

Eclipse Tractus-X 101

An introduction to the open-source
project within the Catena-X data space

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Why Tractus-X?

To promote acceptance and ownership of the Catena-X data space, the Catena-X operating system (cxOS) and use case KITs are developed as open source software (OSS). Defined and developed by the automotive industry for the automotive industry, and not controlled by a single company. This approach builds trust, enables scalability and creates a collaborative development area for new features. We bundle all our open source efforts and deliverables in our official Eclipse Tractus-X™ project.



Benefits

Transparency, Collaboration & Community

We have chosen an open-source approach to enable full transparency into the source code of the non-differentiating Catena-X operating system, provide the means to actively participate through contributions, or take on a driving role via dedicated committers. By embracing open source, we foster early and steady alignment on concepts and code – sometimes to complement Catena-X standards with a reference implementation, sometimes to collaborate on ideas. We want to follow a code-first approach and retroactively extract valid standardization candidates.

As described in the guidebook *The Open-Source Way*,¹ we see the following objectives and benefits for the Catena-X ecosystem:

- **Transparency** is crucial for effective software development and problem-solving in business. Access to information and resources enables developers to excel (e.g., by building on ideas and results from others), fostering collaboration and informed decision-making.
- **Open collaboration** drives innovation by encouraging active participation and allowing modifications to shared content such as our operating system. It enables us to tackle complex challenges collectively.
- **Communities** form when diverse organizations and individuals unite around a common purpose. Guided by shared values, they prioritize community objectives over individual interests, promoting cohesive decision-making.



Context

Connecting the Catena-X Ecosystem

The Tractus-X project connects the three areas of the Catena-X ecosystem² with a focus on software development. Organizations and individuals from the Catena-X ecosystem make up our Tractus-X developer community. This community leverages the Tractus-X project to use or contribute to the Catena-X operating system (cxOS), including source code, semantic models, technical documentation, and deployment instructions.

The **Catena-X Association** encourages and promotes the continuous development and OSS release of the Catena-X operating system in Eclipse Tractus-X. Therefore, the

Association will provide committees and expert groups to ensure vendor-neutral governance and coordination for collaboration on OSS in the Tractus-X project.

The Tractus-X project is an open-source project of the **Eclipse Foundation**, overseen by a Project Management Committee (PMC) and Tractus-X project leads and committers. The Eclipse Foundation is a not-for-profit corporation that is supported by over 300 members, is internationally balanced in terms of governance structure, and has a proven interest in fostering collaboration in the automotive industry.

Key Components

Use & Contribute

Hosted on GitHub, Tractus-X has a one-stop landing page with all the information the developer community needs to use or contribute to our open-source software and community.

Use Tractus-X

- The **blog** provides the latest news for our developer community (e.g., events).
- The **versions** page provides information about our latest Tractus-X releases including release notes and a detailed change log. A release comprises an open-source reference implementations and KITs that adopters or solution providers can use (e.g., digital twin registry).
- The **KIT** page provides information about our current and future offerings of KITs.

We publish the source code of our components under the Apache 2.0 license³ and non-code artifacts such as semantic models under the CC BY 4.0 license.⁴ Our components are reference implementations that require some industrialization effort, depending on the needs of an operating scenario.

Contribute to Tractus-X

- The **community** page provides an overview of our product teams, repositories, and their committers as well as communication rules for contacting the product teams.
- The development work is done in the product teams working against our **GitHub repositories**.
- The **developer hub** page describes the organization of the open-source project including roles, responsibilities, and processes such as open-source development, various how-to guides, and Tractus-X release guidelines (TRGs).

We architect our components to serve an 'open core' mindset, where we collaborate on common, non-differentiating core functionality and enable network participants to enrich that core with extensions to their OSS, commercial, or managed service needs.



Roadmap

Upcoming Milestones

Q3/2023

First teams in Tractus-X work openly and collaboratively.

Q4/2023

All teams in Tractus-X work openly and collaboratively.

Q1/2024

The Tractus-X project and Catena-X Association have established a collaborative governance model.

Q2/2024

The Tractus-X project successfully graduates from Eclipse incubation phase and enters the mature phase.

Endnotes

- 1 <https://www.theopensourceway.org>
- 2 <https://catena-x.net/en/about-us>
- 3 <https://www.apache.org/licenses/LICENSE-2.0>
- 4 <https://creativecommons.org/licenses/by/4.0/>

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