

# CTMinfo: Ontology-Based System for 100% Verified Trade and Manufacturing Data

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## Abstract

This paper presents CTMinfo, the first digital system designed to achieve 100 percent verified data accuracy in trade, manufacturing, and engineering domains. Unlike conventional Big Data and AI-based systems that accumulate probabilistic or redundant information, CTMinfo introduces a structural verification model grounded in precise ontological relationships between real-world objects. The system defines a new technological category — SmallData — emphasizing quality, precision, and verified origin of each datum rather than volume.

## 1. Background and Motivation

Contemporary data infrastructures generate massive datasets that remain unreliable for critical decision-making. Government and corporate information systems typically allow ambiguity, duplication, and manipulation of entries. To overcome this, CTMinfo establishes a unified ontology of engineering and trade entities, enabling fully consistent, cross-verified information structures.

## 2. System Architecture

The CTMinfo model is based on:

1. Exact Ontology — each physical or economic object is represented by a unique verified descriptor.
2. Integrity Loop — data can enter or change only through verified operational chains.
3. Context Verification — every relation between entities has logical and physical validation paths.
4. Open-Tech Principle — technologies remain transparent and auditable, excluding hidden algorithms or black-box AI behavior.

## 3. Comparison with Existing Approaches

While global platforms and state systems (such as digital public infrastructure projects) aim to unify services, they do not achieve semantic precision or verifiable truth of data. CTMinfo differs fundamentally by providing absolute correspondence between digital and physical reality. The concept precedes initiatives like Russia's GosTech platform and international "data trust" projects, positioning CTMinfo as the conceptual and technical source of the verified-data paradigm.

## 4. Implementation and Scope

CTMinfo supports: engineering and manufacturing registries, verified trade documentation, ecological and planetary data modeling, and anti-corruption and compliance monitoring systems. All modules rely on the same ontological base, ensuring structural interoperability and scientific reproducibility.

## **5. Scientific and Social Significance**

CTMinfo transforms information management into a verifiable science rather than a probabilistic discipline. It demonstrates that global data integrity is achievable only through structured ontologies and SmallData ethics, where each datum is true, validated, and accountable.

## **6. Conclusion**

The invention introduces a measurable path toward 100 percent information reliability — a technological foundation for transparent governance, fair trade, and sustainable development. CTMinfo stands as the first operational implementation of the SmallData & Open-Tech paradigm, establishing a verified standard for the digital civilization.

## **Keywords**

SmallData, Open-Tech, Ontology, Verified Data, Information Integrity, Manufacturing, Trade, Digital Verification, Structural Semantics.