DELIVERABLE REPORT D6.1



DELIVERABLE D6.1

eNanoMapper Year 1 Dissemination Report

GRANT AGREEMENT:	604134
ACRONYM:	eNanoMapper
NAME:	eNanoMapper - A Database and Ontology Framework for Nanomaterials Design and Safety Assessment
PROJECT COORDINATOR:	Douglas Connect GmbH
START DATE OF PROJECT; DURATION:	1 February 2014; 36 months
PARTNER(s) RESPONSIBLE FOR THIS DELIVERABLE:	Karolinska Institutet (KI)
DATE:	26.1.2015
VERSION:	V.3.2







Call identifier	FP7-NMP-2013-SMALL-7	
Document Type	Deliverable Report	
WP/Task	WP6 Dissemination and Training / Task 6.1 (Community web site) ,Task 6.2 (Virtual seminars) and Task 6.3 (Workshops)	
Document ID	Deliverable 6.1	
Status	Final	
Partner Organisations	 Douglas Connect, GmbH (DC) National Technical University of Athens (NTUA) In Silico Toxicology (IST) Ideaconsult (IDEA) Karolinska Institutet (KI) VTT Technical Research Centre of Finland (VTT) (until M10) European Bioinformatics Institute (EMBL-EBI) Maastricht University(UM) 	
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Purpose of the Document	To report the dissemination activities in the first year of the project (1 February 2014 - 31 January 2015)	
Document History	1. First draft: 10/11/2014 2. Second draft: 04/12/2014 3. Final version: 26/01/2015	





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GLOSSARY

	Description
WP	Work Package





1. SUMMARY

WP6 (Dissemination and Training) focuses on the development of news, events, findings, practices, resources, services created and scientific discoveries or progress from the eNanoMapper project.

The Deliverable 6.1 describes the overall dissemination activities in the first twelve months of the project with a focus on the **Task 6.1** (*Community web site*), **Task 6.2** (*Virtual seminars*), **Task 6.3** (*Workshops*) developments and other important scientific events in which eNanoMapper partners participated with lecture and/or poster presentations.

Online dissemination tools which facilitate the information exchange between the eNanoMapper partners and the dissemination of the project results to the general public have been created and deployed.

In the first twelve months of the project, the dissemination activities included also webinars and workshops (*i.e. OpenTox 2014 Conference in Athens, Greece, co-sponsored by eNanoMapper and ToxBank FP7 projects*) that covered scientific applications developed in the project and case studies. These events have the role to promote advances in the areas covered by eNanoMapper and to foster collaborations and common approaches with other programs. At the level of EU NanoSafety Cluster, eNanoMapper is also well represented: WG4 (Database) is led by Egon Willighagen (UM) and WG8 (Systems Biology) is led by Bengt Fadeel (KI), both WP leaders in eNanoMapper.

2. INTRODUCTION

2.1. OVERVIEW OF WP6 (DISSEMINATION & TRAINING)

WP6 focuses on the development and communication of news, events, findings, practices, resources, services created and scientific discoveries or progress from the eNanoMapper project:

- To **disseminate scientific results, tools and applications** developed in the project to the nano- scientific and technology communities and to industry user groups;
- To establish and develop usage of the eNanoMapper project website and communications tools;
- To **provide training** on eNanoMapper concepts and tools;
- To promote discussion and collaborative development and acceptance of nano safety data and ontology standards and interoperability between toxicology resources so as to support integrated data analysis concepts required by the community use cases;
- To develop connections, knowledge flows, resource interoperation and application opportunities with other significant programs of relevance to predictive toxicology;
- To disseminate and raise awareness of the eNanoMapper consortium and project applications within the nano-scientific and technology user communities in academia and industry and to attract future users of applications;





- To raise awareness of eNanoMapper resources with regulators and policy makers to show their enabling contribution to acceptance of validated predictive toxicity testing approaches for ENMs as alternatives to animal testing;
- To **ensure access to a wider international audience** in other regions (e.g., Americas, Africa, Middle East and Asia) to promote European opportunities for business development;
- To attract business opportunities for the consortium to ensure sustainability.

The activities revolve also around the **engagement of user communities** through interaction on the user requirements and use cases guiding development and through usage and evaluation of applications developed throughout the project and involving several feedback loops.

Users can obtain **guidance and training** both through online tutorials and meetings and through face-to-face workshops and conferences.

Advances in state-of-art pursued by the project in integrated data analysis and modelling are disseminated through a strongly **coordinated set of publication and conference activities**. The workshop, training and other event activities of WP6 are coordinated closely to support the ongoing community activities of WP1, in addition to developing outreach to new communities and users.

Based on results from the other WPs, the dissemination is being oriented at particular user groups or with different needs (*e.g. tutorials and other material developed in this WP will target the audience for which the use cases from WP5 are developed*). Similarly, within particular solutions, user-specific material is being developed in cases when the needs are significantly different. If there is significant overlap in user needs, parts of the material can be dedicated to a particular user.

A summary of the eNanoMapper project (see **Annex 1**) was included in the 2014 Edition of the EU Nanosafety Cluster Compendium. This document includes a summary of the ongoing and planned activities, the structure of the consortium, the scientific challenges and its expected impact and serves as an important tool to increase the visibility within the nanosafety community.

Importantly to be mentioned is that eNanoMapper is well represented also at the level of EU NanoSafety Cluster, as Egon Willighagen (UM) is the chair of WG4 Database and Bengt Fadeel (KI) is the chair of WG8 Systems Biology.





3. DISSEMINATION ACTIVITIES

3.1. ONLINE TOOLS

The creation of online tools aiming to facilitate the communication and information exchange within the project and with the public is part of the **Task 6.1 (Community web site)**.

The public website (<u>http://www.enanomapper.net/</u>) was launched as planned by M4 and will be further developed throughout the project. Also an identity/branding including a logo were established for the eNanoMapper project. Templates were created for all project-related documents including reports, presentation materials and web pages. The project website integrates in a single, user friendly, platform access to all eNanoMapper developments and tools. The website includes a broad presentation of the project, the consortium and the activities within each work package. Most of the project deliverables as conferences presentations, posters or webinar content are available for the general public on the project website.

A project website (<u>https://bugzilla.enanomapper.net/</u>) for managing tasks and development activities related to the project was also created. The site provides task and issue management functions grouped by Work Packages, search and indexing capability over eNanoMapper resources, and communications tools for ongoing collaborative web resource creation.

Several other important tools that facilitate the information exchange between the eNanoMapper partners and help disseminating the project activities and results to the general public have been created, deployed, and are being actively used:

Online Tools	Address	
Public Website	http://www.enanomapper.net/	
Project-internal Issue Tracker	https://bugzilla.enanomapper.net	
Mailing list	partner@lists.enanomapper.net	
	developers@lists.enanomapper.net	
Twitter account	@enanomapper	
Source code and Public Issue Tracker	https://github.com/enanomapper	
Building, integration, testing server (detailed	https://ionm.higgat.maastrichtunivorsity.nl	
in Deliverable 5.1)	https://jenn.bigcat.madstrichtuniversity.m	

3.2. WEBINARS

Virtual seminars (or webinars) on topics specifically related to project research and innovation activities, scientific applications and case studies are being developed in the project and held using a virtual conferencing facility linked into the website. They will involve internal project presenters, user group members and invited external experts.

A first webinar on Nanotechnology and Safety was organized and presented to eNanoMapper consortium members by Roland Grafström (VTT).

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A second webinar was organized in collaboration with the Nanotechnology Working Group at the US National Cancer Institute (NCI) - National Cancer Informatics Program (NCIP). This joint event facilitated the dissemination of ongoing developments in the eNanoMapper prototype database and application programming interface (API) to the scientific community in the US.

Торіс	Presenter	Date and time
Nanotechnology and Safety	Roland Grafström (VTT)	4 th of March 2014
The first eNanoMapper prototype: a substance database to support a safe innovation approach	Nina Jeliazkova (IDEA)	29 th of January 2015







3.3. WORKSHOPS

A series of technical workshop activities are planned to be held during the project in order to promote advances in the areas covered by eNanoMapper and to foster collaborations and common approaches with other programs e.g., other FP7 projects, IMI, US EPA, FDA etc.

This includes user-oriented workshops to support community development goals, interaction with users on use cases and case studies, and the hands-on application of software tools developed in the project by new users. The hands-on application exercises provide both a rich scientific interaction and experience, and a stress test to the infrastructure.

Opentox 2014 Conference in Athens, Greece, co-sponsored by **eNanomapper** and **ToxBank** (*jointly EU FP7 Project & Cosmetics Europe coordinated by Barry Hardy at Douglas Connect, CH*), included a **Workshop Session** on the following topics (see **Annex 2**):

Торіс	Authors
CHEMICAL SUBSTANCES, NANOMATERIALS AND	Nina Jeliazkova and Vedrin Jeliazkov
ENDPOINT DATA IN AMBIT	(Ideaconsult Ltd.)
DEVELOPMENT OF PREDICTIVE NANOQSAR MODELS	Georgia Tsiliki, Philip Doganis, Nikolaos
USING OPENTOX INFRASTRUCTURE AND THE R	Lampovas, Haralambos Sarimveis (NTUA)
LANGUAGE	and Pantelis Sopasakis (IMT Lucca)
OPEN SCIENCE PATHWAY ANALYSIS	Egon Willighagen, Bart Smeets, Lars Eijssen (Maastricht University)
THE ROLE FOR PHYSIOLOGICALLY-BASED PHARMACOKINETIC (PBPK) MODELLING IN PREDICTING TOXICITY	Mohammed Atari, Prakash Patel, Simon Thomas (Cyprotex Discovery Limited)
CARRYING OUT A META-ANALYSIS ACROSS MULTIPLE HETEROGENOUS SOURCES OF EVIDENCE	Barry Hardy and Markus Hegi (Douglas Connect)





3.4. SCIENTIFIC EVENTS AND PRESENTATIONS

EU NanoSafety Cluster meeting (23 April 2014, Antalya, Turkey)

- Barry Hardy (DC)
- Oral presentation
- o Audience: members of EU Nanosafety Cluster

Abstract

- Modular infrastructure for data storage, sharing and searching, based on open standards and semantic web technologies, minimum information standards and established security solutions;
- Development of ontologies for the categorization and characterization of eNMs in collaboration with other projects;
- Creation of new computational models in nanomaterials safety through the implementation of interfaces for toxicity modelling and prediction algorithms which may process all data made



available through eNanoMapper (e.g. using algorithms available from the OpenTox FP7 project or statistical/data mining software);

- Meta-analysis of nano-bio interactions supporting "safe-by-design" ENMs development by pursuing a Linked Data approach which integrates data and metadata originating from diverse sources within nanoscience, chemistry, biology and toxicology;
- Creation of tools for the exchange, quality assurance and reporting of research protocols and data for regulatory purposes;
- Creation of a community framework for interdisciplinary collaboration.

7th International Nanotoxicology Congress (23-26 April 2014, Antalya, Turkey)

- The Congress was co-chaired by Bengt Fadeel (KI).
- Poster presentations:
 - Vidal Fey, Vesa Hongisto and Roland Grafström (VTT): Bioinformatics processing of high-throughput screening data aimed at optimizing interpretation of nanomaterials safety evaluations in vitro
- Cristian Munteanu, Haralambos Sarimveis (UM/NTUA): Prediction of EC50 values for fullerenes using Markov Mean Properties and assay conditions.



• Egon Willighagen, Hanna L. Karlsson, Roland C. Grafström, and Bengt Fadeel (UM/KI/VTT): *Testing hypotheses explaining metal oxide nanomaterial toxicity using nanoQSAR modelling.*





- Vesa Hongisto, Pirjo Käpylä, Vidal Fey, Pekka Kohonen and Roland Grafström (VTT/KI): Establishing capability for standardized high-throughput and high-content analyses related to nanomaterials safety evaluation in vitro
- Vesa Hongisto, Sandra Jernström, Vidal Fey, Merja Perälä, Roland Grafström (VTT): Considering New Approaches for Toxicity Assessment of Engineered Nanomaterials (ENMs): Comparison of Traditional Monolayer Cell Cultures to Organotypic 3D Cultures Using High-Throughput Technologies.

Modeling Cluster Meeting (April 2014, Leuven,

Belgium)

- Presentation of Egon Willighagen (UM):
- Oral presentation
- Audience: NSC Harmonization Cluster
- Title: eNanoMapper-Modeling Cluster: Collaboration Ideas

UK Ontology Networking Meeting (24 April 2014, Birmingham, UK)

- Janna Hastings (EBI) / WP2
- o Oral presentation
- Type of audience: Approximately 80 UK ontologists
- Title: The eNanoMapper Ontologies: standardising data for nanomaterial risk assessment
- Abstract: Brief overview of eNanoMapper domain and planned ontology work

ISMB Bio-Ontologies SIG meeting (11 July 2014, Boston, USA)

- Janna Hastings (EBI) / WP2
- Oral presentation and proceedings online published abstract (peer reviewed), available from http://www.bioontologies.org.uk/
- Type of audience: Approximately 50 ISMB attendees
- Title: eNanoMapper Opportunities and challenges in using ontologies to enable data integration for nanomaterial risk assessment
- Abstract: Brief overview of eNanoMapper domain and planned ontology work, focusing on the challenges of integrating

multiple overlapping existing ontologies and the problem of giving clear and unambiguous ontological definitions for the nanomaterial domain.

OpenTox Euro 2014 (22-24 September 2014, Athens, Greece)

The meeting was co-sponsored by eNanoMapper. A special session addressed the issue of the safety of nanotechnology: http://www.douglasconnect.com/opentox-sessions/s2-

<u>safety-nanotechnology</u>

• Oral presentation / session:



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- Roland Grafström (VTT) Standardized in vitro high-throughput and high-content analyses serve efficiently to broadly assess nanomaterials safety and influences of different dispersion and testing protocols
- Poster presentations:
 - Georgia Tsiliki, Haralambos Sarimveis (NTUA): *NanoQSAR modelling using protein corona fingerprints*
 - Bart Smeets, Lars Eijssen, Egon Willighagen (UM): *Fullerenes potentially aggravate* atherosclerosis onset by disregulating lipid homeostasis in vascular endothelial cells

Nanosafety Forum for Young Scientist (8-9 October 2014, Syracuse, Italy) – event jointly organized by EU NanoSafety Cluster and COST Action MODENA

- Nina Jeliazkova, Vedrin Jeliazkov (IDEA) / WP3
- Title: Approaches to data models reconciliation in eNanoMapper nanomaterials database
- Bengt Fadeel (KI) / WP6
- Keynote lecture *Nanotoxicology: nanomaterial interactions with biological systems*

MODENA COST action meeting in Syracuse (10

October 2014, Syracuse, Italy)

- Presentation by Egon Willighagen
- Title: eNanoMapper

Nanoinformatics workshop at the IEEE International Conference on Bioinformatics and Biomedicine (2 November 2014, Belfast, UK)

- Egon Willighagen (UM) / WP3
- Title: The first eNanoMapper prototype: a substance database to support safe-by-design (Jeliazkova N., et al. 2014)

EU NanoSafety Cluster review meeting (10-11 December 2014, Brussels, Belgium)

- The project was represented (with presentations) by:
- Barry Hardy (DC, coordinator of eNanoMapper),
- Bengt Fadeel (KI, WG8 chair), and
- Egon Willighagen (UM, WG4 chair).



Approaches to data mode



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Source: Synopsis of FP7 Achievements in Nanosafety [draft version, 2014-12]

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3.5. SCIENTIFIC PUBLICATIONS

- Kohonen P, Ceder R, Smit I, Hongisto V, Myatt G, Hardy B, Spjuth O, Grafström R. Cancer biology, toxicology and alternative methods development go hand-in-hand. <u>Basic Clin Pharmacol</u> <u>Toxicol. 2014 Jul;115(1):50-8.</u> doi: 10.1111/bcpt.12257. Epub 2014 May 23.
- Janna Hastings, Egon Willighagen, Gareth Owen, Nina Jeliazkova and Christoph Steinbeck (2014) eNanoMapper: Opportunities and challenges in using ontologies to enable data integration for nanomaterial risk assessment. In Proceedings of the ISMB Bio-Ontologies SIG meeting, Boston, USA, July 11-12 2014. <u>http://www.bio-ontologies.org.uk/programme</u>
- Nina Jeliazkova, Vedrin Jeliazkov, Egon Willighagen, Bart Smeets, Cristian Munteanu, Bengt Fadeel, Roland Grafström, Pekka Kohonen, Haralambos Sarimveis, Georgia Tsiliki, Philip Doganis, David Vorgrimmler, and Janna Hastings, *The first eNanoMapper prototype: a substance database to support safe-by-design* (http://nanoinfo2014.weebly.com/program.html)
- Mustad, Axel P.; Smeets, Bart; Jeliazkova, Nina; Jeliazkov, Vedrin; Willighagen, Egon (2014): Summary of the Spring 2014 NSC Database Survey. http://dx.doi.org/10.6084/m9.figshare.1195888





4. CONCLUSION

The Deliverable 6.1 presents the dissemination and training within the first 12 months of the eNanoMapper project (February 2014 – January 2015). Specifically, in this Deliverable the activities of Task 6.1 (Community web site), Task 6.2 (Virtual seminars) and Task 6.3 (Workshops), but also other important scientific events, in which eNanoMapper partners participated with lectures of posters, are described. The goals of these Tasks were entirely reached and it is expected that these activities will be continuously developed and updated, once the project releases new tools that will be useful for the scientific community.

In the first year of the project, a public website (<u>www.enanomapper.net</u>) and other online tools were deployed, in order to facilitate the information exchange and the communication within the Consortium but also with potential interested parties (i.e. Twitter account, internal project website, etc.). Also a series of online tools were created for technical purposes only (i.e. to help eNanoMapper developers to create, exchange data, test the systems, etc.). An important dissemination event was the OpenTox 2014 Conference (Athens, Greece) that was co-sponsored by eNanoMapper. This Conference included a separate Workshop Session that covered the eNanoMapper project topics and represented a good opportunity for scientists to exchange information and to discuss the ongoing developments in these areas.

The scientific community was reached also via the presentations of eNanoMapper partners at various scientific events (i.e. EU NanoSafety Cluster meetings, International Nanotoxicology Congress, OpenTox Conference, different meetings on ontologies, etc.). The eNanoMapper partners coordinated or participated in several peer-reviewed scientific publications.

The dissemination of the project results is a continuous process, with a particular emphasis on online seminars, trainings, publications and participation in scientific events.





6. ANNEXES

ANNEX 1. EU NANOSAFETY CLUSTER COMPENDIUM 2014 (PAGE 1-4) ANNEX 2. WORKSHOP PROGRAM: OPENTOX-ENANOMAPPER-TOXBANK, SEPTEMBER 2014





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