
 cyber:IncidentStrategyRevisedDescriptionText
 cyber:IncidentStrategyRevisedReasonDescriptionText

cyber:BreachRemediationServiceType

cyber:BreachRemediationServiceCategoryCode
 cyber:BreachRemediationServiceQuantity

cyber:CyberInsuranceClaimType

cyber:InsuranceClaimFiledIndicator
 cyber:InsuranceResponseIndicator
 cyber:InsuranceClaimResponseCategoryCode
 cyber:InsuranceResponseShareIndicator
 cyber:InsuranceResponseSharingDescriptionText

cyber:IncidentResponseType

cyber:IncidentRecoverabilityEstimateDescriptionText
 cyber:IncidentRecoverabilityEstimatedDate
 cyber:IncidentAssistance
 cyber:IncidentContainmentStrategy
 cyber:IncidentEradicationStrategy
 cyber:IncidentRecoveryStrategy
 cyber:IncidentResponseLessonLearned

cyber:IncidentAssistanceType

cyber:IncidentAssistanceRequiredCategoryCode
 cyber:IncidentLogAvailableIndicator
 cyber:IncidentLogDescriptionText
 cyber:IncidentLogShareIndicator
 cyber:IncidentAnalysisResultsShareIndicator
 cyber:NetworkMapAvailableIndicator

cyber:ResponderType (extends nc:EntityType)

cyber:ResponderOnsiteQuantity
 cyber:ResponderOnsiteTimeDuration
 cyber:ResponderOnsiteStartDateTime
 cyber:ResponderOnsiteEndDateTime

nc:EntityType

nc:EntityName

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Cyber Domain – Analysis & Strategy Revision

cyber:CyberIncidentType (STIX)

cyber:IncidentOpenedDate (STIX)
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 nc:ContactInformation
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cyber:InformationExchangePolicyType

cyber:ExchangePolicyInformationEncryptionCode
 cyber:ExchangePolicyNotificationCode
 cyber:ExchangePolicyInformationResaleCode
 cyber:ExchangePolicyInformationProviderAttributionCode
 cyber:ExchangePolicyPermittedActionCategoryCode
 cyber:TrafficLightProtocolCode

cyber:IncidentResponseType

cyber:IncidentRecoverabilityEstimateDescriptionText
 cyber:IncidentRecoverabilityEstimatedDate
 cyber:IncidentAssistance
 cyber:IncidentContainmentStrategy
 cyber:IncidentEradicationStrategy
 cyber:IncidentRecoveryStrategy
 cyber:IncidentResponseLessonLearned

cyber:CyberAnalyticType (STIX)

cyber:CyberAnalyticDescriptionText (STIX)
 cyber:Platform
 cyber:AttackPattern
 cyber:CyberAnalyticProgrammingStatement

cyber:AttackPatternType (STIX)

cyber:AttackPatternName (STIX)
 cyber:AttackPatternDescriptionText (STIX)
 cyber:KillChainPhase (STIX)

cyber:CyberAnalyticProgrammingStatementType

cyber:CyberAnalyticProgrammingStatementText (STIX)

cyber:IncidentStrategyType

cyber:IncidentStrategyDescriptionText
 cyber:IncidentStrategySuccessIndicator
 cyber:IncidentStrategyRevisedDescriptionText
 cyber:IncidentStrategyRevisedReasonDescriptionText

cyber:IncidentResponseLessonLearnedType

cyber:IncidentResponseLessonLearnedCategoryCode
 cyber:IncidentResponseLessonLearnedDescriptionText

cyber:PlatformType

cyber:PlatformName (STIX)
 cyber:PlatformCategoryDescriptionText
 cyber:PlatformOwnerName
 cyber:PlatformLocation
 cyber:PlatformPartText
 cyber:PlatformVendorText
 cyber:PlatformProductText
 cyber:PlatformVersionText
 cyber:PlatformUpdateText
 cyber:PlatformEditionText
 cyber:PlatformLanguageText
 cyber:PlatformSoftwareEditionText
 cyber:PlatformTargetSoftwareText
 cyber:PlatformTargetHardwareName
 cyber:PlatformOtherText

Cyber Domain – Involved Entities

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cyber:IncidentOpenedDate (STIX)
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 cyber:InformationExchangePolicy
 cyber:CyberAnalytic
 cyber:Responder (STIX)
 cyber:IncidentNotification
 cyber:CyberInsuranceClaim
 nc:Organization
 nc>ContactInformation
 nc:Person
 nc:UserType

nc:OrganizationType

nc:OrganizationIdentification
 nc:OrganizationName
 nc:OrganizationCategoryText
 nc:OrganizationSubUnitName
 cyber:OrganizationAugmentation

nc:ContactInformationType

nc:ContactTelephoneNumber
 nc:ContactEmailID
 nc:ContactEntity (extends nc:Entity)
 cyber:ContactInformationAugmentation

cyber:ContactInformationAugmentationType

cyber:ClassifiedContactTelephoneNumber
 cyber:ClassifiedContactEmailID
 cyber:ContactInformationReportingConsentIndicator

cyber:UserType

nc:RoleOfPerson (extends nc:Person)
 cyber:UserCategorycode

nc:PersonType

nc:PersonGivenName
 nc:PersonMiddleName
 nc:PersonSurName
 nc:PersonNameSuffixText

nc:OrganizationIdentificationType

nc:IdentificationID

cyber:OrganizationAugmentationType

cyber:OrganizationCategoryCode
 cyber:ReportingOrganizationIdentification (extends nc:OrganizationIdentification)
 nc:Facility

nc:FacilityType

nc:FacilityIdentification (extends nc:OrganizationIdentification)
 nc:FacilityCategoryText

nc:EntityType

nc:EntityOrganization (extends nc:Organization)
 nc:EntityPerson (extends nc:Person)