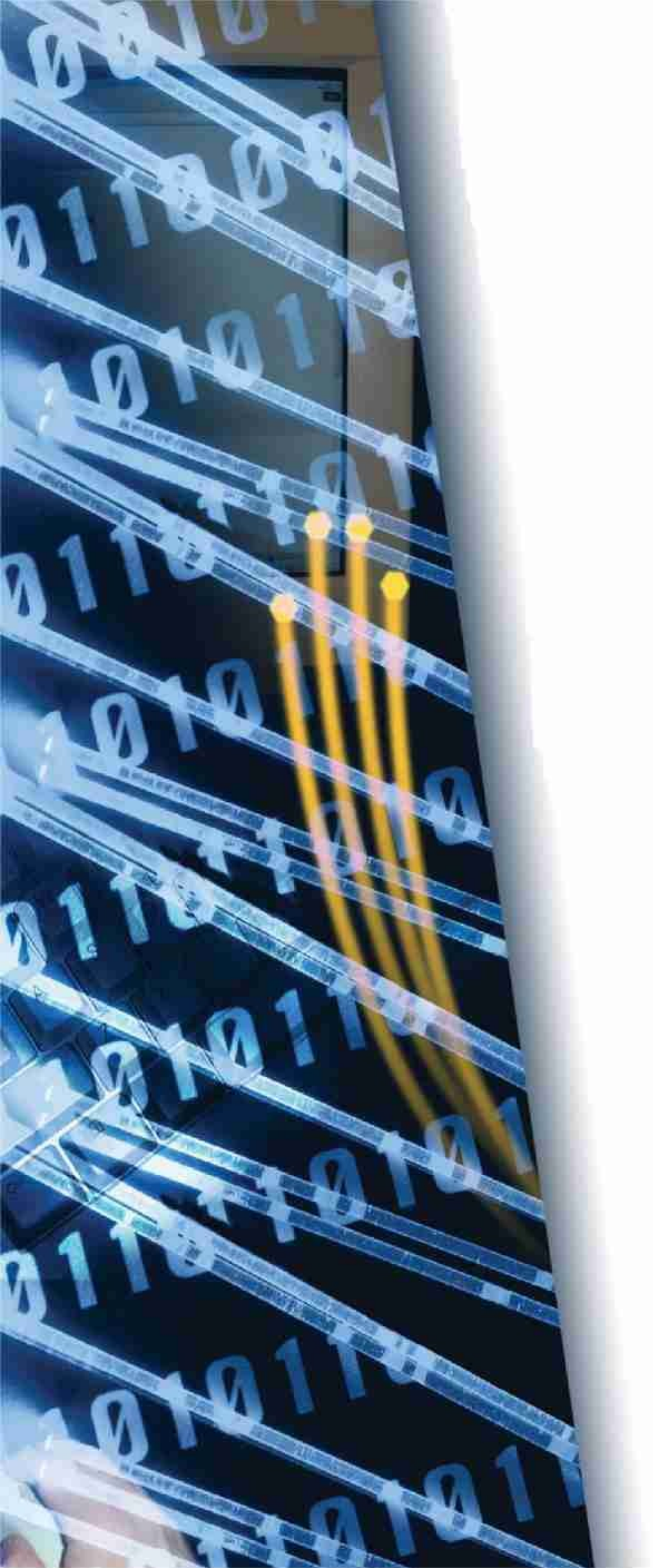

Information Security Exchange Formats and Standards

Till Dörges

PRESENSE

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About the Author

- **2002 started working for PRESECURE**
  - Consulting
  - Research (eCSIRT.net, POSITIF, CarmentiS, …)
  - ...
- **2008/12 PRESENSE Technologies GmbH founded with 3 colleagues**
  - Founder
  - Managing Director
- **PRE-CERT Team-Representative**
  - FIRST
  - Trusted Introducer (TI)

Motivation

- **Standards can help**
  - Collaboration ↔ Information exchange
  - Clear semantics
  - Process automation
- **Overview**
  - Many standards exist
  - Important areas unstandardized?

Definitions

- **Standard / Specification**
  - Norm, requirement
  - Formal docment, that establishes uniform … methods, processes
  - Explicit set of requirements
- **Language**
  - Description of acutal information
- **Enumeration**
  - Vocabulary, ontology

Definitions (cont'd)

- **Data model**
  - What information
- **Data format**
  - Bit sequence
- **Protocol**
  - How to exchange with others
- **Other**
  - Metric
  - Collection of standards

Standards of choice

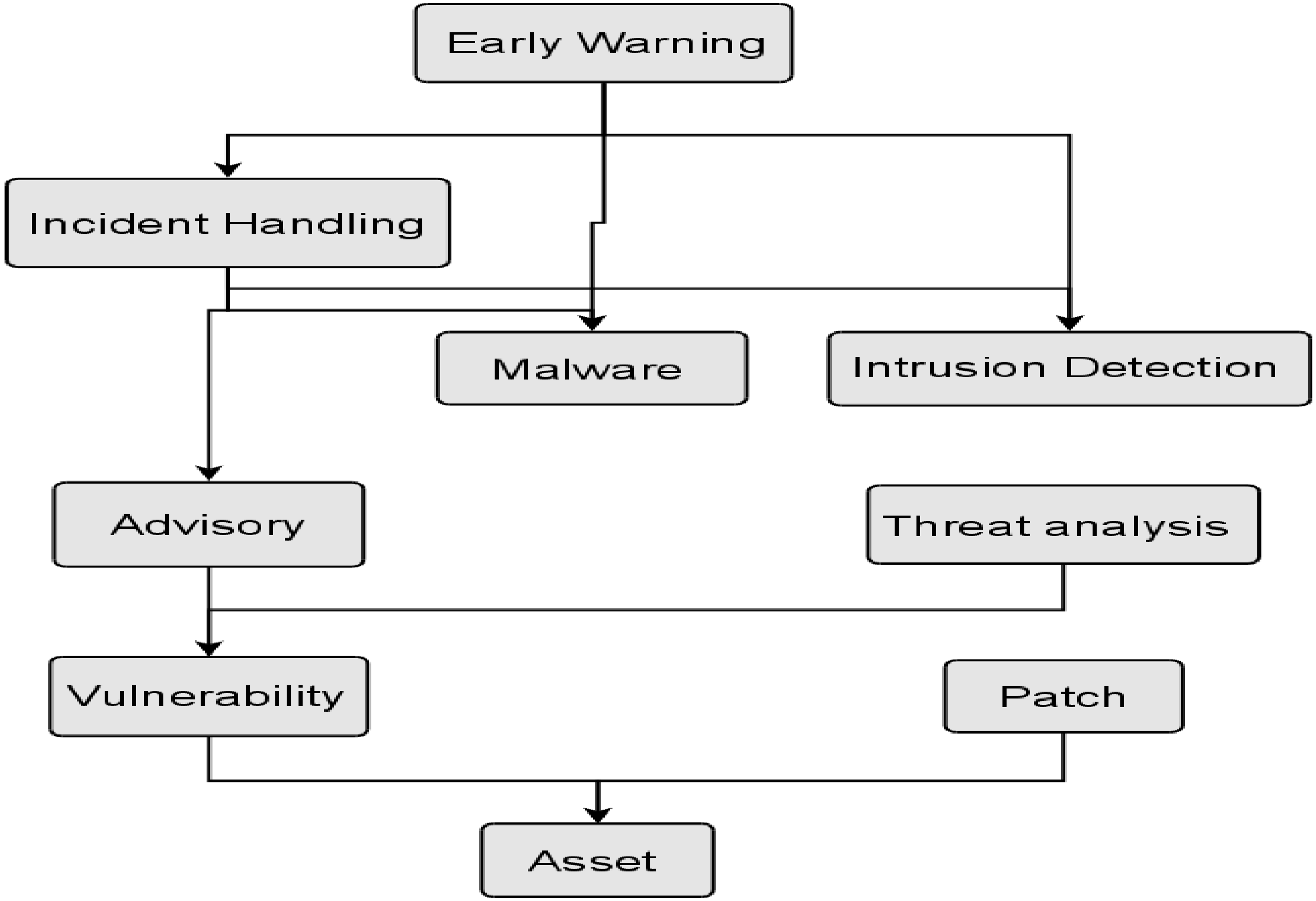
- **IT security only**
- **Very many standards exist**
- **Excluded**
  - ISO 27001, ...
  - Emergency standards (EXDL, CAP, ...)
  - Military interoperability Standards (ICD, …)
  - RFC 2350, Expectations for Computer Security Incident Response

Areas for Standards

- Advisory exchange
- Asset
  - Management
  - Security assessment
- Early Warning
- Incident handling (Phishing, Spam)
- Intrusion detection
- Malware (Naming, ...)
- Patch management
- Threat management
- Vulnerability management

Area Dependencies

- Areas include others



Investigation of Standards

- Purpose: Description (what)
- Area: Domain
- Author: Organization, Person (who)
- Year: Last update of standard
- URL: Homepage
- Type: Enumeration, Language, Other?
- Used: Is it used? If so, where?
- Comment(s)

Standards: Asset

- **CAPEC, Common Attack Pattern Enumeration and Classification**
  - standard schema for representing attack patterns
  - Cigital Inc. (sponsored by US DHS), 2008
  - http://capec.mitre.org/
- **CCE, Common Configuration Enumeration**
  - purpose: provides unique identifiers to system configuration issues
  - MITRE Coporation, 2009
  - http://cce.mitre.org/

Standards: Asset (cont'd)

- **CIM, Common Information Model**
  - provide a common definition of management information for systems, networks, applications and services, and allows for vendor extensions
  - Distributed Management Task Force, Inc., 2009
  - http://www.dmtf.org/standards/cim/
- **CMSI, Common Model of System Information**
  - machine readable descriptions of systems (products, platforms, not hardware)
  - CERT-Verbund, 2005
  - http://www.cert-verbund.de/cmsi/

Standards: Asset (cont'd)

- **CPE, Common Platform Enumeration**
  - structured naming scheme for information technology systems, platforms, and packages (URI style)
  - (?) MITRE, 2009
  - http://cpe.mitre.org/
- **CRF, Common Result Format**
  - standardized IT asset assessment result format that facilitates the exchange of assessment
  - http://makingsecuritymeasurable.mitre.org/crf/
  - MITRE Corporation, 2007

Standards: Asset (cont'd)

- **DPE, Default Password Enumeration**
  - enumeration of default logons and passwords of network devices, applications, ...
  - Security-Database, 2008
  - http://www.security-database.com/dpe.php
- **OVAL, Open Vulnerability & Assessment Lang.**
  - standardize the transfer of this information across security tools and services
  - MITRE, OVAL Board, sponsored by the US-CERT at the U.S. DHS, 2008
  - http://oval.mitre.org/

Standards: Asset (cont'd)

- **XCCDF, Extensible Configuration Checklist Description Format**
  - structured collection of security configuration rules for some set of target systems
  - NIST, 2008
  - http://scap.nist.gov/specifications/xccdf/

Standards: Vulnerability

- **CVE, Common Vulnerabilities and Exposures**
  - dictionary of publicly known information security vulnerabilities and exposures
  - CVE Editorial Board, MITRE, 2009
  - http://cve.mitre.org/
- **CVSS, Common Vulnerability Scoring System**
  - vendor agnostic, industry open standard designed to convey vulnerability severity and help determine urgency and priority of response
  - FIRST, CVSS-SIG, 2007
  - http://www.first.org/cvss/

Standards: Vulnerability (cont'd)

- **VEDEF, Vulnerability and Exploit Description and Exchange Format**
  - free exchange of information on new Vulnerability and Exploit
  - (?) 2005
  - http://www.vedef.org/ (offline)
- **VuXML, Vulnerability and Exposure Markup Language**
  - vulnerability database for FreeBSD
  - Jacques A. Vidrine, 2005
  - http://www.vuxml.org/

Standards: Vulnerability (cont'd)

- **OASIS Application Vulnerability Description Language TC (AVDL)**
  - create a uniform way of describing application security vulnerabilities
  - OASIS AVDL TC, 2004
  - http://www.oasis-open.org/committees/tc_home.php?wg_abbrev=avdl

Standards: Advisory

- **CAIF, Common Announc't Interchange Format**
  - RUS-CERT, 2005
  - http://www.caif.info/
- **DAF, Deutsches Advisory Format**
  - profile for EISPP
  - CERT-Verbund, 2004
  - http://www.cert-verbund.de/daf/index.html
- **European Information Security Promotion Programme (EISPP) advisory format**
  - EISPP consortium, 2004
  - http://www.eispp.org/

Standards: Threat analysis

- **CWE, Common Weakness Enumeration**
  - (not sure about area classification)
  - unified, measurable set of software weaknesses
  - MITRE Corporation, 2009
  - http://cwe.mitre.org/

Standards: Malware

- **CME, Common Malware Enumeration**
  - provide single, common identifiers to new virus threats (...) neutral indexing
  - CME Editorial Board, 2005
  - http://cme.mitre.org/
- **“DHS/DoD Software Assurance Forum Malware Working Group”**
  - Develop Malware Attribute Enumeration and Characterization (MAEC)
  - https://buildsecurityin.us-cert.gov/swa/malact.html

Standards: Intrusion Detection

- **IDMEF, Intrusion Detection Msg. Exchange Format**
  - data formats and exchange procedures for sharing information of interest to intrusion detection and response systems and to the management systems
  - IETF, IDWG, 2007
  - http://tools.ietf.org/html/rfc4765
- **IDXP, Intrusion Detection Exchange Protocol**
  - exchange of IDMEF messages, BEEP profile
  - IETF, IDWG, 2007
  - http://tools.ietf.org/html/rfc4767

Standards: Incident Handling

- **IODEF, Incident Object Desc. Exchange Format**
  - sharing information commonly exchanged by Computer Security Incident Response Teams (CSIRTs) about computer security incidents
  - APWG extensions
  - IETF, INCH WG, 2007
  - http://tools.ietf.org/html/rfc5070
- **ARF, Abuse Reporting Format**
  - communicating feedback about email abuse
  - http://www.shaftek.org/publications/drafts/abuse-report/
  - MIPA, 2009

Standards: Other

- CEE, Common Event Expression
  - creation of a Common Event Taxonomy that allows event producers to consistently and unambiguously define each heterogeneous event; creation of a Common Log Syntax combined with a public data dictionary to provide consistency for specifying and gathering event-specific details.
  - docs announced for Feb 2008 (behind schedule)
  - http://cee.mitre.org/
  - Indirectly: Intrusion Detection, Incident Handling

Standards: Other (cont'd)

- **SCAP, Security Content Automation Protocol**
  - combines a number of open standards that are used to enumerate software flaws and configuration issues related to security
  - CVE, CCE, CPE, CVSS, XCCDF, OVAL
  - Superset: Asset & Vulnerability
  - NIST
  - http://nvd.nist.gov/scap.cfm

Standards: Missing?

- **Patch Management**
  - included in Asset management
- **Early Warning**
  - IODEF perhaps enough
- **Malware**
  - no active standard
  - enumeration difficult, but important
- **Threat**
  - CWE used elsewhere

Summary

- Investigated > 30 standards
  - 13 languages
  - 8 enumerations
  - 5 other
- 9 unused (dead or never alive)
- 6 unclear
- 17 actively used or developed

Summary (cont'd)

Advisory	3
Asset	9
Early warning	-
Incident handling	2
Intrusion detection	2
Malware	2
Patch	-
Threat	1
Vulnerability	5
Other	2

Thank you

Thanks for your attention!

Questions?

Contact Information

Till Dörges

PRESENSE Technologies GmbH

doerges@pre-sense.de

http://www.pre-sense.de/

PGP

- 0x37FC5954
- F95B 5EBE 9DFC 3B30 1800 9492 2901 BAED 37FC 5954