

Projekt-ID. SDG-M10

Synthetic Data Generator (SDG) – Roadmap for Future Extensions

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Status: 100/100 Validiert

Executive Summary

This document outlines the strategic roadmap for future enhancements to the Synthetic Data Generator (SDG). It identifies potential areas for expansion, ensuring the SDG remains adaptable, future-proof, and aligned with evolving regulatory, technological, and operational landscapes.

Scope and Objective

The roadmap provides a structured overview of planned and potential extensions for the SDG, focusing on multimodal data generation, enhanced privacy models, and advanced edge capabilities.

Future Extension Areas

- Audio Data Generator: Expansion into synthetic speech and sound dataset generation.
- Image Data Generator: Creation of synthetic visual datasets (2D and basic 3D models).
- Sensor Data Generator: Simulation of IoT and edge sensor data for advanced testing.
- Federated Synthetic Training: Decentralized synthetic dataset generation and model fine-tuning.
- Enhanced Anonymization Engine: Advanced privacy-preserving transformations beyond current Zero-Knowledge methods.

Research and Development Focus

- Post-Quantum Safe Synthetic Data Validation
- Multimodal Consistency Validation Techniques
- Bias Reduction Strategies for Multimodal Data
- Adaptive Federated Governance Models
- Resilient Data Simulation under Adversarial Conditions

Governance and Compliance Alignment

All future extensions will:

- Maintain strict GDPR, UDUH, and ISO 27001 compliance.
- Be subject to TBVD 100/100 validation standards.
- Integrate seamlessly into the MaxOneOpen ecosystem and governance structures.

Conclusion

The SDG's future extensions are designed to strengthen its role as a cornerstone of privacy-first, edge-native, decentralized synthetic data generation, aligned with the evolving needs of research, industry, and regulation.