# Position  Paper of the Consortium InnoMatSafety

## Scope

The consortium *InnoMatSafety* plans to create a research data infrastructure which offers data and information on the impact of innovative materials on human health and the environment. Innovative materials present unique or enhanced properties compared to conventional ones and enable technological innovations bearing the potential to benefit society. Innovative materials include nanomaterials (1 nm - 100 nm) as well as other materials that exhibit novel properties independent from a defined size-range. Accordingly, innovative materials might possess toxicological profiles deviating from the ones of conventional materials. This requires strategies to predict and assess potential hazard and risk along their life-cycle in order to support their safe and sustainable application. The research field of materials safety is hallmarked by a vast variety of material types and approaches to characterise their intrinsic and toxicological properties. In addition, there is an urgent need to develop appropriate test systems and testing schemes supporting the scientific understanding as well as regulatory needs. Consolidation of research data and their efficient use/re-use are mandatory for the further advancement of the field. This can only be enabled by a smart research data management infrastructure.

## Vision

Our vision is to develop and establish a stable, secure, reliable and sustainable research data management infrastructure in the field of innovative materials safety. This will allow users across disciplines to access, store and reuse quality-assured data and information anytime and anywhere. The initiative will contribute to standardisation and digitisation of processes starting from the planning of research projects, acquisition of data, up to their publication, collection, curation, and dissemination. Due to the interdisciplinary nature of its research field, *InnoMatSafety* aligns to and complements several other NFDI consortia, with a focus on either materials or specific health aspects, and therefore plays an important hinge role within the overall NFDI.

## Objectives

The vision of InnoMatSafety will be achieved through the realisation of several interlinked objectives:

- Defining comprehensive metadata standards and quality criteria for research data
- Digitising all processes in the research workflow for a rapid translation of outcomes into regulation, safe materials design and sustainable applications aiming at a sustainable Research Data Management (RDM) with FAIR data
- Establishing standards for data preparation to support regulatory processes and meta-analyses (prediction)
- Managing sustainably quality-assured data and provide it for re-use in a highly interdisciplinary research area
- Increasing accessibility to existing reliable data and SOP with the aim of a more efficient experimental design and no duplication of experiments
- Enabling a quick and unbiased overview of existing data sets, preferably error-corrected and quality-checked raw data
- Increasing the national and international cooperativeness by data sharing

## Task Areas

| Task Area | Core Responsibility |
|---|---|
| Metadata and Data Standards | Develop metadata standards that work across disciplines and support regulatory needs |
| Methods Development | Develop SOPs for research, materials development, and regulation |
| Networked Repositories | Create a family of interconnected domain-specific repositories/databases for storing, sharing, finding and re-using research data across diverse data sources by adapting existing systems or by creating new ones |
| Community Involvement and Training | Foster the recognition of FAIR data as standard for the community, integrate RDM and data science among professional curricular competencies and disseminate the services provided by the consortium |
| Ethical and Legal Framework | Create an ethical and legal framework that provides guidelines and policies regarding the use of personal data, animal testing, terms of use and intellectual property |
| Cross-Cutting Topics | Engage in collaborations with other NFDI-initiatives to ascertain the interoperability of cross-cutting topics across consortia |