CycloneDX Software Bill of Materials

FOSDEM’21

CycloneDX

About

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- OSS Maintainer
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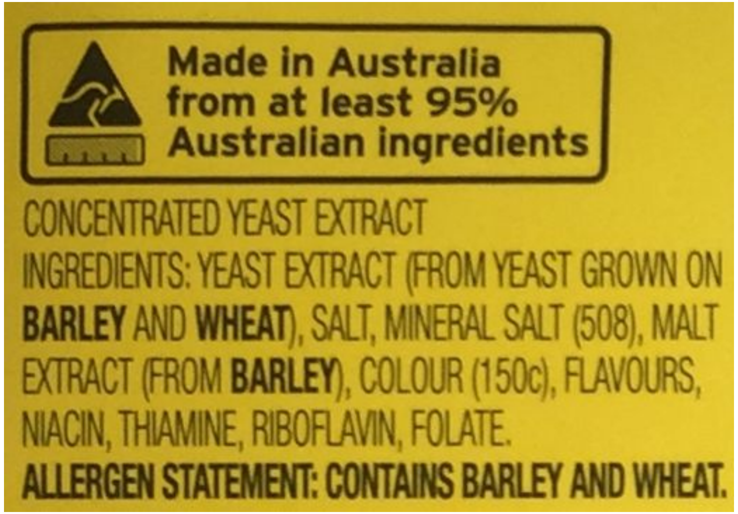
Food allergies

Food Labelling Standards

- Made in Australia from at least 95% Australian ingredients
- Malt extract from barley
- Allergen statement



Made in Australia from at least 95% Australian ingredients

CONCENTRATED YEAST EXTRACT

INGREDIENTS: YEAST EXTRACT (FROM YEAST GROWN ON **BARLEY** AND **WHEAT**), SALT, MINERAL SALT (508), MALT EXTRACT (FROM **BARLEY**), COLOUR (150c), FLAVOURS, NIACIN, THIAMINE, RIBOFLAVIN, FOLATE.

ALLERGEN STATEMENT: CONTAINS BARLEY AND WHEAT.

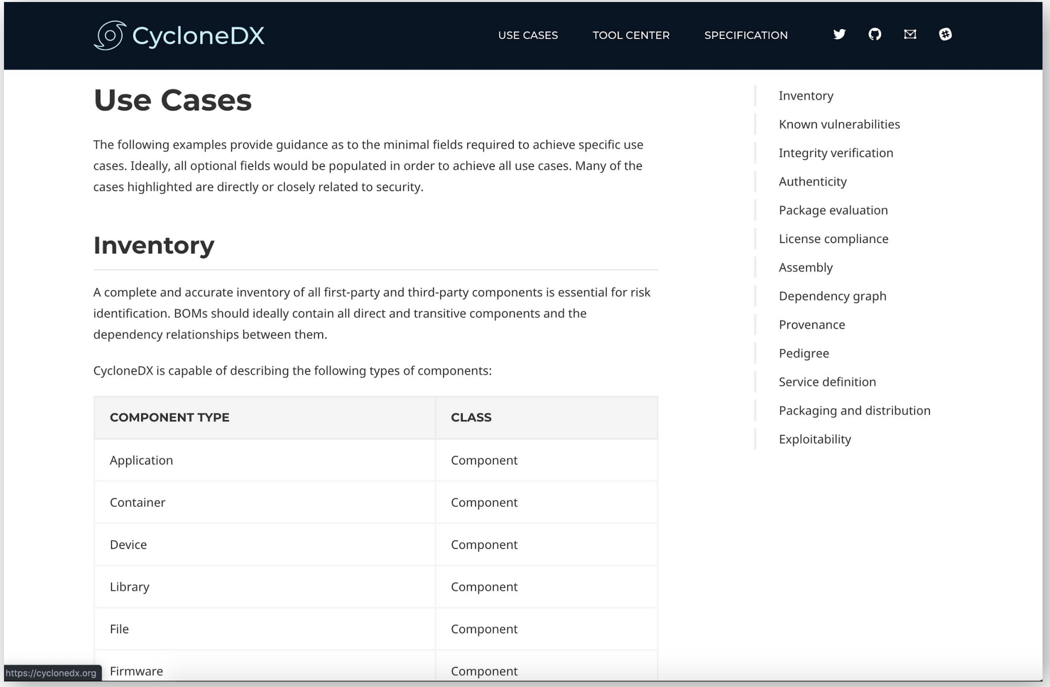
History

- Origins in the OWASP community
- Designed in May 2017
- Initial release in March 2018
- OWASP Dependency-Track was first adopter, many others followed
- CycloneDX v1.1 released in March 2019
- CycloneDX v1.2 released in May 2020
- Formal CycloneDX working group and standardization process in 2020
- Members of CycloneDX Core working group are OWASP leaders/members

The CycloneDX Approach

- Easy to adopt – easy to contribute
- Identify risk to as many adopters as possible, as quickly as possible
- Avoid any/all blockers that prevent the identification of risk
- Continuous improvement – Innovate quickly, improve over time
- Encourage innovation and competition through extensions
- Produce immutable and backward compatible releases
- Facts first – Dynamic facts and observations enabled through extensions
- Automation and optimization of BOM creation
- Full-stack BOM specification

Use Case Examples



Use Cases

The following examples provide guidance as to the minimal fields required to achieve specific use cases. Ideally, all optional fields would be populated in order to achieve all use cases. Many of the cases highlighted are directly or closely related to security.

Inventory

A complete and accurate inventory of all first-party and third-party components is essential for risk identification. BOMs should ideally contain all direct and transitive components and the dependency relationships between them.

CycloneDX is capable of describing the following types of components:

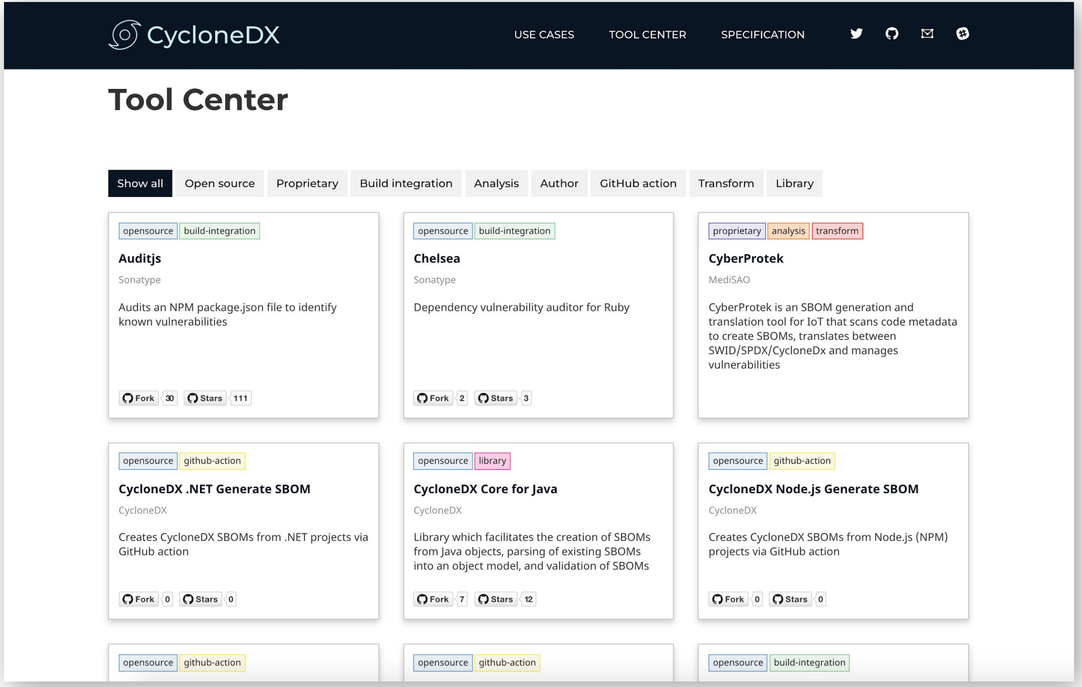
COMPONENT TYPE	CLASS
Application	Component
Container	Component
Device	Component
Library	Component
File	Component
Firmware	Component

- Inventory
- Known vulnerabilities
- Integrity verification
- Authenticity
- Package evaluation
- License compliance
- Assembly
- Dependency graph
- Provenance
- Pedigree
- Service definition
- Packaging and distribution
- Exploitability

A collection of common use cases achievable with CycloneDX along with concrete examples in XML and JSON.

Spongebob Squarepants vector trace by kssael ©Ni
SHARING IS CARING
memegenerator.net

Tool Center



Tool Center

opensource build-integration

Auditjs

Sonatype

Audits an NPM package.json file to identify known vulnerabilities

Fork 30 Stars 111

opensource build-integration

Chelsea

Sonatype

Dependency vulnerability auditor for Ruby

Fork 2 Stars 3

proprietary analysis transform

CyberProtek

MediSAO

CyberProtek is an SBOM generation and translation tool for IoT that scans code metadata to create SBOMs, translates between SWID/SPDX/CycloneDx and manages vulnerabilities

opensource github-action

CycloneDX .NET Generate SBOM

CycloneDX

Creates CycloneDX SBOMs from .NET projects via GitHub action

Fork 0 Stars 0

opensource library

CycloneDX Core for Java

CycloneDX

Library which facilitates the creation of SBOMs from Java objects, parsing of existing SBOMs into an object model, and validation of SBOMs

Fork 7 Stars 12

opensource github-action

CycloneDX Node.js Generate SBOM

CycloneDX

Creates CycloneDX SBOMs from Node.js (NPM) projects via GitHub action

Fork 0 Stars 0

opensource github-action

opensource github-action

opensource build-integration

Community effort to establish a marketplace of free, open source, and proprietary tools and solutions that support CycloneDX.

Community Participation

- Website (introduction, use cases, tool center, and specification)
  - https://cyclonedx.org/
- GitHub
  - https://github.com/CycloneDX
- Slack
  - https://cyclonedx.org/slack
  - https://cyclonedx.org/slack/invite
- Mailing List
  - https://cyclonedx.org/discussion