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Beyond Sharing: Cyber Threat Intelligence Making a Difference

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Our Goal...

Create an ecosystem where actionable cyber threat intelligence is automatically shared in real-time to enable real-time defense – the detection, prevention and mitigation of cyber threats *before or as they occur*



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Have We Succeeded?

Sort of.

Significant progress towards creating a global ecosystem of automated cyber threat intelligence sharing

Existing versions of STIX/TAXII on their way to becoming true international standards

Implementations are out there but we are probably more at the “crawl” or “walk” stages than we are at “run”



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Transition to OASIS

- **Transition of STIX/TAXII/CybOX to OASIS Cyber Threat Intelligence (CTI) Technical Committee (TC) is complete**
- **OASIS CTI TC is the largest TC in OASIS history with over 200 members**
- **The CTI TC has begun the process of codifying the existing STIX/TAXII specifications as formal international standards**
- **CTI TC members are now hard at work on the future – STIX 2.0 and TAXII 2.0**
- **For more information: https://www.oasis-open.org/committees/tc_home.php?wg_abbrev=cti**



OASIS CTI Members



CenturyLink



NEW CONTEXT



VERISIGN



STIX/TAXI – the Next Generation...

- **CTI TC is incorporating lessons-learned from 3+ years of implementation to inform the evolution of STIX 2.0, TAXII 2.0 and CybOX 3.0**
- **Key takeaways:**
 - **STIX and CybOX complexity often an issue – refactoring to reduce complexity**
 - **XML is a barrier for many developers – JSON is the new mandatory to implement (MTI) representation**
 - **TAXII specification will be expanded to better define services to promote interoperability**



STIX/TAXII in Practice

- **Foundation for DHS Automated Indicator Sharing (AIS) initiative enabling bi-directional indicator exchange between the USG and the private sector**
- **Used by over 350 financial organizations to exchange threat indicators with the FS-ISAC**
- **Powers CTI exchange at ISAC's/ISA0's including:**
 - **FS-ISAC, NH-ISAC, HITRUST, DSIE, R-CISC, MS-ISAC and ICS-ISAC**
- **Global reach – used by CSIRTS internationally including CERT-EU, CERT-UK, CERT-AU, and CERT-CA.**



This Ecosystem Enables...

As more CTI is represented using standardized and structured languages, opportunities emerge. Some examples:

- Automated CTI exchange with policy-based filtering (e.g. CISA)
- Indicator Sightings at scale
- Platform/Repository-Independent Analytics
- Structured Courses of Action shared at scale



CISA and STIX/TAXII

Cybersecurity Information Sharing Act of 2015

Provides limited liability protection for private sector entities that share cyber threat indicators with the Federal Government via DHS

DHS NCCIC is the focal point for this sharing

Our implementation of CISA for automated submission is based on STIX/TAXII



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Privacy/PII Filtering

Structured representation of cyber threat indicators allows much of the privacy and Personally Identifiable Information (PII) scrubbing to be automated

Planning on using natural language processing technology to automated PII detection in free-text fields in STIX



Indicator Sightings At Scale

Sighting: Report that a previously-published/shared indicator has “fired” in an organization

Sightings allow adversary activity to be tracked across organizations and sectors

Sightings also support a quality-control feedback loop that can help users gauge the quality of information sources



Platform/Repository Independent Analytics

Analytic Code

Platform A

Platform B

Remote
Repository
C



Structured Courses of Action at Scale

Courses of Action answer the “now what?” question when indicators “fire”

Structured Courses of Action enable organizations to share COAs that can be machine-interpreted (e.g. blocking/sink-holeing)

Requires a high degree of trust/confidence in information source

Can help eliminate the noise allowing analysts to focus on what is important



Work In Progress

Some areas where additional work is needed to improve our ability to leverage standardized CTI at scale:

- Data markings – going beyond TLP – FIRST IEP-SIG is leading the charge
- More uniform confidence/reputation scoring of content & sources
- Content deduplication/correlation



The Future

**Join us and help us shape
the future of CTI!**

**For more information contact:
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