STIX^{TM} Version 1.2.1. Part 11: Report

Committee Specification 01

05 May 2016

Specification URIs

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Additional artifacts:

This prose specification is one component of a Work Product that also includes:

- *STIX Version 1.2.1. Part 1: Overview*. http://docs.oasis-open.org/cti/stix/v1.2.1/cs01/part1-overview/stix-v1.2.1-cs01-part1-overview.html
- *STIX Version 1.2.1. Part 2: Common*. http://docs.oasis-open.org/cti/stix/v1.2.1/cs01/part2-common/stix-v1.2.1-cs01-part2-common.html
- *STIX Version 1.2.1. Part 3: Core*. http://docs.oasis-open.org/cti/stix/v1.2.1/cs01/part3-core/stix-v1.2.1-cs01-part3-core.html
- *STIX Version 1.2.1. Part 4: Indicator*. http://docs.oasis-open.org/cti/stix/v1.2.1/cs01/part4-indicator/stix-v1.2.1-cs01-part4-indicator.html
- *STIX Version 1.2.1. Part 5: TTP*. http://docs.oasis-open.org/cti/stix/v1.2.1/cs01/part5-ttp/stix-v1.2.1-cs01-part5-ttp.html
- *STIX Version 1.2.1. Part 6: Incident*. http://docs.oasis-open.org/cti/stix/v1.2.1/cs01/part6-incident/stix-v1.2.1-cs01-part6-incident.html

- *STIX Version 1.2.1. Part 7: Threat Actor*. http://docs.oasis-open.org/cti/stix/v1.2.1/cs01/part7-threat-actor/stix-v1.2.1-cs01-part7-threat-actor.html
- *STIX Version 1.2.1. Part 8: Campaign*. http://docs.oasis-open.org/cti/stix/v1.2.1/cs01/part8-campaign/stix-v1.2.1-cs01-part8-campaign.html
- *STIX Version 1.2.1. Part 9: Course of Action*. http://docs.oasis-open.org/cti/stix/v1.2.1/cs01/part9-coa/stix-v1.2.1-cs01-part9-coa.html
- *STIX Version 1.2.1. Part 10: Exploit Target*. http://docs.oasis-open.org/cti/stix/v1.2.1/cs01/part10-exploit-target/stix-v1.2.1-cs01-part10-exploit-target.html
- *STIX Version 1.2.1. Part 11: Report* (this document). http://docs.oasis-open.org/cti/stix/v1.2.1/cs01/part11-report/stix-v1.2.1-cs01-part11-report.html
- *STIX Version 1.2.1. Part 12: Default Extensions*. http://docs.oasis-open.org/cti/stix/v1.2.1/cs01/part12-extensions/stix-v1.2.1-cs01-part12-extensions.html
- *STIX Version 1.2.1. Part 13: Data Marking*. http://docs.oasis-open.org/cti/stix/v1.2.1/cs01/part13-data-marking/stix-v1.2.1-cs01-part13-data-marking.html
- *STIX Version 1.2.1. Part 14: Vocabularies*. http://docs.oasis-open.org/cti/stix/v1.2.1/cs01/part14-vocabularies/stix-v1.2.1-cs01-part14-vocabularies.html
- *STIX Version 1.2.1. Part 15: UML Model*. http://docs.oasis-open.org/cti/stix/v1.2.1/cs01/part15-uml-model/stix-v1.2.1-cs01-part15-uml-model.html
- UML Model Serialization: http://docs.oasis-open.org/cti/stix/v1.2.1/cs01/uml-model/

Related work:

This specification replaces or supersedes:

- *STIX^{TM} 1.2 Report Specification (v1.0)* https://github.com/STIXProject/specifications/blob/version1.2/documents/pdf%20versions/STIX_Report_Draft.pdf

This specification is related to:

- *CybOX^{TM} Version 2.1.1*. Work in progress. https://www.oasis-open.org/committees/tc_home.php?wg_abbrev=cti-cybox
- *CybOX^{TM} 2.1*. https://cyboxproject.github.io/

Abstract:

The Structured Threat Information Expression (STIX) framework defines nine core constructs and the relationships between them for the purposes of modeling cyber threat information and enabling cyber threat information analysis and sharing. This specification document defines the Report construct, which gives context to a grouping of content specified using any of the nine core constructs, including related Reports.

Status:

This document was last revised or approved by the OASIS Cyber Threat Intelligence (CTI) TC on the above date. The level of approval is also listed above. Check the "Latest version" location noted above for possible later revisions of this document. Any other numbered Versions and other technical work produced by the Technical Committee (TC) are listed at https://www.oasis-open.org/committees/tc_home.php?wg_abbrev=cti#technical.

TC members should send comments on this specification to the TC's email list. Others should send comments to the TC's public comment list, after subscribing to it by following the instructions at the "Send A Comment" button on the TC's web page at https://www.oasis-open.org/committees/cti/.

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Table of Contents

1 Introduction

[All text is normative unless otherwise labeled]

The Structured Threat Information Expression (STIX[TM]) framework defines nine top-level component data models: Observable[1], Indicator, Incident, TTP, ExploitTarget, CourseOfAction, Campaign, ThreatActor, and Report. This document serves as the specification for the STIX Report data model.

As defined within the STIX language, the Report construct defines a contextual wrapper for a grouping of STIX content, which could include content specified using any of the other eight top-level constructs, or even other related Reports.

In Section **1.1** we discuss additional specification documents, in Section **1.2** we provide document conventions, and in Section **1.3** we provide terminology. References are given in Section **1.4**. In Section **2**, we give background information to help the reader better understand the specification details that are provided later in the document. We present the Report data model specification details in Section **3** and conformance information in Section **4**.

1.1 STIX[TM] Specification Documents

The STIX specification consists of a formal UML model and a set of textual specification documents that explain the UML model. Specification documents have been written for each of the key data models that compose the full STIX UML model.

The *STIX Version 1.2.1 Part 1: Overview* document provides a comprehensive overview of the full set of STIX data models, which in addition to the nine top-level component data models mentioned in the Introduction, includes a core data model, a common data model, a cross-cutting data marking data model, various extension data models, and a set of default controlled vocabularies. *STIX Version 1.2.1 Part 1: Overview* also summarizes the relationship of STIX to other languages and outlines general STIX data model conventions.

Figure 1-1 illustrates the set of specification documents that are available. The color black is used to indicate the specification overview document, altered shading differentiates the overarching Core and Common data models from the supporting data models (vocabularies, data marking, and default extensions), and the color white indicates the component data models. The solid grey color denotes the overall STIX Language UML model. This Report specification document is highlighted in its associated color (see Section **1.2.3.3**). For a list of all STIX documents and related information sources, please see *STIX Version 1.2.1 Part 1: Overview*.

Figure 1-1. STIX[TM] Language v1.2.1 specification documents

1.2 Document Conventions

The following conventions are used in this document.

1.2.1 Fonts

The following font and font style conventions are used in the document:

- Capitalization is used for STIX high level concepts, which are defined in *STIX Version 1.2.1 Part 1: Overview*.

  <u>Examples</u>: Indicator, Course of Action, Threat Actor

- The `Courier New` font is used for writing UML objects.

  <u>Examples</u>: `RelatedIndicatorsType`, `stixCommon:StatementType`

  Note that all high level concepts have a corresponding UML object. For example, the Course of Action high level concept is associated with a UML class named, `CourseOfActionType`.

- The '*italic'* font (with single quotes) is used for noting actual, explicit values for STIX Language properties. The *italic* font (without quotes) is used for noting example values.

  <u>Example</u>: *'PackageIntentVocab-1.0,' high, medium, low*

1.2.2 UML Package References

Each STIX data model is captured in a different UML package (e.g., Core package, Campaign package, etc.) where the packages together compose the full STIX UML model. To refer to a particular class of a specific package, we use the format `package_prefix:class`, where `package_prefix` corresponds to the appropriate UML package. *STIX Version 1.2.1 Part 1: Overview* contains a list of the packages used by the Report data model, along with the associated prefix notations, descriptions, examples.

Note that in this specification document, we do not explicitly specify the package prefix for any classes that originate from the Report data model.

1.2.3 UML Diagrams

This specification makes use of UML diagrams to visually depict relationships between STIX Language constructs. Note that the diagrams have been extracted directly from the full UML model for STIX; they have not been constructed purely for inclusion in the specification documents. Typically, diagrams are included for the primary class of a data model, and for any other class where the visualization of its relationships between other classes would be useful. This implies that there will be very few diagrams for classes whose only properties are either a data type or a class from the STIX Common data model. Other diagrams that are included correspond to classes that specialize a superclass and abstract or generalized classes that are extended by one or more subclasses.

In UML diagrams, classes are often presented with their attributes elided, to avoid clutter. The fully described class can usually be found in a related diagram. A class presented with an empty section at the bottom of the icon indicates that there are no attributes other than those that are visualized using associations.
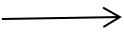
1.2.3.1 Class Properties

Generally, a class property can be shown in a UML diagram as either an attribute or an association (i.e., the distinction between attributes and associations is somewhat subjective). In order to make the size of

UML diagrams in the specifications manageable, we have chosen to capture most properties as attributes and to capture only higher level properties as associations, especially in the main top-level component diagrams. In particular, we will always capture properties of UML data types as attributes. For example, properties of a class that are identifiers, titles, and timestamps will be represented as attributes.

1.2.3.2 Diagram Icons and Arrow Types

Diagram icons are used in a UML diagram to indicate whether a shape is a class, enumeration or data type, and decorative icons are used to indicate whether an element is an attribute of a class or an enumeration literal. In addition, two different arrow styles indicate either a directed association relationship (regular arrowhead) or a generalization relationship (triangle-shaped arrowhead). The icons and arrow styles we use are shown and described in **Table 1-1**.

Table 1-1. UML diagram icons

Icon	Description
	This diagram icon indicates a class. If the name is in italics, it is an abstract class.
	This diagram icon indicates an enumeration.
	This diagram icon indicates a data type.
	This decorator icon indicates an attribute of a class. The green circle means its visibility is public. If the circle is red or yellow, it means its visibility is private or protected.
	This decorator icon indicates an enumeration literal.
	This arrow type indicates a directed association relationship.
	This arrow type indicates a generalization relationship.

1.2.3.3 Color Coding

The shapes of the UML diagrams are color coded to indicate the data model associated with a class. The colors used in the Report specification are illustrated via exemplars in **Figure 1-2**.

Figure 1-2. Data model color coding

1.2.4 Property Table Notation

Throughout Section **3**, tables are used to describe the properties of each data model class. Each property table consists of a column of names to identify the property, a type column to reflect the datatype of the

property, a multiplicity column to reflect the allowed number of occurrences of the property, and a description column that describes the property. Package prefixes are provided for classes outside of the Report data model (see Section **1.2.2**).

Note that if a class is a specialization of a superclass, only the properties that constitute the specialization are shown in the property table (i.e., properties of the superclass will not be shown). However, details of the superclass may be shown in the UML diagram.

In addition, properties that are part of a "choice" relationship (e.g., Prop1 OR Prop2 is used but not both) will be denoted by a unique letter subscript (e.g., API_Call$_A$, Code$_B$) and single logic expression in the Multiplicity column. For example, if there is a choice of property `API_Call`$_A$ and `Code`$_B$, the expression "A(1)|B(0..1)" will indicate that the `API_Call` property can be chosen with multiplicity 1 or the `Code` property can be chosen with multiplicity 0 or 1.

1.2.5 Property and Class Descriptions

Each class and property defined in STIX is described using the format, "The X property <u>verb</u> Y." For example, in the specification for the STIX Indicator, we write, "The `id` property <u>specifies</u> a globally unique identifier for the kill chain instance." In fact, the verb "specifies" could have been replaced by any number of alternatives: "defines," "describes," "contains," "references," etc.

However, we thought that using a wide variety of verb phrases might confuse a reader of a specification document because the meaning of each verb could be interpreted slightly differently. One the other hand, we didn't want to use a single, generic verb, such as "describes," because although the different verb choices may or may not be meaningful from an implementation standpoint, a distinction could be useful to those interested in the modeling aspect of STIX.

Consequently, we have chosen to use the three verbs, defined as follows, in class and property descriptions:

Verb	STIX Definition
<u>captures</u>	Used to record and preserve information without implying anything about the structure of a class or property. Often used for properties that encompass general content. This is the least precise of the three verbs.
	Examples: The `Source` property characterizes the source of the sighting information. Examples of details <u>captured</u> include identitifying characteristics, time-related attributes, and a list of the tools used to collect the information. The `Description` property <u>captures</u> a textual description of the Indicator.
<u>characterizes</u>	Describes the distinctive nature or features of a class or property. Often used to describe classes and properties that themselves comprise one or more other properties.
	Examples: The `Confidence` property <u>characterizes</u> the level of confidence in the accuracy of the overall content captured in the Incident. The `ActivityType` class <u>characterizes</u> basic information about an activity a defender might use in response to a Campaign.
<u>specifies</u>	Used to clearly and precisely identify particular instances or values associated with a property. Often used for properties that are defined by a controlled vocabulary or enumeration; typically used for properties that take on only a single

	value.
	Example: The `version` property <u>specifies</u> the version identifier of the STIX Campaign data model used to capture the information associated with the Campaign.

1.3 Terminology

The key words "MUST", "MUST NOT", "REQUIRED", "SHALL", "SHALL NOT", "SHOULD", "SHOULD NOT", "RECOMMENDED", "MAY", and "OPTIONAL" in this document are to be interpreted as described in **[RFC2119]**.

1.4 Normative References

[RFC2119]   Bradner, S., "Key words for use in RFCs to Indicate Requirement Levels", BCP 14, RFC 2119, March 1997. http://www.ietf.org/rfc/rfc2119.txt.

2 Background

In this section, we provide high level information about the Report data model that is useful to fully understand the specification details given in Section **3**.

As illustrated in **Figure 2-1**, the STIX Report data model leverages all eight of the other top-level component data models and acts as a contextual wrapper for a grouping of the associated constructs (which can include related Report constructs). As stated in Section **1.1**, each of these top-level components is defined in a separate specification document.

Figure 2-1. A Report

An aggregation of content using a Report instance is an assertion that the content is somehow contextually related. The nature of the shared context can be characterized using the `Title`, `Intent`, `Description`, and `Short_Description` properties of the `HeaderType` class (see Section **3.2**).

2.1 Component Data Models

Individual component data models define objects specific to each of the other top-level STIX component construct: Observable; Indicator; Incident; Tactics, Techniques, and Procedures (TTPs); Exploit Target; Course of Action (COA); Campaign; and Threat Actor. These data models each provide the capability to fully express information about their targeted conceptual area. In the STIX framework, they are all optional and may be used separately or in concert, as appropriate, using whichever components and architectural relationships that are relevant for a given use case.

In the subsections below, a brief description is given for each component data model as well as a reference to the data model's individual specification document.

2.1.1 Observable

A STIX Observable (as defined with the CybOX Language) represents stateful properties or measurable events pertinent to the operation of computers and networks. Implicit in this is a practical need for descriptive capability of two forms of observables: "observable instances" and "observable patterns." Observable instances represent actual specific observations that took place in the cyber domain. The property details of this observation are specific and unambiguous. Observable patterns represent conditions for a potential observation that may occur in the future or may have already occurred and exists in a body of observable instances. These conditions may be anything from very specific concrete

patterns that would match very specific observable instances to more abstract generalized patterns that have the potential to match against a broad range of potential observable instances.

2.1.2 Indicator

A STIX Indicator conveys specific Observable patterns combined with contextual information intended to represent artifacts and/or behaviors of interest within a cyber security context. Please see *STIX Version 1.2.1 Part 4: Indicator* for details.

2.1.3 Incident

A STIX Incident corresponds to sets of related security events affecting an organization, along with information discovered or decided during an incident response investigation. Please see *STIX Version 1.2.1 Part 6: Incident* for details.

2.1.4 Tactics, Techniques and Procedures (TTP)

A STIX Tactics, Techniques, and Procedures (TTP) is used to represent the behavior or modus operandi of cyber adversaries. Please see *STIX Version 1.2.1 Part 5: TTP* for details.

2.1.5 Campaign

A STIX Campaign represents a set of TTPs, Incidents, or Threat Actors that together express a common intent or desired effect. Please see *STIX Version 1.2.1 Part 8: Campaign* for details.

2.1.6 Threat Actor

A STIX Threat Actor is a characterization of a malicious actor (or adversary) representing a cyber attack threat including presumed intent and historically observed behavior. Please see *STIX Version 1.2.1 Part 7: Threat Actor* for details.

2.1.7 Exploit Target

A STIX Exploit Target conveys information about a vulnerability, weakness, or misconfiguration in software, systems, networks, or configurations that may be targeted for exploitation by an adversary. Please see *STIX Version 1.2.1 Part 10: Exploit Target* for details.

2.1.8 Course of Action (COA)

A STIX Course of Action (COA) is used to convey information about courses of action that may be taken either in response to an attack or as a preventative measure prior to an attack. Please see *STIX Version 1.2.1 Part 9: Course of Action* for details.

3 STIX^{TM} Report Data Model

The primary class of the STIX Report package is the `ReportType` class, which defines a contextual wrapper for a grouping of STIX content. Similar to the primary classes of all of the component data models in STIX, the `ReportType` class extends a base class defined in the STIX Common data model; more specifically, it extends the `ReportBaseType` base class, which provides the essential identifier (`id`) and identifier reference (`idref`) properties.

The relationship between the `ReportType` class and the `ReportBaseType` base class, as well as the properties of the `ReportType` class, are illustrated in the UML diagram given in **Figure 3-1** on page **15**.

The property table, which includes property descriptions and corresponds to the UML diagram given in **Figure 3-1**, is provided in **Table 3-1**.

All classes defined in the Report data model are described in detail in Sections **3.2** and **3.3**. Details are not provided for classes defined in non-Report data models; instead, the reader is refered to the corresponding data model specification as indicated by the package prefix specified in the Type column of the table.
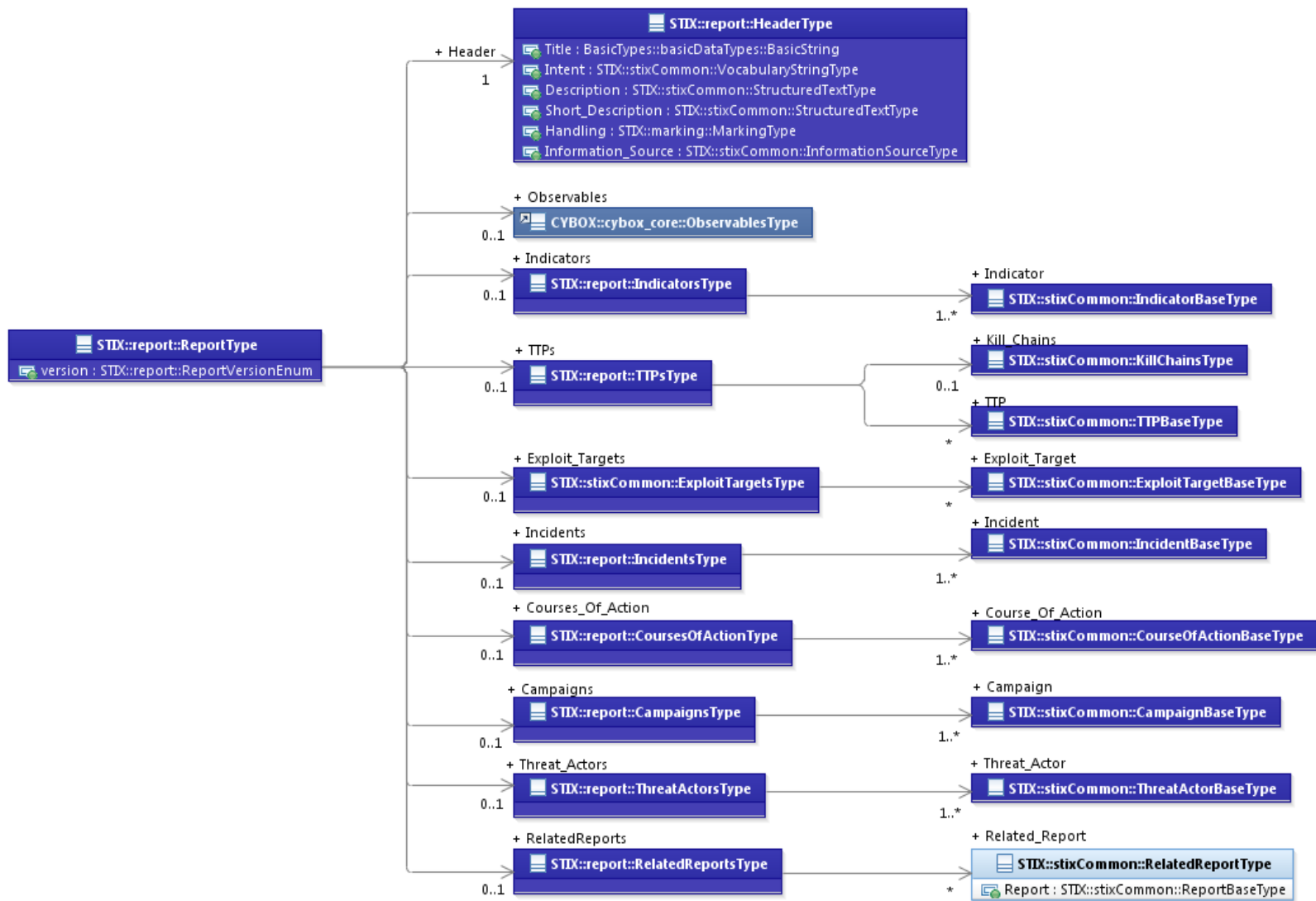
Figure 3-1. UML diagram of the `ReportType` *class*

Table 3-1. Properties of the `ReportType` *class*

Name	Type	Multiplicity	Description
version	`ReportVersionEnum`	0..1	The `version` property specifies the version number of the STIX Report data model for STIX v1.2.1 used to capture the information associated with the Report.
Header	`HeaderType`	0..1	The `Header` property characterizes the contextual information for this grouping of STIX content.
Observables	`cybox:ObservablesType`	0..1	The `Observables` property specifies a set of one or more cyber observables.
Indicators	`IndicatorsType`	0..1	The `Indicators` property specifies a set of one or more cyber threat Indicators.
TTPs	`TTPsType`	0..1	The `TTPs` property specifies a set of one or more cyber threat adversary Tactics, Techniques or Procedures.
Exploit_Targets	`stixCommon:ExploitTargetsType`	0..1	The `Exploit_Targets` property specifies a set of one or more potential targets for exploitation.
Incidents	`IncidentsType`	0..1	The `Incidents` property specifies a set of one or more cyber threat Incidents.
Courses_Of_Action	`CoursesOfActionType`	0..1	The `Courses_Of_Action` property specifies a set of one or more Courses of Action to be taken in regards to one of more cyber threats.
Campaigns	`CampaignsType`	0..1	The `Campaigns` property specifies a set of one or more cyber threat Campaigns.
Threat_Actors	`ThreatActorsType`	0..1	The `Threat_Actors` property specifies a set of one or more cyber Threat Actors.
Related_Reports	`RelatedReportsType`	0..1	The `Related_Reports` property specifies a set of one or more other Reports related to this Report.

3.1 ReportVersionEnum Enumeration

The `ReportVersionEnum` enumeration is an inventory of all versions of the Report data model for STIX version 1.2.1. The enumeration literals are given in **Table 3-2**.

Table 3-2. Literals of the `ReportVersionEnum` enumeration

Enumeration Literal	Description
stix-1.2.1	Report data model for STIX v1.2.1

3.2 HeaderType Class

The `HeaderType` class provides a structure for characterizing the contextual information of a Report.

The property table of the `HeaderType` class is given in **Table 3-3**.

Table 3-3. Properties of the `HeaderType` class

Name	Type	Multiplicity	Description
Title	`basicDataTypes:BasicString`	0..1	The `Title` property captures a title for the Report and reflects what the content producer thinks the Report as a whole should be called. The `Title` property is typically used by humans to reference a particular Report; however, it is not suggested for correlation.
Intent	`stixCommon: VocabularyStringType`	0..*	The `Intent` property specifies the intended purpose(s) or use(s) for the Report. Examples of potential purposes are *collective threat intelligence*, *campaign characterization* and *malware samples* (these specific values are only provided to help explain the property: they are neither recommended types nor necessarily part of any existing vocabulary). The content creator may choose any arbitrary value or may constrain the set of possible values by referencing an externally-defined vocabulary or leveraging a formally defined vocabulary extending from the `stixCommon:ControlledVocabularyStringType` class.

			The STIX default vocabulary class for use in this property is *'ReportIntentVocab-1.0'*.
Description	`stixCommon: StructuredTextType`	0..*	The `Description` property captures a textual description of the Report. Any length is permitted. Optional formatting is supported via the `structuring_format` property of the `StructuredTextType` class.
Short_Description	`stixCommon: StructuredTextType`	0..*	The `Short_Description` property captures a short textual description of the Report. This property is secondary and should only be used if the `Description` property is already populated and another, shorter description is available.
Handling	`marking:MarkingType`	0..1	The `Handling` property specifies the appropriate data handling markings for the properties of this Report. The marking scope is limited to the Report and the content it contains. Note that data handling markings can also be specified at a higher level.
Information_Source	`stixCommon: InformationSourceType`	0..1	The `Information_Source` property characterizes the source of the Report and all of its contained information unless that information specifies a different source. Examples of details captured include identitifying characteristics, time-related attributes, and a list of the tools used to collect the information.

3.3 Content Aggregation Types

Each component type has an associated aggregation class that has one main property – a set of instances of that component type whether directly specified or included via reference. The aggregation class for Observables, `cybox_core:ObservablesType`, is defined in the CybOX specification documents.

3.3.1 IndicatorsType Class

The `IndicatorsType` class specifies a set of one or more cyber threat Indicators.

The properties of the `IndicatorsType` class are given in **Table 3-4**.

Table 3-4. Properties of the `IndicatorsType` class

Name	Type	Multiplicity	Description
Indicator	`stixCommon:IndicatorBaseType`	1..*	The `Indicator` property characterizes a cyber threat Indicator. The `stixCommon:IndicatorBaseType` class is a minimal base class that is intended to be extended. The default and strongly recommended class to fully implement an Indicator is the `indicator:IndicatorType` class defined in *STIX Version 1.2.1 Part 4: Indicator*. Base classes are used to minimize interdependence between STIX components, not to enable or encourage conflicting syntactic variation. However, through the use of the `idref` property, a reference to an Indicator defined elsewhere can be specified via the direct use of the `stixCommon:IndicatorBaseType` class.

3.3.2 TTPsType Class

The `TTPsType` class specifies a set of zero or more cyber threat TTPs.

The property table of the `TTPsType` class is given in **Table 3-5**.

Table 3-5. Properties of the `TTPsType` class

Name	Type	Multiplicity	Description
TTP	`stixCommon:TTPBaseType`	0..*	The TTP property characterizes a cyber threat adversary Tactic, Technique or Procedure (TTP). The `stixCommon:TTPBaseType` class is a minimal base class that is intended to be extended. The default and strongly recommended class to fully implement a TTP is the `ttp:TTPType` class defined in *STIX Version 1.2.1 Part 5: TTP*. Base classes are used to minimize interdependence between STIX components, not to enable or encourage conflicting syntactic variation. However, through the use of the `idref` property, a reference to a TTP defined elsewhere can be specified via the direct use of the `stixCommon:TTPBaseType` class.

3.3.3 IncidentsType Class

The `IncidentsType` class specifies a set of one or more cyber threat Incidents.

The properties of the `IncidentsType` class are given in **Table 3-6**.

Table 3-6. Properties of the `IncidentsType` class

Name	Type	Multiplicity	Description
Incident	`stixCommon:IncidentBaseType`	1..*	The `Incident` property characterizes a cyber threat Incident. The `stixCommon:IncidentBaseType` class is a minimal base class that is intended to be extended. The default and strongly recommended class to fully implement an Incident is the `incident:IncidentType` class defined in *STIX Version 1.2.1 Part 6: Incident*. Base classes are used to minimize interdependence between STIX components, not to enable or encourage conflicting syntactic variation. However, through the use of the `idref` property, a reference to an Incident defined elsewhere can be specified via the direct use of the `stixCommon:IncidentBaseType` class.

3.3.4 CoursesOfActionType Class

The `CoursesOfActionType` class specifies a set of one or more actions that could be taken in regard to cyber threats.

The properties of the `CoursesOfActionType` class are given in **Table 3-7**.

Table 3-7. Properties of the `CoursesOfActionType` class

Name	Type	Multiplicity	Description
Course_Of_Action	stixCommon: CourseOfActionBaseType	1..*	The `Course_Of_Action` property characterizes a Course of Action that could be taken in regard to one of more cyber threats. The `stixCommon:CourseOfActionBaseType` class is a minimal base class that is intended to be extended. The default and strongly RECOMMENDED class to fully implement a Course of Action is the `coa:CourseOfActionType` class defined in *STIX Version 1.2.1 Part 9: Course of Action*. Base classes are used to minimize interdependence between STIX components, not to enable or encourage conflicting syntactic variation. However, through the use of the `idref` property, a reference to a Course of Action defined elsewhere can be specified via the direct use of the `stixCommon:CourseOfActionBaseType` class.

3.3.5 CampaignsType Class

The `CampaignsType` class specifies a set of one or more cyber threat Campaigns.

The properties of the `CampaignsType` class are given in **Table 3-8**.

Table 3-8. Properties of the `CampaignsType` class

Name	Type	Multiplicity	Description
Campaign	stixCommon:CampaignBaseType	1..*	The `Campaign` property characterizes a cyber threat Campaign. The `stixCommon:CampaignBaseType` class is a minimal base class that is intended to be extended. The default and strongly recommended class to fully implement a Campaign is the `campaign:CampaignType` class defined in *STIX Version 1.2.1 Part 8: Campaign*. Base classes are used to minimize interdependence between STIX components, not to enable or encourage conflicting syntactic variation. However, through the use of the `idref` property, a reference to a Campaign defined elsewhere can be specified via the direct use of the `stixCommon:CampaignBaseType` class.

3.3.6 ThreatActorsType Class

The `ThreatActorsType` class specifies a set of one or more cyber Threat Actors.

The property table of the `ThreatActorsType` class is given in **Table 3-9**.

Table 3-9. Properties of the `ThreatActorsType` class

Name	Type	Multiplicity	Description
Threat_Actor	stixCommon:ThreatActorBaseType	1..*	The `ThreatActor` property characterizes a cyber Threat Actor. The `stixCommon:ThreatActorBaseType` class is a minimal base class that is intended to be extended. The default and strongly recommended class to fully implement an ThreatActor is the `ta:ThreatActorType` class defined in *STIX Version 1.2.1 Part 7: Threat Actor*. Base classes are used to minimize interdependence between STIX components, not to enable or encourage conflicting syntactic variation. However, through the use of the `idref` property, a reference to a Threat Actor defined elsewhere can be specified via the direct use of the `stixCommon:ThreatActorBaseType` class.

3.3.7 RelatedReportsType Class

The `RelatedReportsType` class specifies a set of one or more STIX Reports related to this STIX Report and therefore is a self-referential relationship. It extends the `GenericRelationshipListType` superclass defined in the STIX Common data model, which specifies the scope (whether the elements of the set are related individually or as a group).

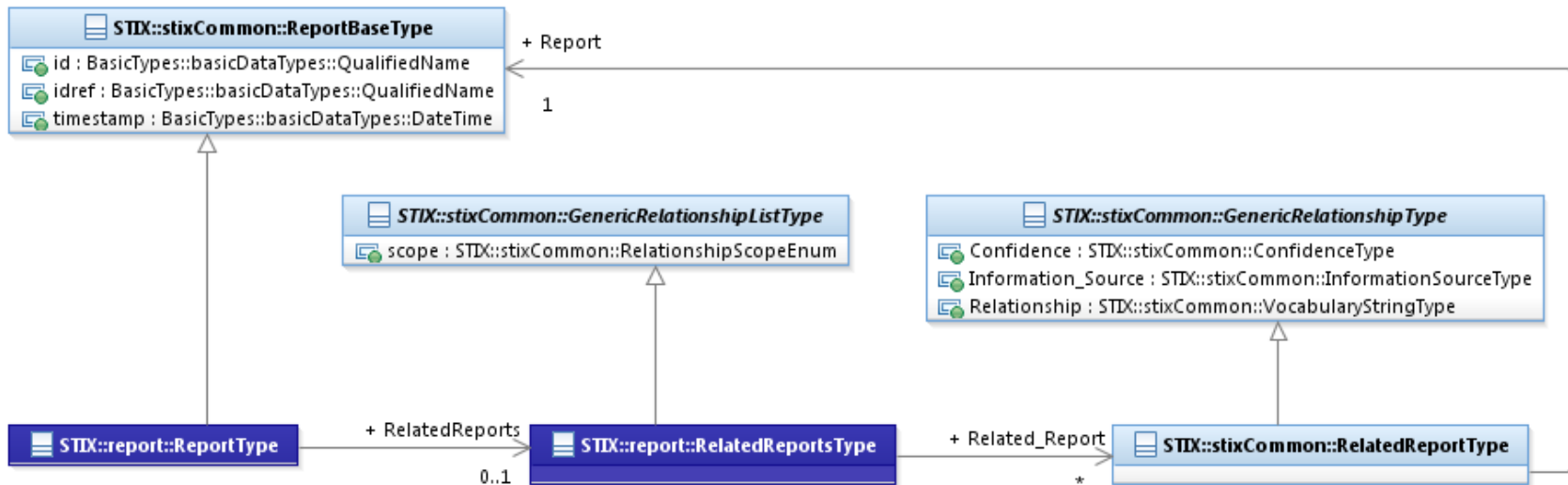The UML diagram corresponding to the `RelatedReportsType` class is shown in **Figure 3-2**.

Figure 3-2. UML diagram showing the use of the `RelatedReportsType` *class*

Table 3-10 shows the properties of the `RelatedReportsType` specialization and is associated with the UML diagram in **Figure 3-2**.

Table 3-10. Properties of the `RelatedReportsType` *class*

Name	Type	Multiplicity	Description
Related_Report	stixCommon:RelatedReportType	1..*	The `Related_Report` property specifies another Report associated with this Report and characterizes the relationship between the Reports by capturing information such as the level of confidence that the Reports are related, the source of the relationship information, and the type of the relationship. A relationship between Reports may represent assertions of general associativity or different versions of the same Report.

4 Conformance

Implementations have discretion over which parts (components, properties, extensions, controlled vocabularies, etc.) of STIX they implement (e.g., Indicator/Suggested_COAs).

[1] Conformant implementations must conform to all normative structural specifications of the UML model or additional normative statements within this document that apply to the portions of STIX they implement (e.g., Implementers of the entire TTP component must conform to all normative structural specifications of the UML model or additional normative statements within this document regarding the TTP component).

[2] Conformant implementations are free to ignore normative structural specifications of the UML model or additional normative statements within this document that do not apply to the portions of STIX they implement (e.g., Non-implementers of any particular properties of the TTP component are free to ignore all normative structural specifications of the UML model or additional normative statements within this document regarding those properties of the TTP component).

The conformance section of this document is intentionally broad and attempts to reiterate what already exists in this document. The STIX 1.2 Specifications, which this specification is based on, did not have a conformance section. Instead, the STIX 1.2 Specifications relied on normative statements and the non-mandatory implementation of STIX profiles. STIX 1.2.1 represents a minimal change from STIX 1.2, and in that spirit no requirements have been added, modified, or removed by this section.

Appendix A. Acknowledgments

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Appendix B. Revision History

Revision	Date	Editor	Changes Made
wd01	21 August 2015	Sean Barnum Desiree Beck Aharon Chernin Rich Piazza	Initial transfer to OASIS template

Notes ――――――――――――

[1] The CybOX Observable data model is actually defined in the CybOX Language, not in STIX; but it is included in the list because it is referenced often from STIX.