NanoCommons Workshop for SbD Projects

9° Nov 2021

Irini Furxhi

Project ASINA

Anticipating Safety Issues at the Design Stage of NAno Product Development

Anna Costa - CNR
Project Coordinator

Start date: 1st March 2020

End date: 31st August 2023

EU Grant: 6M €

https://www.asina-project.eu/

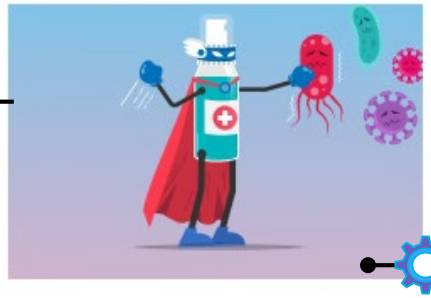
42 MONTH DURATION

21 PARTNERS

8 COUNTRIES

"This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 862444".

ASINA
In a nutshell



ANTI-MICROBIAL / ANTI-BIOFILM / DEPOLLUTANT COATINGS IN CLEAN TECHNOLOGY

VC1

NANO STRUCTURED CAPSULES DELIVERING ACTIVE PHASES IN COSMETICS

VC2

Define → Measure → Analyse → Design → Verify

SSbD Solutions

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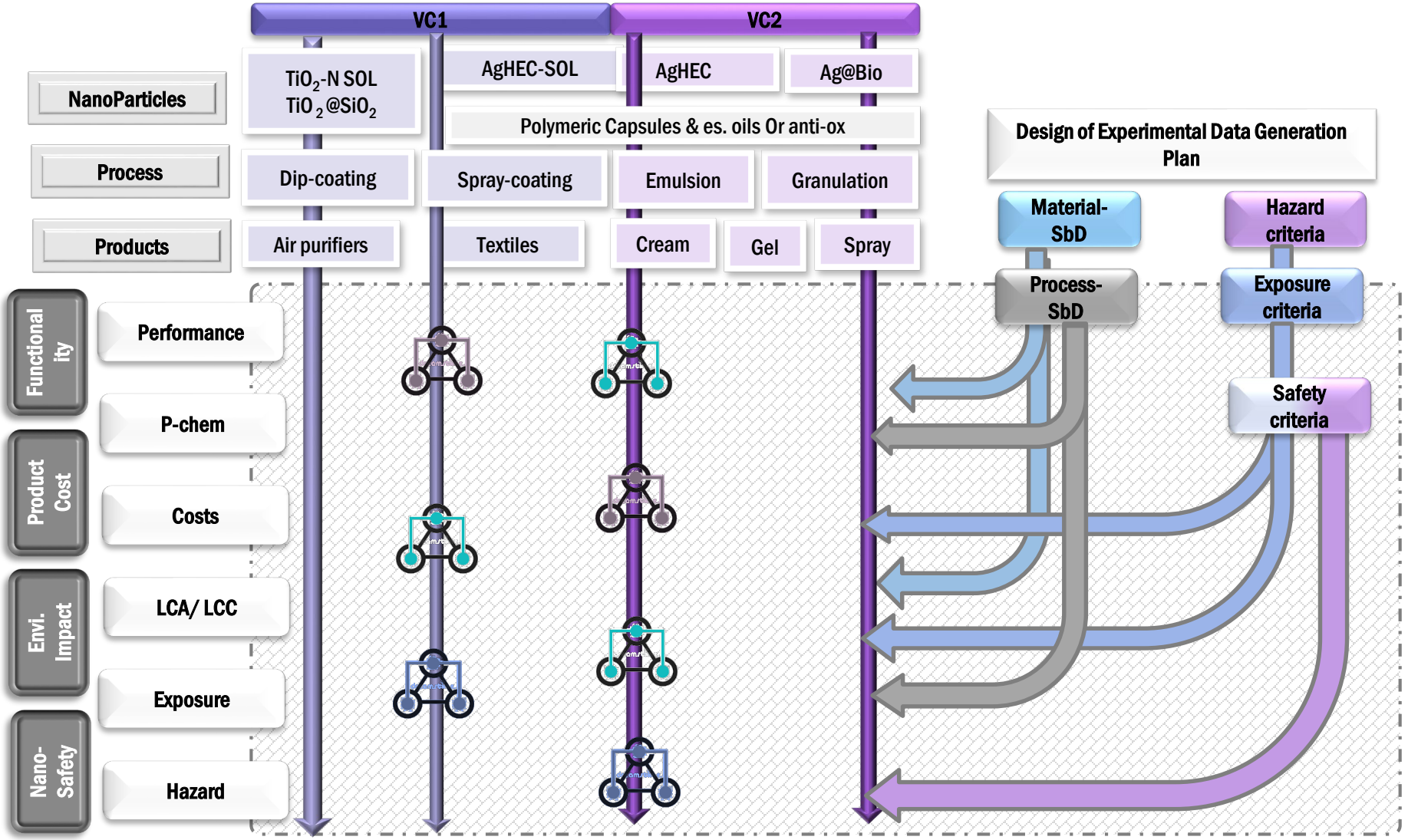
ASINA data -In a nutshell



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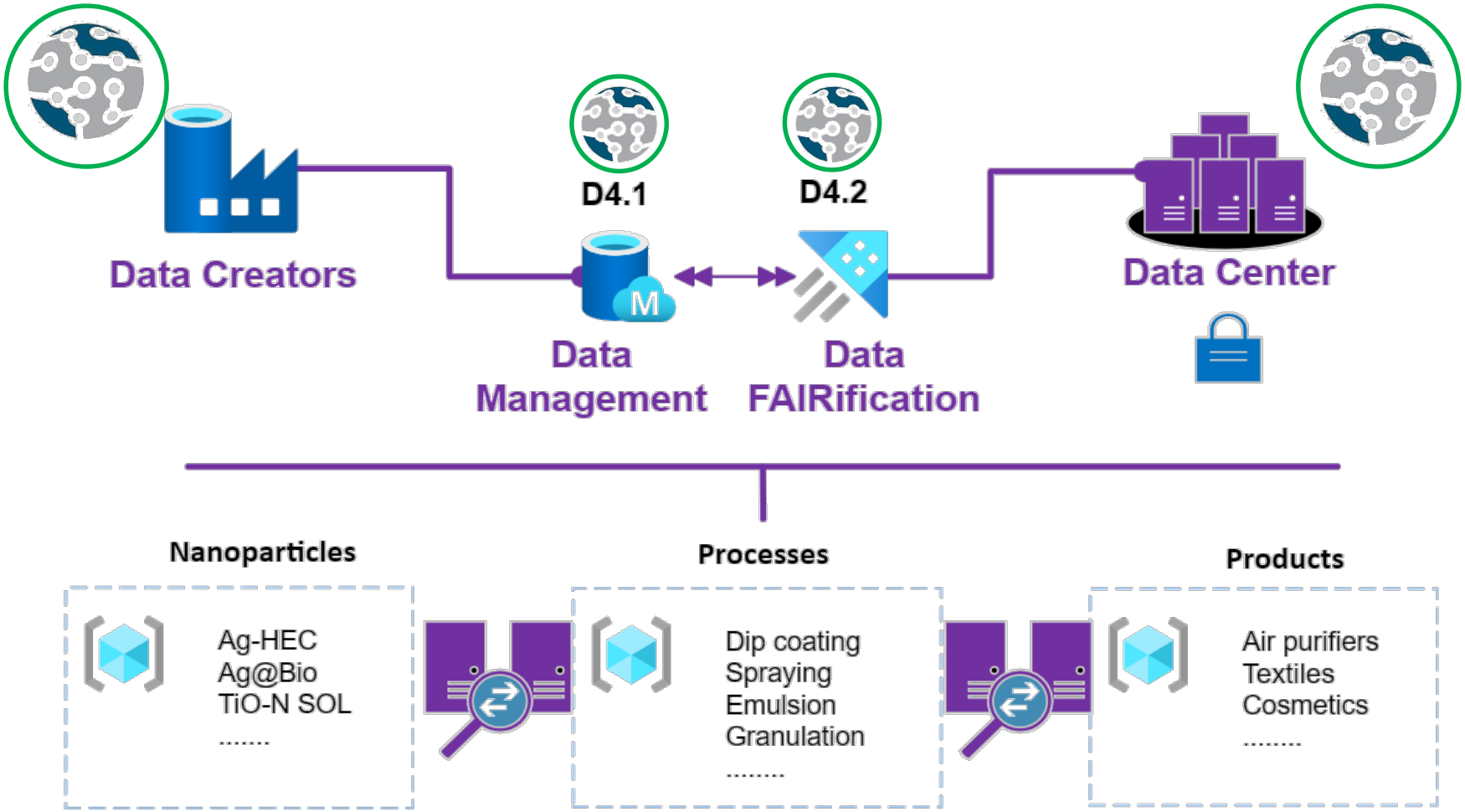
Why we needed TA with NanoCommons? (1)



WP4: Data Curation and Management

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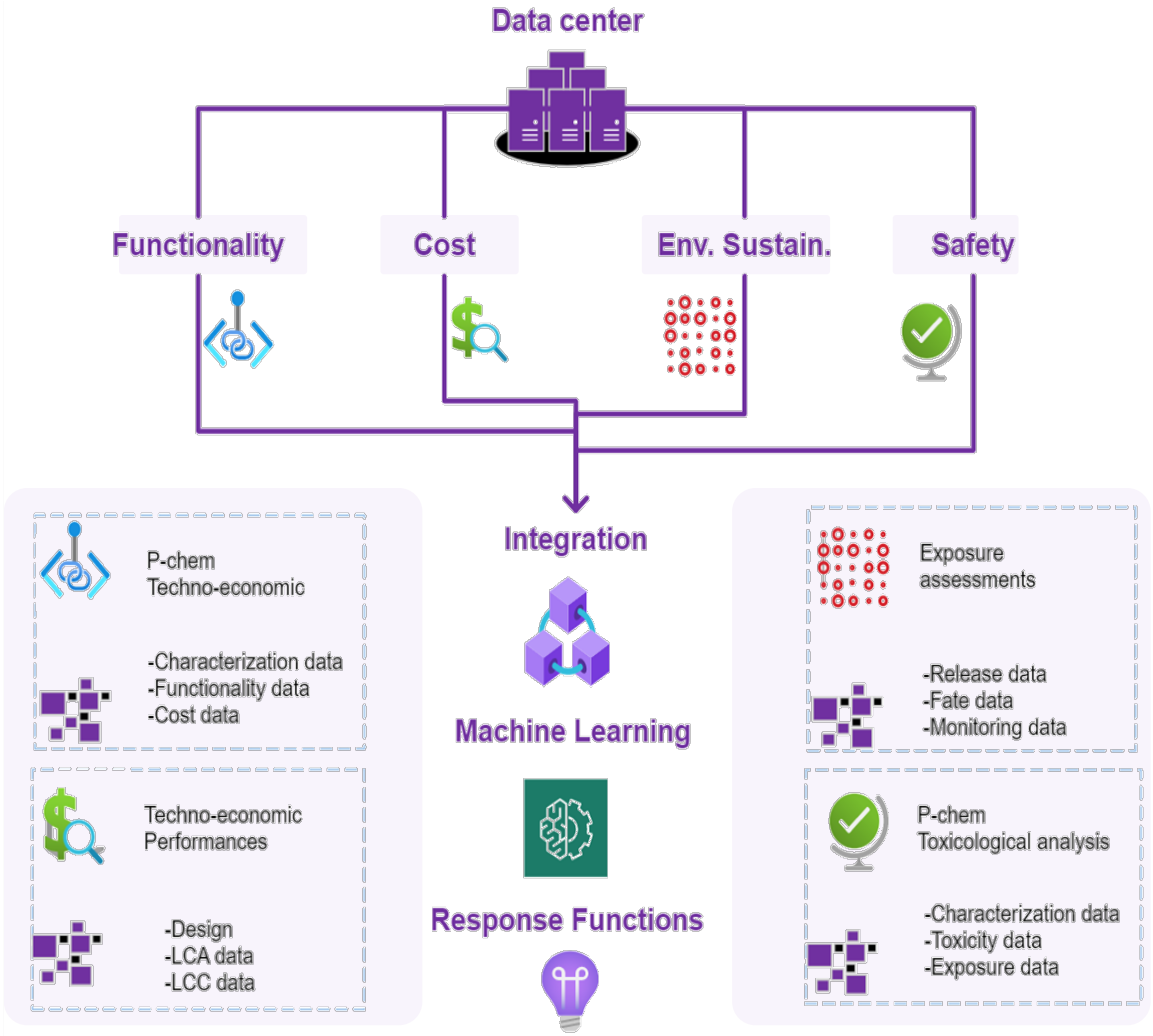
Why we need TA with NanoCommons? (2)



D4.3

Neural Networks
Random Forest
Bayesian Networks
Regression Tools

ML Design

D4.4

Internal Validation
External validation
Comparison of metrics
Parameterization

Train

Theoretical Descriptors Generation;

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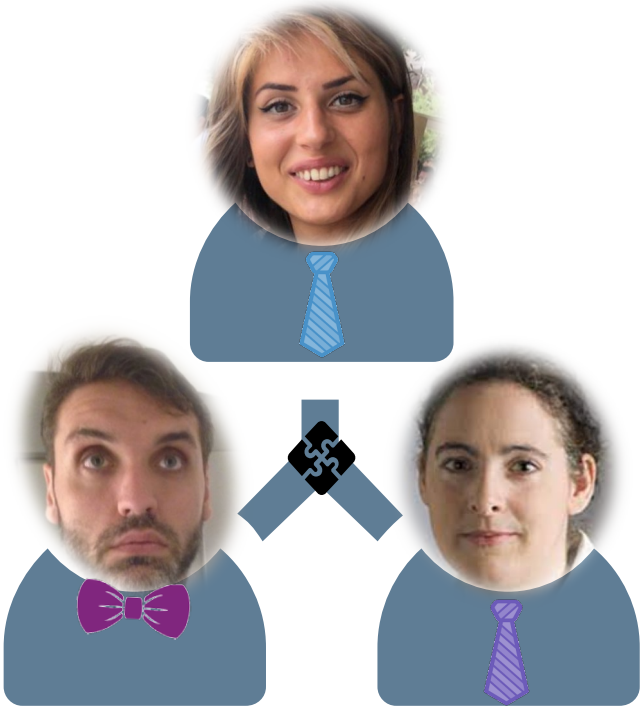
What we achieved?



D4.1

Data Management

D4.2

Data FAIRification

Transnational Access

Looking forward to working with you!

Successful Transnational Access

&

1) ASINA **DMP** submitted.
2) Generic **Questionnaires**
3) Capturing **Templates**
4) Storage in **Knowledge base.**

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Generic Questionnaires

Form for info collection on each future dataset from relevant partners!

Dataset Name	
Data Identification	
Dataset description	.....
Source	.....
Partner's activities and responsibilities	
Partner owner of the data; copyright holder (if applicable)	.....
Partner in charge of data collection	.....
Partner in charge of data analysis	.....
Partner in charge of data storage	.....
Related WP(s) and task(s)	.....
Expected input variables	
Description of the information required (working packages (WPs) and/or tasks) in order to move forward.	.....
Expected outcomes	
Description of the specific endpoint measurement variables/outcomes.	.....
Standards	
Detailed description of the methods/protocols	.....

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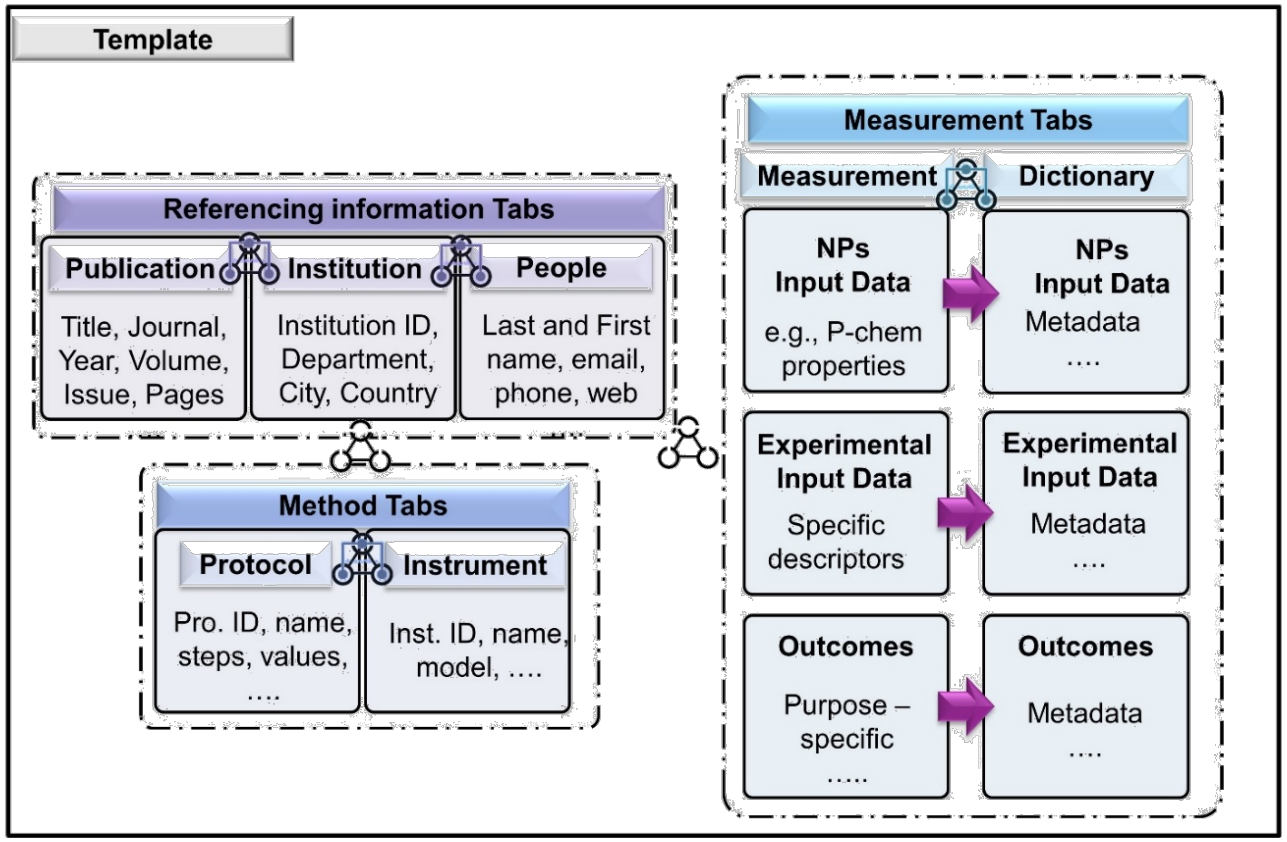
ASiNA Data Capturing Initial Template



Developed **case specific template** for **data capturing** in Collaboration with **NanoCommons**

We assist Nanosafety research in transforming into a **competitive and data-intensive field**

The template **enables data creators** to report **data in a FAIR way**

CEINT's NanoInformatics Knowledge Commons (NIKC) spreadsheet

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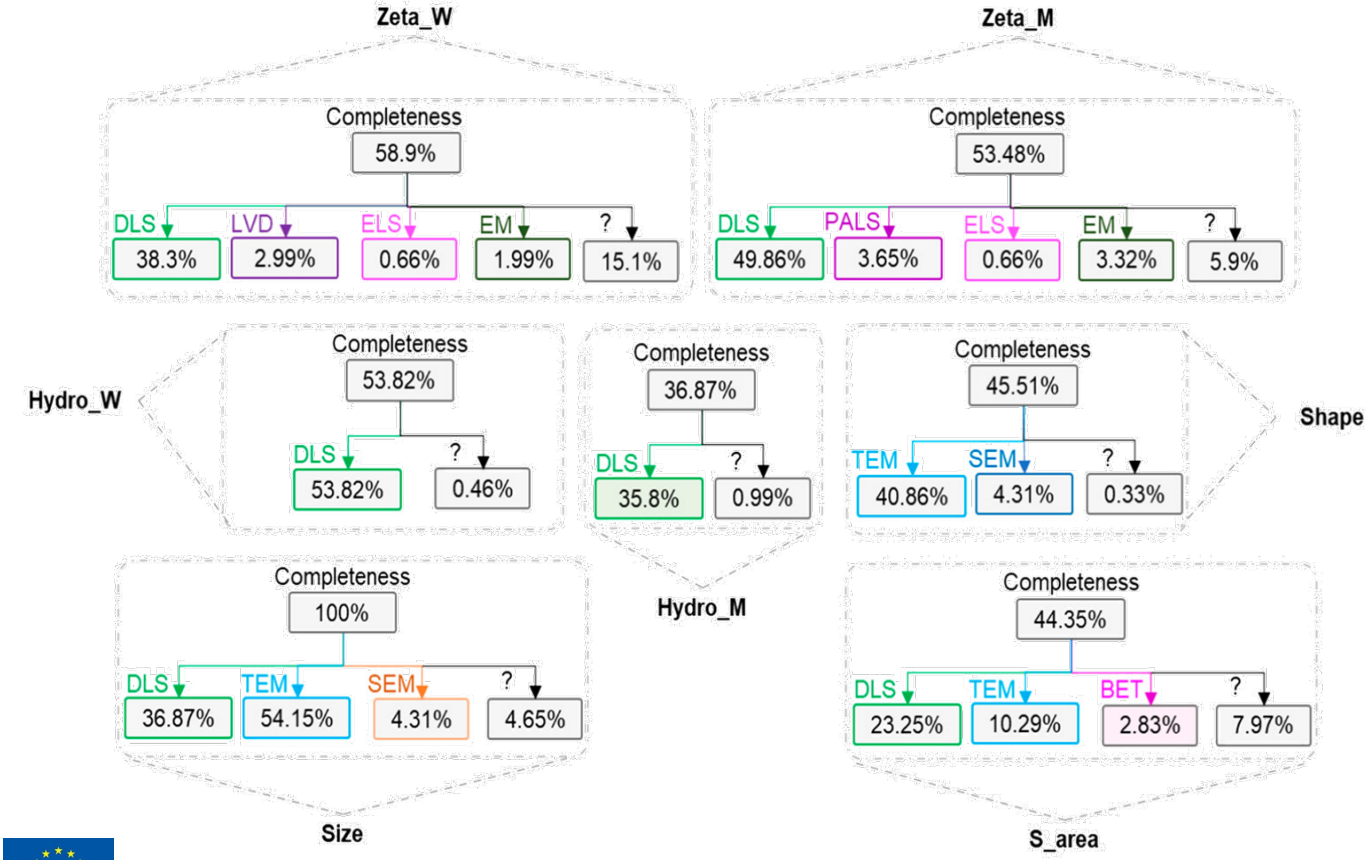
Annotated Dataset

The NanoCommons Workshop
"Annotating Your Experimental Data Workshop"
held on 28th of April 2020

Furxhi I., et al. (2020) Predicting In Vitro Neurotoxicity Induced by Nanoparticles Using Machine Learning
https://doi.org/10.3390/ijms21155280



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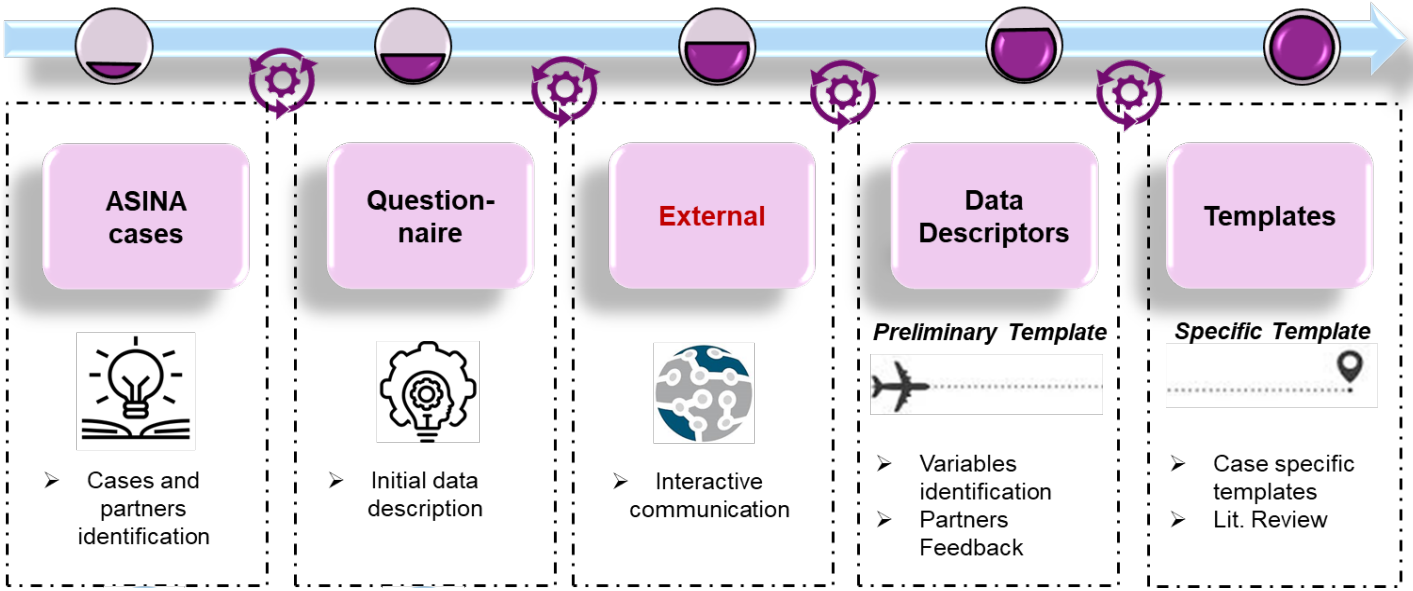
The Roadmap to FAIRification

Furxhi I., et al. (2021) Data shepherding in nanotechnology. The Initiation.
https://doi.org/10.3390/nano11061520



How **data creators, data analysts, stewards** and **shepherds** are engaged in the data shepherding process, in any project:
a **roadmap**, demonstrated **in the case of ASINA**.

Ensure Data access to **Nanosafety projects and stakeholders**

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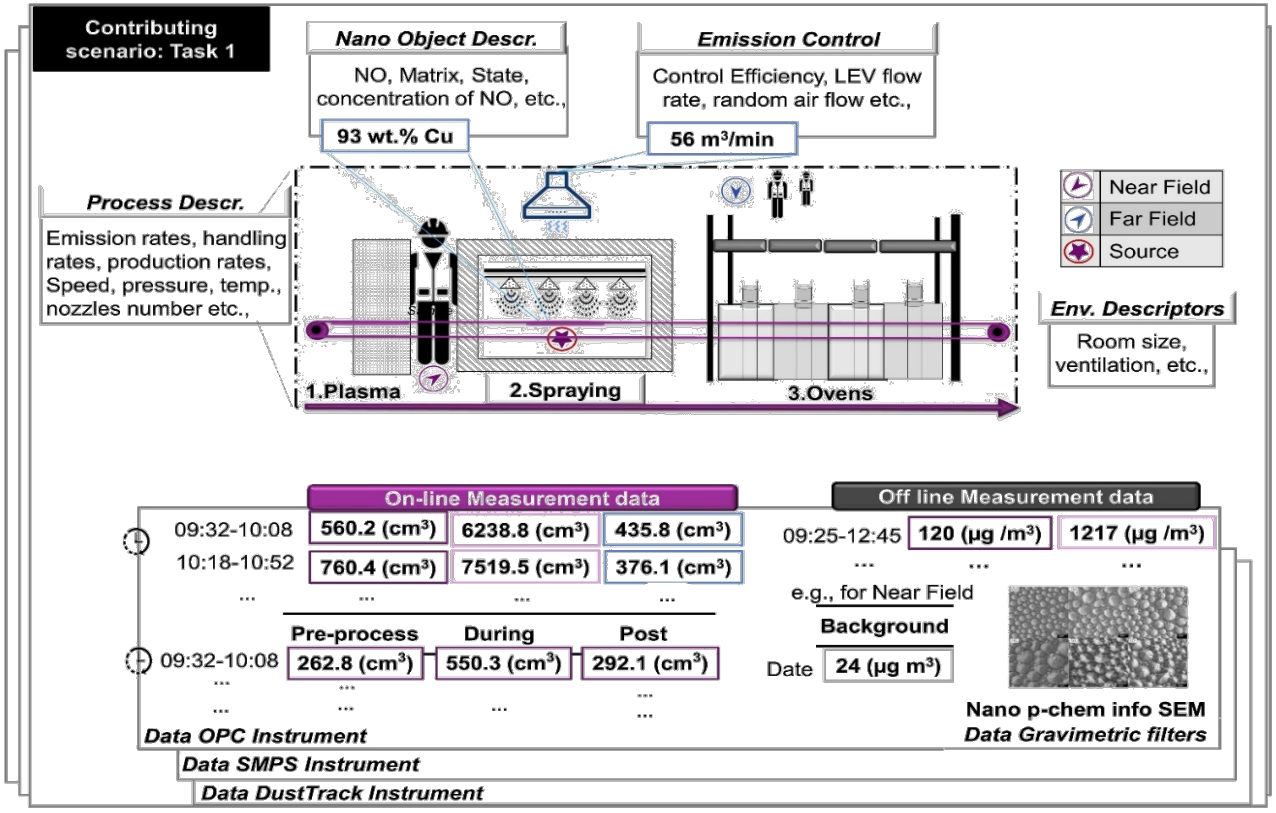
Capturing Template

Furxhi I., et al. (2021) The Exposure Field Campaign Template
https://doi.org/10.3390/nano11071818



Annotated template for **exposure field campaign** data increasing **interoperability**

Comparison with existing templates

gracious

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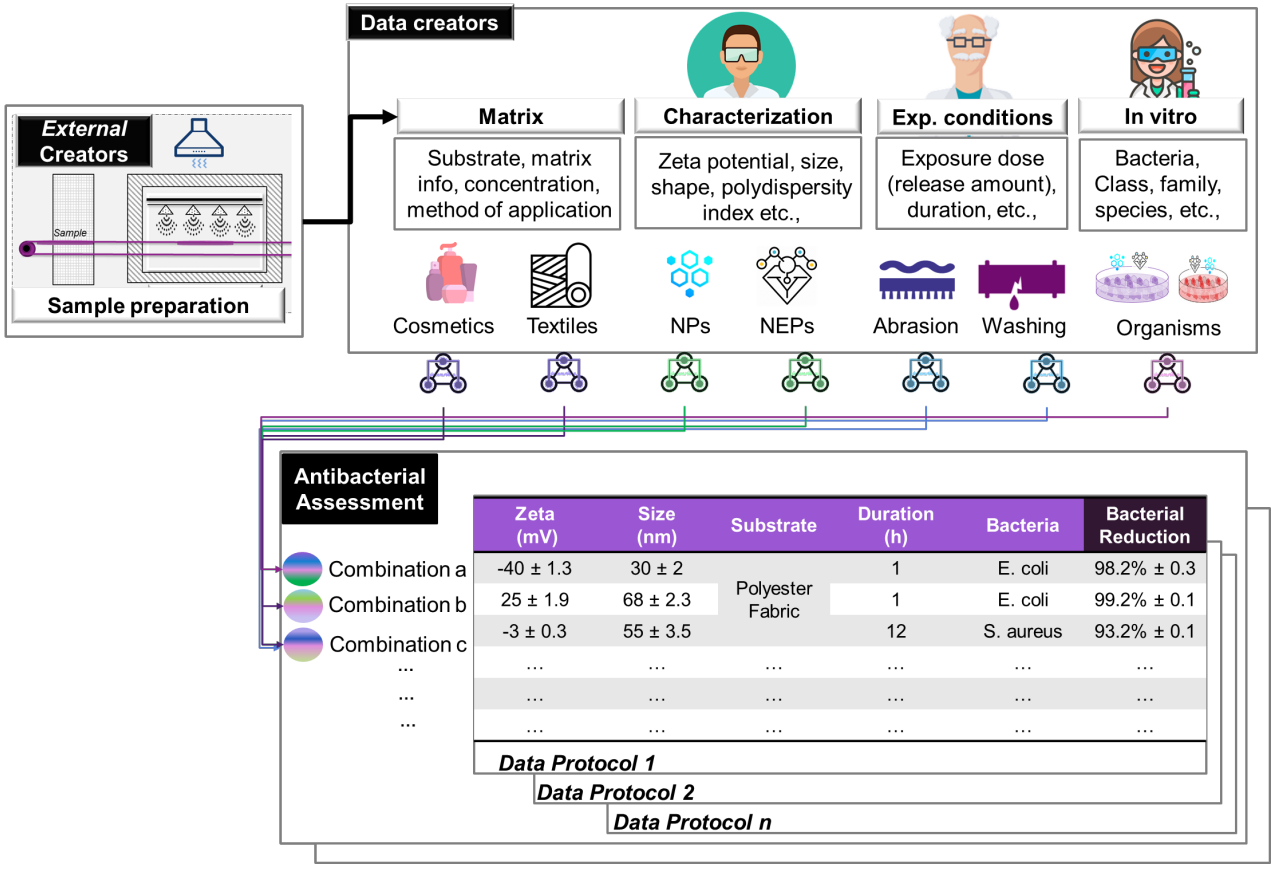
ASiNA Capturing Template

Furxhi I., et al. (2021) The Antibacterial capturing Template
Under development



Annotated template for **antibacterial** data increasing **interoperability**

No template available in the literature

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Data under FAIRification

Partner	Overview	NPs/NEP related	Pillar related	Outcome	Link
WP2 LEITAT	Low-tier RA tool (SUNDS)	**NEPs:** AHC*, ASC*, CPC*, FMG* **Containing:** N-TiO2 (COL), SiO2-TiO2 (COL & ISTEC) and Ag-HEC (ISTEC-CNR), Sp. Oreg/ Q10/Ve, CruOx (BIONANO)	- Exposure - Hazard - Environment - Processes: dip padding, screen printing, spraying, cosm. Formulation	**Risk scores ranges [0-1]** Public Health and Env. /Occupational/Consumers • <0.33: low risk • 0.33-0.67: medium risk • >0.67: high risk	https://cloud.asina-project.eu/f/197020
WP3 ISAC – CNR	Exposure campaign	**NPs:** TiO2, AgHEC NEPs: TiO2 (PPMA, Textiles), AgHEC (Textile)	-Exposure -Processes **Spraying Wiva**	NF/FF/Source **concentrations** (count and mass values) **Gravimetric** analysis (densities)	https://cloud.asina-project.eu/f/197020
WP2 LEITAT	MPPD dosimetry (Spray-wiva)	**NPs:** TiO2, AgHEC NEPs: TiO2 (PPMA, Textiles), AgHEC (Textile)	-Exposure -Hazard	(35) **Deposited** mass rate/ fraction (µg/min, µg/min/cm^2)	https://cloud.asina-project.eu/f/195101
STIIMA-CNR	Antimicrobial (abrasion, washing) (Spray-wiva)	**NPs:** AgHEC NEPs: Textile	-Functionality	Bacteria **Reduction** (%)	TBC
WP2 UNIMIB	P-chem, ROS, MTT	**NPs Reference** (Ag/NKD/PVP, TiO2), **NPs:** AgHEC, TiO2-SiO2 (CNR), TiO2-N (COL)	-Toxicity -P-chem	**P-chem:** Shape/Size/Polydispersity Index (Concentra/Media/Ph) **Tox:** ROS (Lung cells, DCFDA fold increase), MTT (Lung cells, %)	TBC
WP3 Koivisto (APM)	Emission factor, Conditions of Use (Spray-wiva)	**NPs:** TiO2, AgHEC NEPs: TiO2 (PPMA, Textiles), AgHEC (Textile)	-Exposure -Safety -Environment	Emission rates (mg/min),exp. Determinants, Exposure/REL	TBC

CPC: Coated Polymers and Ceramics / AHC: Antibacterial Hand Cream / ASC: Antiaging Skin Care Cream / FMG: Face masks and gowns

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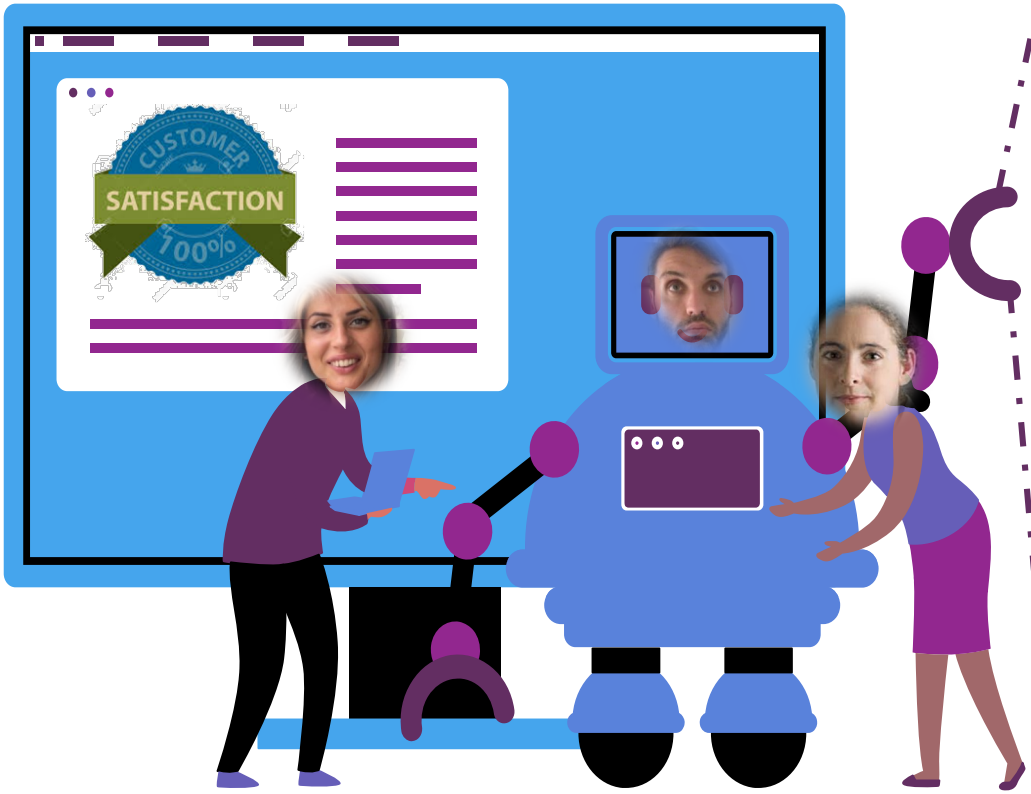
ASINA & NanoCommons



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Cheers!

EMERGING RISK RESEARCH, SOLUTIONS AND TRAINING

TGO

Ireland

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