

Projekt-ID. SDG-M9

Synthetic Data Generator (SDG) – Integration into MaxTune and MaxOneOpen

Version: 2.0

Status: 100/100 Validiert

Executive Summary

This document describes the integration of the Synthetic Data Generator (SDG) into the MaxTune learning environment and the MaxOneOpen decentralized infrastructure. It outlines interfaces, control flows, and compliance mechanisms ensuring seamless, secure, and auditable interaction.

Scope and Objective

The objective of this integration is to:

- Enable MaxTune to trigger synthetic data generation under controlled policies
- Ensure SDG modules operate natively within the MaxOneOpen edge architecture
- Maintain full compliance with TBYD standards and audit requirements

Technical Background

MaxTune serves as the policy orchestrator for data generation, defining quality, diversity, and compliance goals. MaxOneOpen provides the decentralized, edge-based infrastructure where the SDG operates without centralized dependencies.

Integration with MaxTune

- Policy Interface: MaxTune defines generation rules and goals.
- Readiness Reporting: SDG reports data readiness and validation results to MaxTune.
- Feedback Loop: MaxTune adjusts future generation policies based on validation outcomes.

Integration with MaxOneOpen

- Edge Execution: SDG components deploy natively on local nodes.
- Security Context Inheritance: SDG modules inherit Zero-Trust and Zero-Knowledge security configurations.
- Modular Deployment: SDG modules are dynamically loadable and verifiable within MaxOneOpen environments.

Compliance and Governance Alignment

- Full Auditability: All integration points log critical events to MaxAudit.
- Policy Compliance: Generation and validation operations are enforced via MaxControl policies.
- Regulatory Readiness: Integration design meets GDPR, ISO 27001, and MaxReg compliance standards.

Validation and Testing Criteria

- Interface Integrity Tests
- Policy Compliance Simulations
- Edge Node Deployment and Performance Validation
- Full Audit Log Consistency Checks