



Overall view of the LIFE NanoMONITOR project



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NanoMONITOR – Stakeholder's Day

NanoMONITOR is partly funded by the European Commission Life+ with grant agreement LIFE14 ENV/ES/000662





Outline

- 1 CONCEPT AND OBJECTIVES
- 2 OVERALL VIEW OF THE WORKPLAN AND EXPECTED OUTCOMES
- 3 PROGRESS SO FAR AND MAIN RESULTS
- 4 SUMMARY CONCLUSION



NanoMONITOR – Stakeholder's Day

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1. Concept and Objectives



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Overall view of the NanoMONITOR LIFE project

1. Concept and Objectives

❑ Objectives

LIFE NanoMONITOR tackles the challenge of supporting the monitoring of the concentration of ENMs in indoor workplaces and environment upon release, considering that:

- ❗ Whilst a **growing number of ENMs** are already available on the market, there is still an on-going debate about their potential effects on human health and the environment.
- ❗ The use, production and disposal of ENMs raise concerns about their environmental impact at all stages of the value chain, considering that **nanostructured materials can be released** to the air, soil or water in common industrial processes and/or accidental events, and ultimately accumulate in the soil, water or biota, endangering the health of living organisms and ecosystems.
- ❗ The **likelihood of unintended release** during production, use, and end-of-life treatments of ENMs will tend to increase in the near term, being necessary to define proven methodologies and procedures to characterize current levels of exposure in indoor workplaces and the environment.

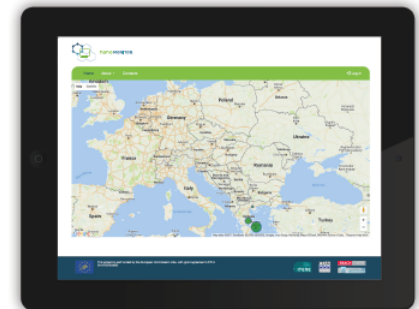
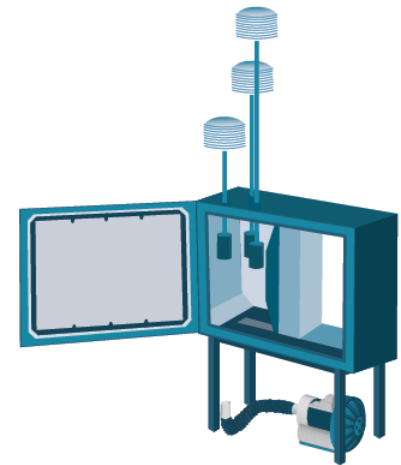


Overall view of the NanoMONITOR LIFE project

1. Concept and Objectives

❏ Objectives

- ❗ The overall aim of the project is to develop a **real-time information and monitoring system** as a key innovative tool to support the risk assessment of nanomaterials.
- ❗ The system is based on the development of an **online data analysis tool** for collecting and archiving data on the concentration of nanomaterials in the workplace, urban areas and the environment, coupled with a newly developed **low cost nano-pollution monitoring system prototype** able to continuously measure and monitor the concentration of particles in the nanometer range.
- ❗ By developing these tools, NanoMONITOR **promotes the use of measured data** that can be used by risk assessors and other stakeholders to identify and study the concentration and behavior of nanomaterials in relevant zones for risk assessment purposes, as well as to support the identification of **predicted environmental concentration levels (PEC)**.



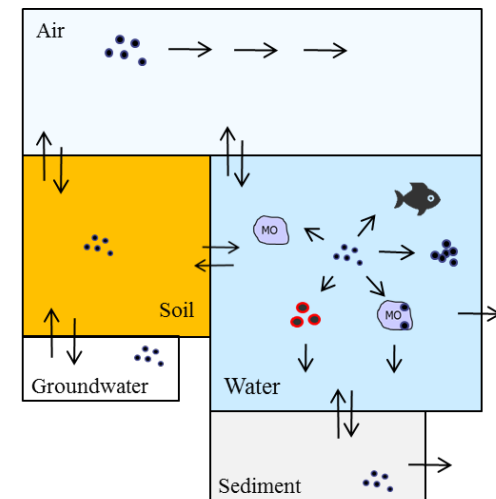
Overall view of the NanoMONITOR LIFE project

1. Concept and Objectives

Objectives

Taking into account the LIFE priority areas, as well as current uncertainties on potential adverse effects of nanomaterials in human health and the environment, the **specific objectives outlined in the project** are:

- ❗ New low cost **monitoring station prototype** for the measure of indoor and outdoor concentrations of NMs
- ❗ To develop a **software application** to store, exchange and manage data on the concentration of NMs.
- ❗ To design and develop **standardized sampling and data analysis procedures** to ensure the quality, comparability and reliability of the monitoring data used for risk assessment
- ❗ To implement and validate the NanoMONITOR integrated systems in case studies
- ❗ Support the calculation of **the predicted environmental concentration (PEC)** of NMs in the context of REACH
- ❗ Transfer and **disseminate the project results** to a large community of SMEs and potential stakeholders

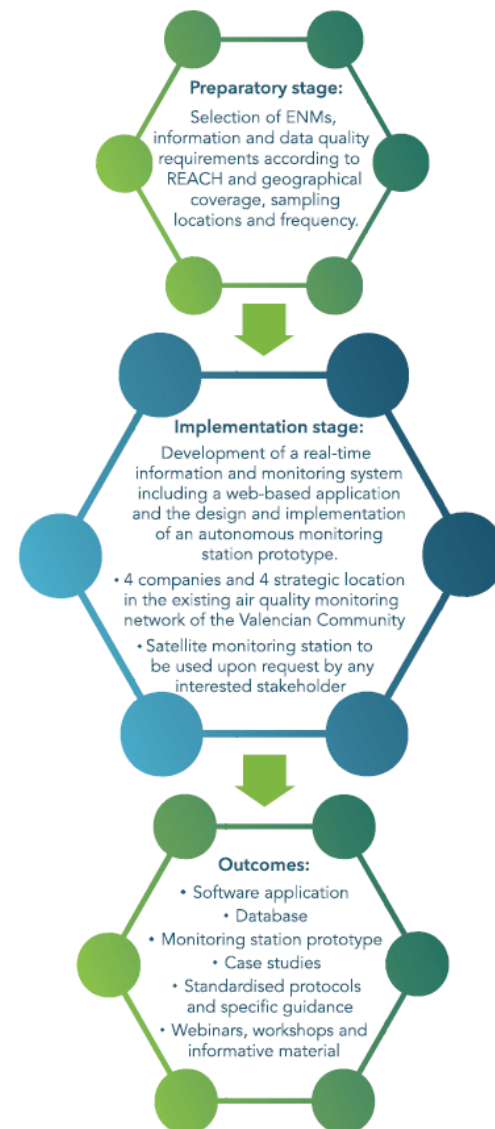
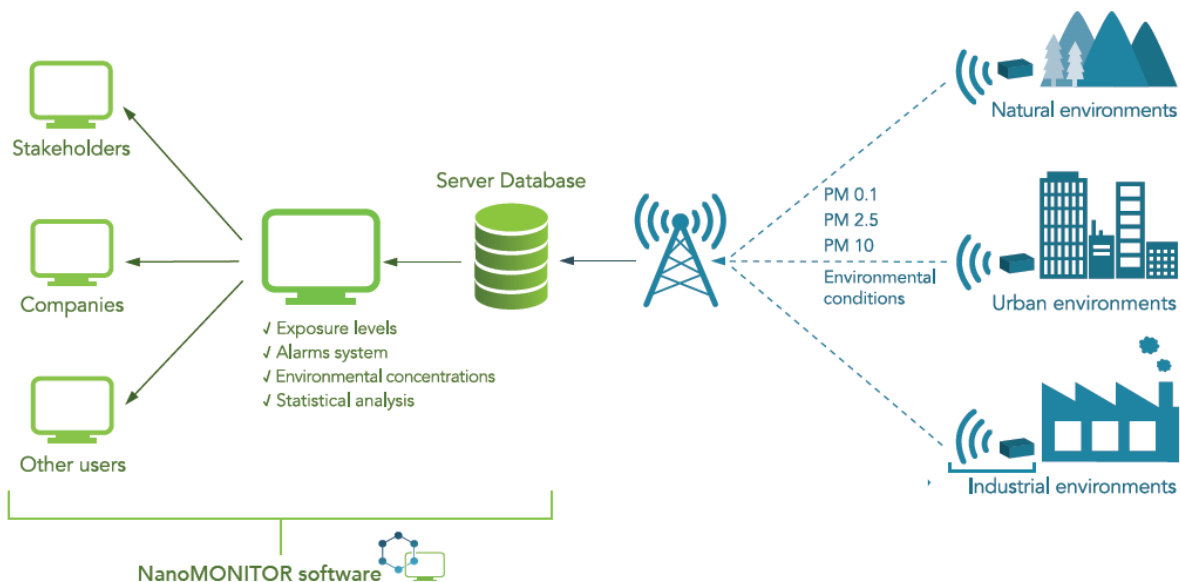


Overall view of the NanoMONITOR LIFE project

1. Concept and Objectives

□ Concept

- The concept of the project stems from the need of generating robust, accessible, comparable and interoperable environmental and indoor air monitoring data on the concentration of NMs to support risk assessment and decision making.



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Overall view of the NanoMONITOR LIFE project

1. Concept and Objectives

□ Key objectives in 2017

Taking into account our scheduled calendar of activities and progress so far, our key objectives in 2017 are:

- ❗ Delivery of up to **2 fully operative monitoring stations** in 2017
- ❗ **Installation of 2 monitoring stations** in urban environments (high traffic areas + subway)
- ❗ Delivery of the **first version of the NanoMONITOR software** platform in December 2017
- ❗ Selection of up to **4 industrial facilities** covering relevant processes in the ENM life cycle by Nov. 2017
- ❗ Development a **first draft of procedures to support the sampling, monitoring and analysis of NMs** in the workplace, urban areas and the environment by March 2018.
- ❗ Disseminate the project to stakeholders
- ❗ Gain awareness through the presence in relevant disseminations events in Europe.



Overall view of the NanoMONITOR LIFE project

1. Concept and Objectives

❑ Consortium and main roles

The consortium of the project consists of **4 organizations representing** 3 main areas: Spain, Greece and UK.

► Coordinating Beneficiary

Instituto tecnológico del embalaje, transporte y Logística (ITENE)

► Associated Beneficiaries:

- Fundación centro de estudios ambientales del mediterráneo (CEAM) - Spain
- The REACH Centre Ltd (TRC) - Uk
- AXON Enviro-Group Ltd (AXON) - Greece





2. Overall view of the workplan and expected outcomes



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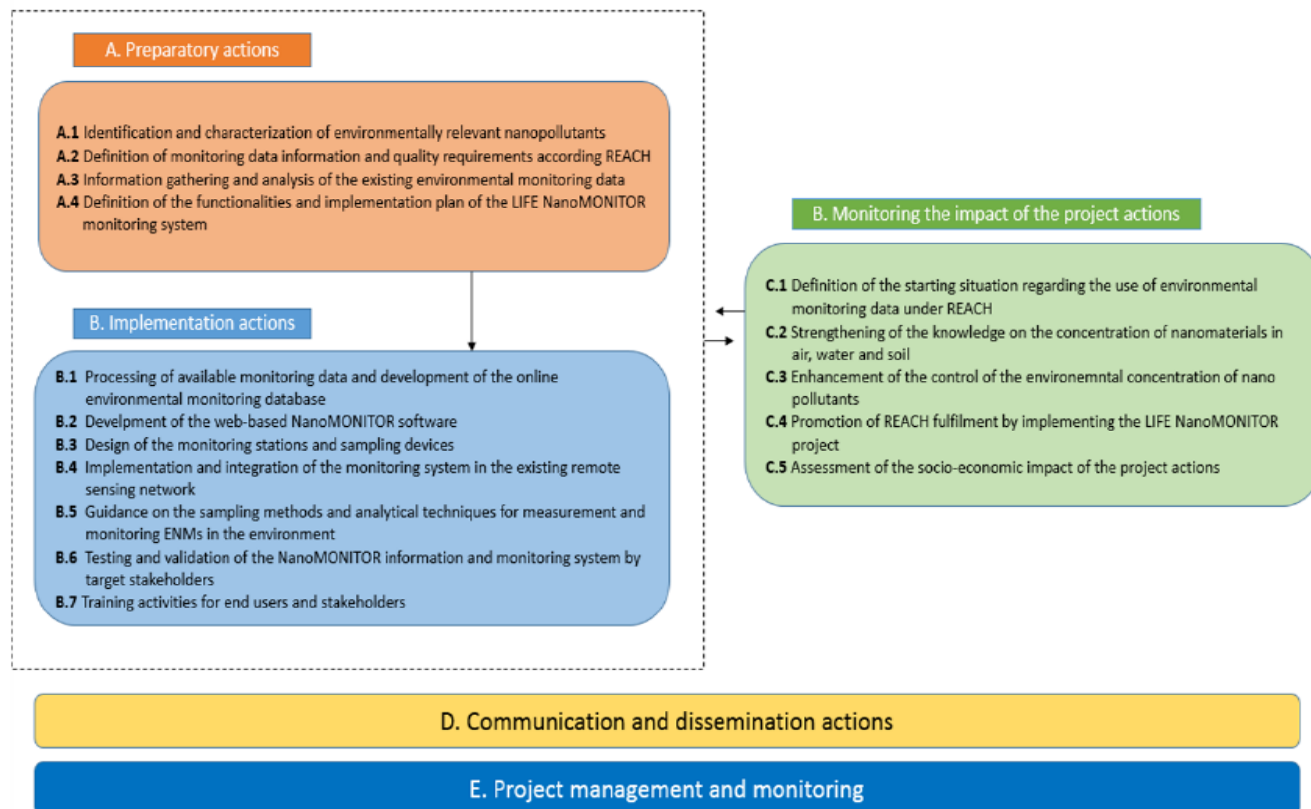
Overall view of the NanoMONITOR LIFE project

2. Overall view of the workplan and expected outcomes

❑ Scheduled activities

NanoMONITOR consists of 5 complementary actions, including:

- A. Preparatory actions
- B. Implementation
- C. Monitoring
- D. Communication
- E. Management



Overall view of the NanoMONITOR LIFE project

2. Overall view of the workplan and expected outcomes

□ A. Preparatory Actions

These actions focus on the selection of environmentally relevant ENMs, the information and data quality requirements according REACH and the geographical coverage and sampling locations and frequency.

Action Nº	Action Title	Partner id
A.1.	Identification and characterization of environmentally relevant nano-pollutants	ITENE
A.2	Definition of monitoring data information and quality requirements according REACH	ITENE
A.3	Information gathering and analysis of the existing environmental monitoring data	CEAM
A.4.	Definition of the functionalities and implementation plan of the LIFE NanoMONITOR monitoring system	AXON

Main outcomes are:

P1. Quality criteria to use measured data under REACH and relevant monitoring programs

P2. Procedures to determine the validity of measured data based on scoring criteria

P3. Inventory of data on the concentration of NMs in industrial, urban and environmental compartments



Location	Country	Year †	PNC (particles/cm ³)		
			Max	Min	Mean
Toronto	Canada	2006 – 2011	36800	11400	
Huelva	Spain	2008 – 2009			
Barcelona	Spain	2009	29449	6140	16847
Lugano	Switzerland	2009	47562	2751	14945
North Kensington	UK	2009	27295	795	12134
Bern	Switzerland	2009	93078	8888	28032
Marylebone	UK	2009	58017	4753	22156
Huelva	Spain	2009	67949	1091	17918
Sta. Cruz de Tenerife	Spain	2009	26249	1076	12008
Durham (NC)	US	2008			
Augsburg	Germany	2004 – 2006	24122	5387	
Milan	Italy	2009	117600	13500	
Mol	Belgium	2007			

Overall view of the NanoMONITOR LIFE project

2. Overall view of the workplan and expected outcomes

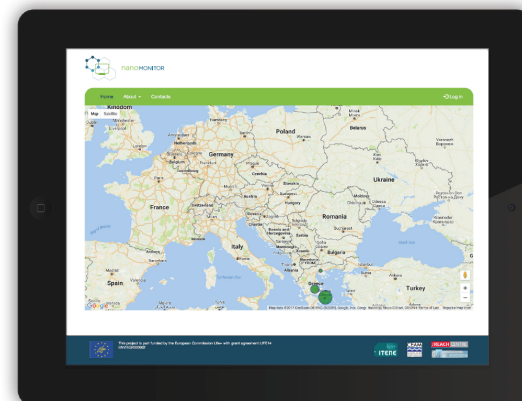
□ B. Implementation Actions

The implementation actions will focus on the development of the real-time information and monitoring system including the development of the web-based application and the design and implementation of the autonomous monitoring station prototype.

Action N°	WP Title	Partner id
B.1.	Development of a web based library of exposure scenarios and measured data on the exposure and release of ENMs	ITENE
B.2.	Development of the web-based NanoMONITOR software application	AXON
B.3.	Design of the monitoring stations and measurement devices	ITENE
B.4.	Implementation and integration of the monitoring system in the existing air quality monitoring network	CEAM
B.5.	Sampling methods and analytical techniques for the measurement and monitoring of ENMs in the environment	ITEBE
B.6.	Testing and validation of the NanoMONITOR information and monitoring system by target stakeholders	ITENE
B.7.	Training activities for end users and stakeholders	TRC

Main outcomes are:

- P1. On-line database of exposure scenarios
- P2. NanoMONITOR Software Platform
- P3. Up to 5 NanoMONITOR monitoring stations
- P4. Publication of a list of 10 well defined and standardised protocols for collecting and sampling ENMs for risk assessment purposes
- P5. New interactive guidance on the sampling methods and analytical techniques for the measurement and monitoring of ENMs in the environment



Overall view of the NanoMONITOR LIFE project

2. Overall view of the workplan and expected outcomes

□ B. Implementation Actions

! A Real-time Information and Monitoring System.

Technical Details on the Monitoring Station:



Detection of particles ranging in size from 10 to about 700 nm



Geolocated real-time information on ENM concentrations



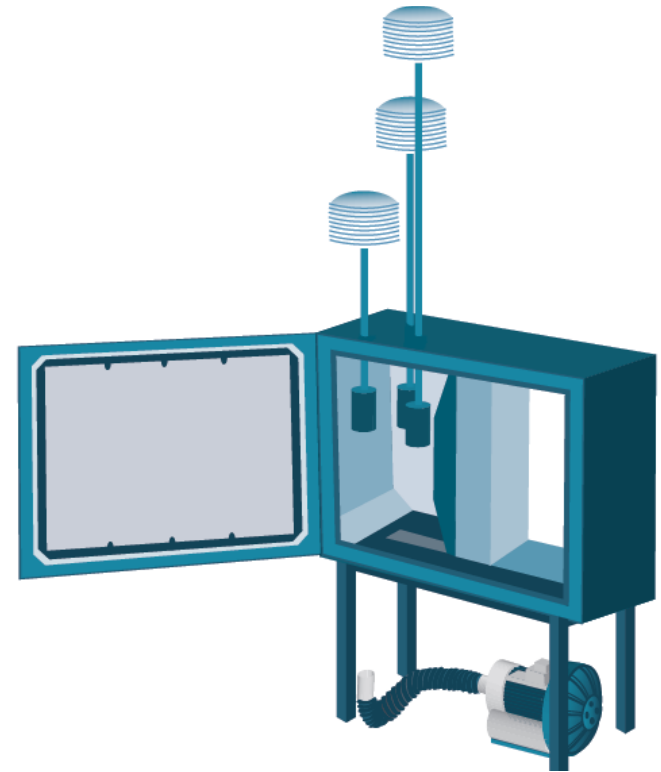
Integrated plug and play solution designed for long term sampling and monitoring ENM concentrations



Remotely configurable settings, readings and transmission periods



Minimum maintenance requirements



Overall view of the NanoMONITOR LIFE project

2. Overall view of the workplan and expected outcomes

□ B. Implementation Actions

❗ Software application to store, exchange and manage data on the concentration of ENMs



Multiple exporting
data formats



Real-time
multiparametric
graphical information



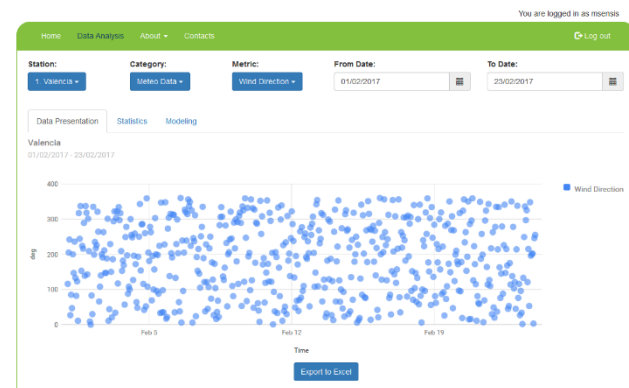
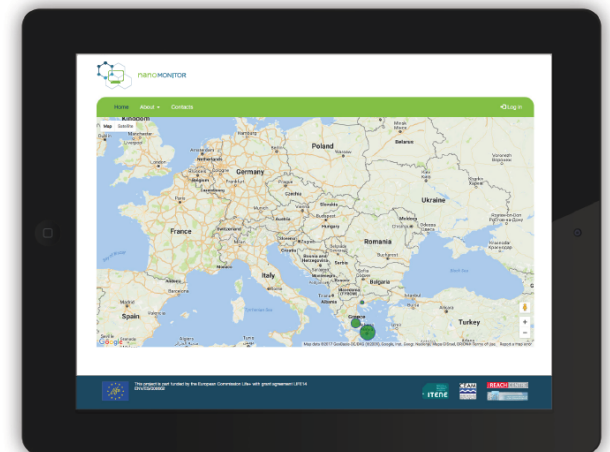
Easy data management
options, including data
storage, comparative
analysis and modelling



High resolution maps



Access from smartphones
and tablets



Overall view of the NanoMONITOR LIFE project

2. Overall view of the workplan and expected outcomes

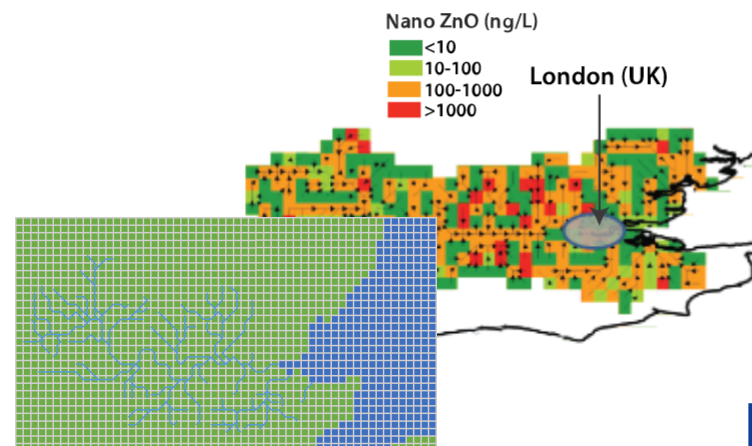
□ C. Monitoring Actions

These actions are focused on the evaluation of the enhancement of knowledge on the concentration of ENMs in indoor and outdoor areas as a result of the activities conducted within the project, and the analysis of the impact of the project in REACH implementation.

Action Nº	WP Title	Partner id
C.1.	Definition of the starting situation regarding the use of environmental monitoring data under REACH	ITENE
C.2.	Strengthening of the knowledge database on the concentration of NMs in air, water and soil	TRC
C.3.	Promotion of the use of exposure/environmental monitoring data in the protection of human health and the environment	CEAM
C.4.	Promotion of REACH fulfilment by implementing the LIFE NanoMONITOR project	ITENE
C.5.	Assessment of the socio-economic impact of the project actions	ITENE

Main outcomes are:

- P1. Continuously updated Inventory of current information of ENMs in indoor/outdoor environments
- P2. Database with data to be used for regulatory risk assessment: PEC values + exposure levels
- P3. Action plan to promote REACH implementation
- P4. Report on the socioeconomic impact of the project



Overall view of the NanoMONITOR LIFE project

2. Overall view of the workplan and expected outcomes

□ D. Dissemination Actions

A number of dissemination activities will be conducted during the project execution period and during 3 years after the end date.

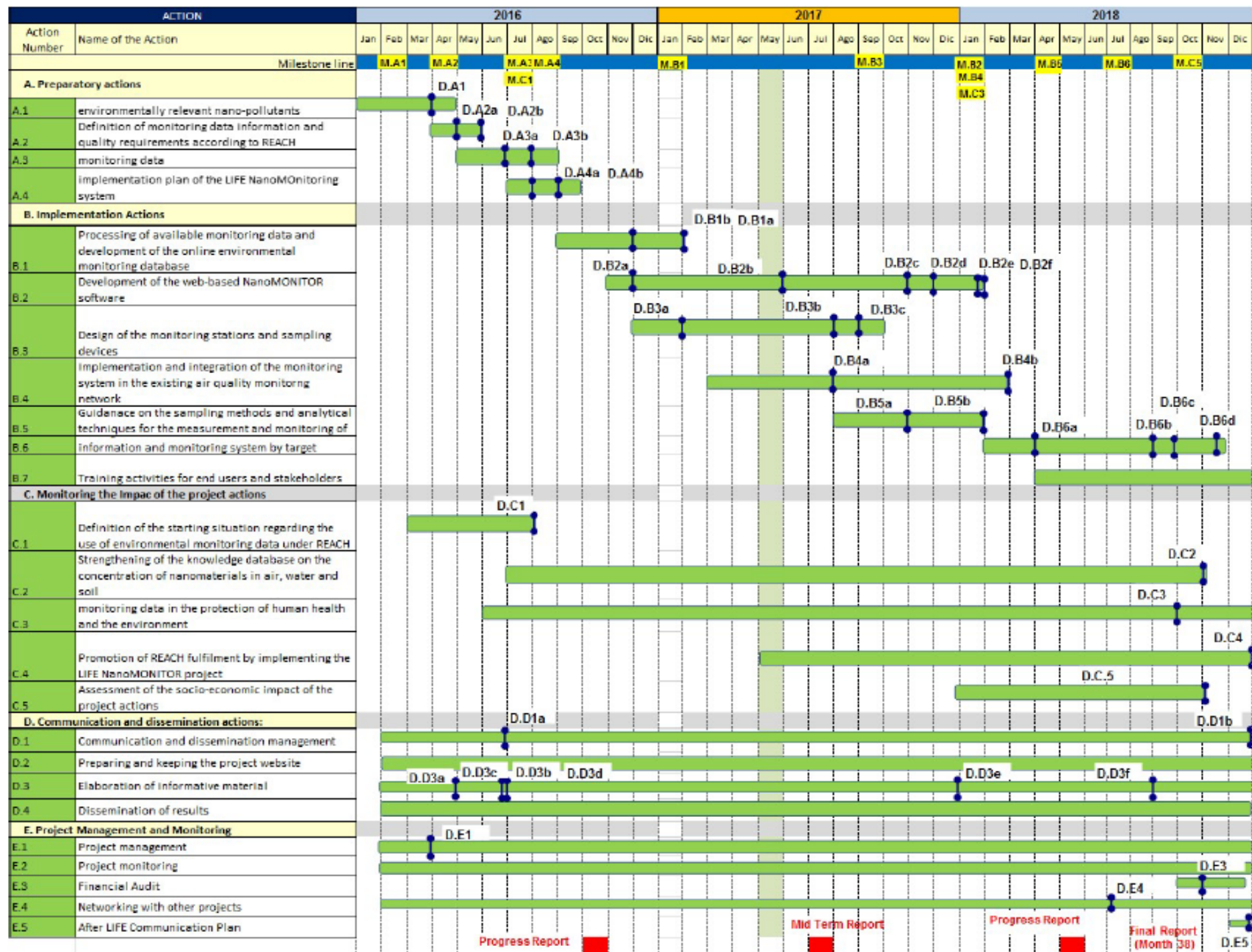
Scheduled actions include :

- Join Workshop on risk assessment strategies. Madrid, March 2018
- NanoMONITOR conference in Greece in Spring/ Summer 2018
- NanoMONITOR final conference in Valencia in Autumn 2018
- Webinars on exposure monitoring and sampling methodologies (April - October 2018)
- Organization of a parallel workshop in a relevant nanosafety related conference in Europe in 2018



Dissemination materials (posters, leaflets, fatesheets), presentations, webinars and videos will be available in the web site (<http://www.lifenanomonitor.eu>)







3. Progress so far and main results



NanoMONITOR – 1st Stakeholder's Day

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Overall view of the NanoMONITOR LIFE project

3. Progress so far and main results

Overall progress

! Selection of **relevant ENMs** considering market volume, uses, processes and risk profile

Exposition (50%)																	Hazard (50%)									
Production (47,5%)		Uses (REACH Description) (2.5%)					Toxicity (25%)					Ecotoxicity (25%)														
Nanoparticle		SU (0.6%)	PC (0.6%)	PROC (0.6%)	AC (0.6%)	inh (5%)	der (5%)	oral (5%)	geno t.(5 %)	citot. (5%)	daphnia (5%)	alga (5%)	fish (5%)	worms (5%)	BAF5 %	Total Score										
SWCNTs	4,75	0,01157	0,00457	0,00551	0,00321	0	0,4	0,2	0	0	0,4	0,2	0	0,4	0,4	6,8										
MWCNTs	4,75	0,01157	0,00457	0,00551	0,00321	0,4	0	0	0	0	0	0,4	0	0,4	0,4	6,4										
Ag	2,375	0,01157	0,00457	0,00000	0,00641	0,4	0,4	0	0	0,4	0,4	0,4	0,4	0,4	0,4	5,6										
TiO ₂	4,75	0,02778	0,01372	0,02610	0,00481	0,2	0,4	0,2	0	0	0	0,4	0,4	0,4	0,4	7,2										
ZnO	2,375	0,01389	0,00610	0,01103	0,00160	0,4	0,4	0,2	0,4	0,4	0,4	0,4	0,4	0,4	0,4	6,2										
CeO ₂	2,375	0,01157	0,00610	0,01287	0,00160	0,4	0,4	0	0,4	0,4	0,4	0,4	0	0,4	0,4	5,6										
SiO ₂	4,75	0,05556	0,03659	0,03860	0,00962	0	0	0	0	0	0,2	0	0	0,4	0,4	5,9										
Graphene	2,375	0,00231	0,00000	0,00000	0,00160	0,4	0,4	0	0	0,4	0,4	0,4	0,4	0	0,4	5,2										
Graphite	0,475	0,01157	0,00457	0,00551	0,00321	0	0,4	0,4	0,4	0,4	0,4	0,4	0,4	0	0,4	3,7										
Fullenere	0,475	0,00000	0,00457	0,00000	0,00160	0,4	0,4	0,4	0,4	0,4	0,4	0,4	0	0,4	0,4	4,1										
Fe ₃ O ₄	4,75	0,01389	0,00000	0,00000	0,00000	0,4	0,4	0,4	0,4	0,4	0,4	0,4	0,4	0,4	0,4	8,8										
Fe ₂ O ₃	4,75	0,01620	0,00457	0,01287	0,00481	0,4	0,4	0,4	0,4	0,4	0,4	0,4	0	0,4	0,4	8,4										
CaCO ₃	4,75	0,02315	0,00762	0,01691	0,00641	0,4	0	0	0	0	0,2	0,2	0	0,4	0,4	6,4										
CuO	0,475	0,00000	0,00000	0,00000	0,00160	0,4	0,4	0,4	0,4	0,4	0,4	0,4	0	0	0,4	3,7										
SrO	0,475	0,00000	0,00000	0,00000	0,00000	0,4	0,4	0,4	0,4	0,4	0,4	0,4	0,4	0,4	0,4	4,5										
SnO ₂	0,475	0,00231	0,00000	0,00000	0,00160	0,4	0,4	0,4	0,4	0,4	0,4	0,4	0,4	0,4	0,4	4,5										
MgO	0,475	0,00694	0,00000	0,00000	0,00000	0,4	0,4	0,4	0,4	0,4	0,4	0,4	0	0,4	0,4	4,1										
ZrO ₂	0,475	0,00463	0,00000	0,00000	0,00000	0,4	0,4	0,2	0	0	0,4	0,4	0,4	0,4	0,4	3,5										
Cu	2,375	0,00000	0,00000	0,00000	0,00000	0,4	0,4	0,4	0,4	0	0,4	0,4	0,2	0,4	0,4	5,8										
Au	0,475	0,00231	0,00000	0,00000	0,00000	0,4	0,4	0,4	0	0,4	0	0,4	0	0,4	0,4	3,3										
Ni	0,475	0,00000	0,00000	0,00000	0,00000	0,4	0,4	0,4	0,4	0,4	0,4	0,4	0	0,4	0,4	4,1										
Co	0,475	0,00231	0,00457	0,00368	0,00000	0,4	0,4	0,4	0,4	0,4	0,4	0,4	0,4	0,4	0,4	4,5										
Cd-Se QDs	0,475	0,00463	0,00152	0,00000	0,00000	0,4	0,4	0,4	0,4	0	0,4	0,4	0,4	0,4	0,4	4,1										
Al ₂ O ₃	4,75	0,02546	0,01067	0,02206	0,00321	0,4	0,4	0	0	0	0	0,2	0	0	0,4	6,2										
Cellulose	4,75	0,00926	0,00305	0,00000	0,00321	0,4	0,4	0,4	0	0	0,4	0,4	0,4	0,4	0,4	8,0										

Overall view of the NanoMONITOR LIFE project

3. Progress so far and main results

Overall progress

! Excel based tool to analyze if a certain data satisfy a set of quality requirements defined by the consortium members to guarantee the reliability and robustness of the data to be used for risk assessment purposes under the context of REACH and relevant monitoring programs



Reliability Assessment for Exposure Data



This tool is intended to be used as a guidance to characterize the completeness of the metainformation from databases or scientific literature of Environmental or Occupational Exposure Monitoring data, as well as modelization data to be used according to the REACH guidelines.

HOW TO USE:

1- Select the scenario to which the database is referred from the table below:

Select the scenario
Model
Worker Indoor
Worker Outdoor
Urban Indoor
Urban /Rural Outdoor
Environmental emission AIR
Environmental emission-inmission WATER
Environmental emission-inmission SOIL

2- In the corresponding worksheet, select all the data referenced on the metainformation of the database.

3- The quality or completeness of the data will appear at the bottom as one of the three categories:

NOT VALID	Indicates that fundamental information is missing
VALID WITH RESTRICTIONS	Complementary information would be required to ensure the completeness of the data
VALID	The data is reliable and complete

Worker Outdoor
Data Parameter checklist
Check all the parameters on which information is available
I. Source information
<input type="checkbox"/> Objective/goal of measurements: regulatory program, research project task, etc.
<input checked="" type="checkbox"/> Data source: author, date of publication, data base of publication
<input type="checkbox"/> Contact data: address, mail, phone number of the author or institution
<input type="checkbox"/> Followed estandar protocol/internal validated protocol (reference or explanation in the document itself)
II. Description of the scenario
<input type="checkbox"/> Location of measurements (GPS coordenates, location, country)
<input type="checkbox"/> Pressure
<input type="checkbox"/> Relative Humidity
<input type="checkbox"/> Temperature
<input type="checkbox"/> Height of location (m.a.s.l)
<input type="checkbox"/> Height of the sampling place (m)
<input type="checkbox"/> Type of location: rural, urban, suburban (see instructions)
<input type="checkbox"/> Scenario area information (proximity of other activities, secondary sources)
<input type="checkbox"/> Type of influence: traffic, industry, background (see instructions)
<input checked="" type="checkbox"/> If traffic: distance to nearest traffic via (m)
<input type="checkbox"/> If traffic: traffic intensity (low / medium / high)
<input type="checkbox"/> If industry: distance to main focus (m)
<input type="checkbox"/> If industry: type of industrial activity
<input type="checkbox"/> Flow rate (air, water, etc.)
<input type="checkbox"/> Industry sector
<input type="checkbox"/> Task description
<input type="checkbox"/> Exposure route
<input type="checkbox"/> Risk Management Measures present in the process
<input type="checkbox"/> Operative Conditions of the process (task duration, frequency, etc.)
<input type="checkbox"/> Work area information (proximity of other activities, secondary sources)
<input type="checkbox"/> Sampling location (source, personal, workplace)
<input type="checkbox"/> Attached schemes or pictures of the scenario
<input type="checkbox"/> Intermittent, shot or continuous process
VI. Offline measurement Information
<input type="checkbox"/> Analytical method (standard, internal, not validated)
<input type="checkbox"/> Sampling protocol (number of samples, location of sampler, transport and conservation conditions,...)
<input type="checkbox"/> Sampler location (source, personal, workplace)
<input type="checkbox"/> Sampling pattern (frequency and duration)
<input type="checkbox"/> Equipment
<input type="checkbox"/> Resolution
<input type="checkbox"/> Range
<input type="checkbox"/> Precision
<input type="checkbox"/> Accuracy
<input type="checkbox"/> Sensitivity
NO VALID

Select All

RESET



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Overall view of the NanoMONITOR LIFE project

3. Progress so far and main results

Overall progress

- Inventory of the concentration of ENMs in relevant environmental matrices and indoor workplaces



ES	CES	Background	Surface ($\mu\text{m}^2/\text{cm}^3$)	Mass (mg/m^3)	Number ($\#/\text{cm}^3$)	Ratio
Production of carbonaceous materials		34694 (N)			105856	3.1
Production of carbonaceous materials		34694 (N)			63130	1.8
Production of carbonaceous materials		57000 (N)		81000		1.4
Production of carbonaceous materials		57000 (N)		85000		1.5
Separation and packaging of Al_2O_3	Separation	19000 (N)			43000	2.3
	Packaging	19000 (N)			34000	1.8
	Transportation	19000 (N)			56000	2.9
Separation and packaging of Al_2O_3	Separation	50 (M)		200		4
	Packaging	50 (M)		460		9.2
	Transportation	50 (M)		510		10.2
Separation and packaging of Al_2O_3	Separation	18 (M)	77			4.3
	Packaging	18 (M)	57			3.2
	Transportation	18 (M)	93			5.1
Production of MWCNT	Production	2900 (N)	8.8	0.026	30700	10.6
	Harvesting	30700 (N)	24.7	0.032	31800	1.0
Harvesting of DWCNT		2900 (N)	33.5	0.032	31800	10.9

Overall view of the NanoMONITOR LIFE project

3. Progress so far and main results

Overall progress

! On line library of exposure scenarios



+ Add new information

Search by keywords...

Search filters

Life Cycle Stage

Manufacture

Route of exposure

-- No filter --

Search by filter

Remember You can use the search menu to filter the number of results

Production of SiO₂ in liquid medium

Pilot | Indoor | Measured data

Life Cycle Stage: Manufacture Route of exposure: Combined Release by: Air

2

Filling a wall with mortar containing nano TiO₂

Pilot | Indoor | Measured data

Life Cycle Stage: Widespread use by professional workers Route of exposure: Inhalation Release by: Air

2

Production of SiO₂ in solid medium

Pilot | Indoor | Measured data

Life Cycle Stage: Manufacture Route of exposure: Combined Release by: Air

2

Packing of graphene

Pilot | Indoor | Measured data

Life Cycle Stage: Formulation/re-packing Route of exposure: Inhalation Release by: Air

0



+ Add new information

Search by keywords...

Search filters

Life Cycle Stage

Manufacture

Route of exposure

-- No filter --

Search by filter

General description of the scenario

Name

Production of SiO₂ in liquid medium

Scale

Pilot

Location

Spain

Environmental release

☐ Water ☒ Air ☐ Soil

Type of use

☒ Indoor ☐ Outdoor

Life Cycle Stage

Manufacture

Route of exposure

Combined

Data

☒ Measured ☐ Estimated

2

Addition of the material and discharge of the end product

Cleaning

Contributing scenario title

Cleaning

Name of the ENM used

SiO₂

Physical state of the material

Aglomerates

Primary particle size

160 nm

CAS Number

112926-00-8

Shape of the ENM

Spherical

Surface area of the ENM

Unknown m²/g

Density of the ENM

Unknown kg/m³

Concentration in formulation

97 %

Amount

1kg-10kg

Frequency (approx.)

Unknown

Duration of use / Usage

1min-30min/day

Operational conditions affecting exposure/release

Describe the activity in terms of the energy applied to the process

Unknown

Temperature at which the process is carried out

Unknown °C

Site conditions

Room volume

339 m³

Temperature

16.5 °C



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Overall view of the NanoMONITOR LIFE project

3. Progress so far and main results

Overall progress

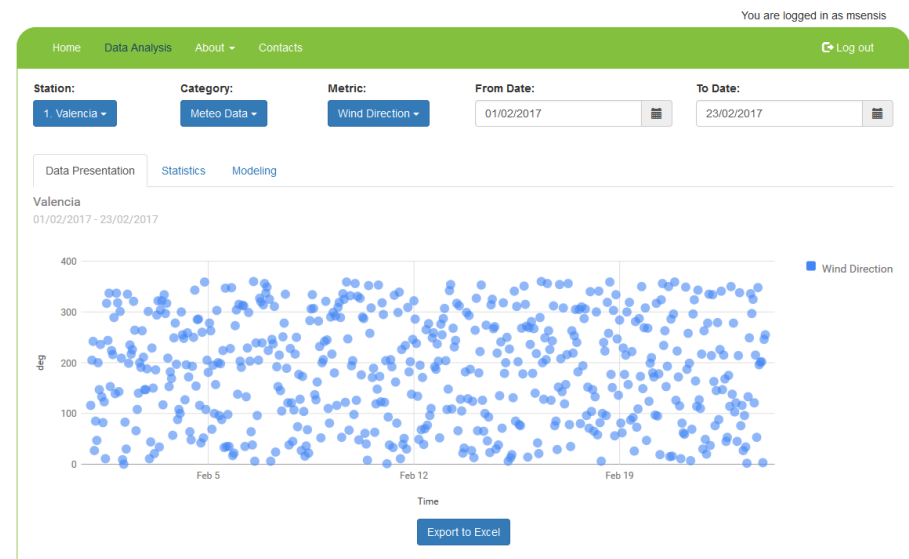
! Nano Monitor Portal created:

- Pages
- Databases
- Import of data from sources
- Presentation of data
- Export of presented data
- Statistic models
- User roles



! Administrator Portal created

- Administration of user and roles
- Administration of stations
- Administration of metrics



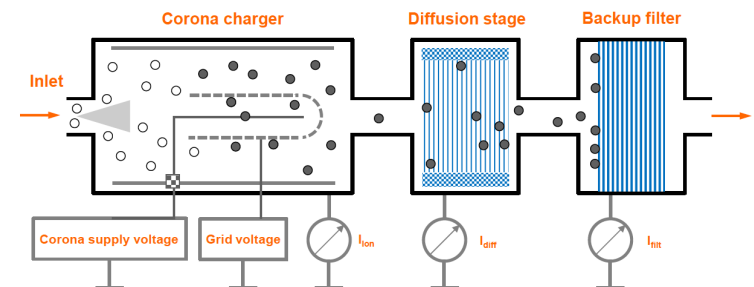
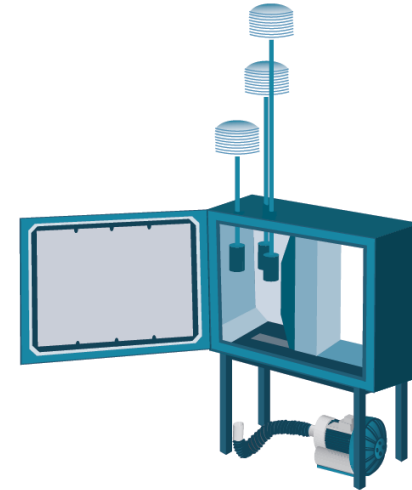
Overall view of the NanoMONITOR LIFE project

3. Progress so far and main results

Overall progress

! NanoMONITOR monitoring station in progress

- Detection of particles ranging in size from 10 to about 700 nm
- Geolocated real-time information on ENMs concentrations
- Integrated plug and play solution designed for long term sampling and monitoring ENMs concentration
- Remotely configurable settings, readings and transmission periods
- Minimum maintenance requirements.



Overall view of the NanoMONITOR LIFE project

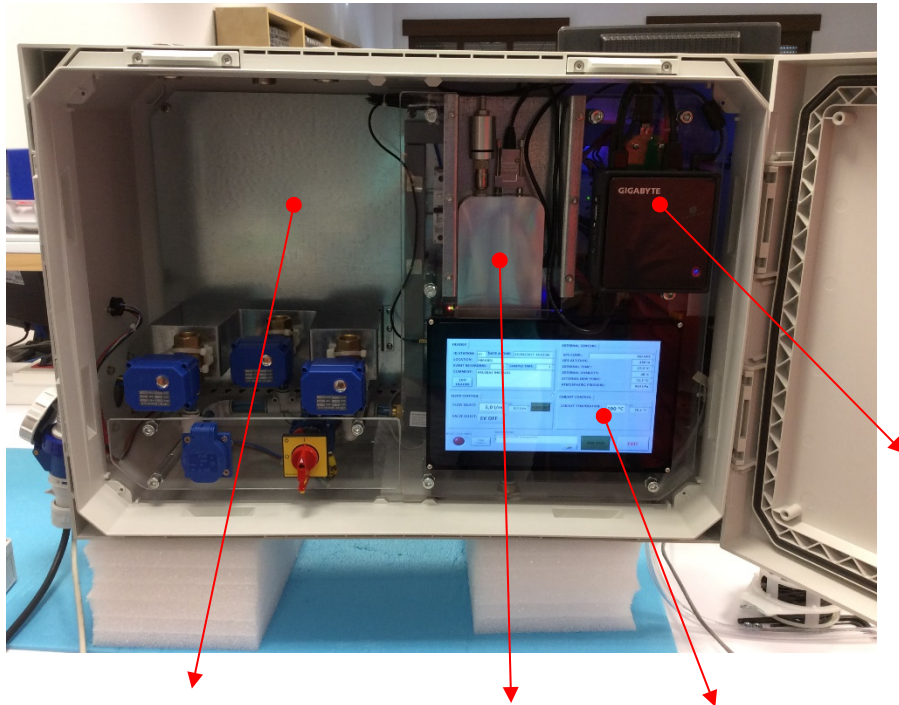
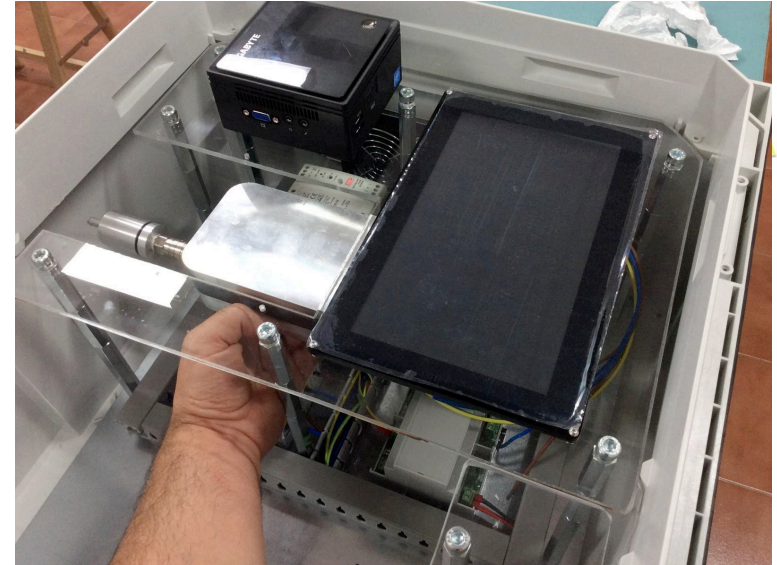
3. Progress so far and main results



nanoMONITOR

Overall progress

! NanoMONITOR monitoring station in progress

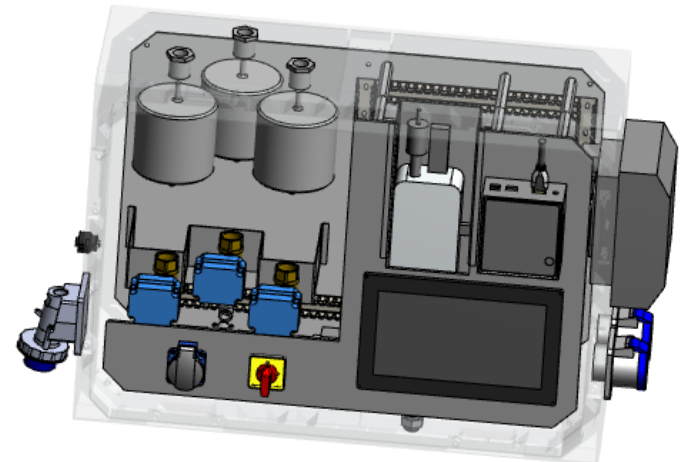


PC

Filtering / impactors

Sensor

Touch screen



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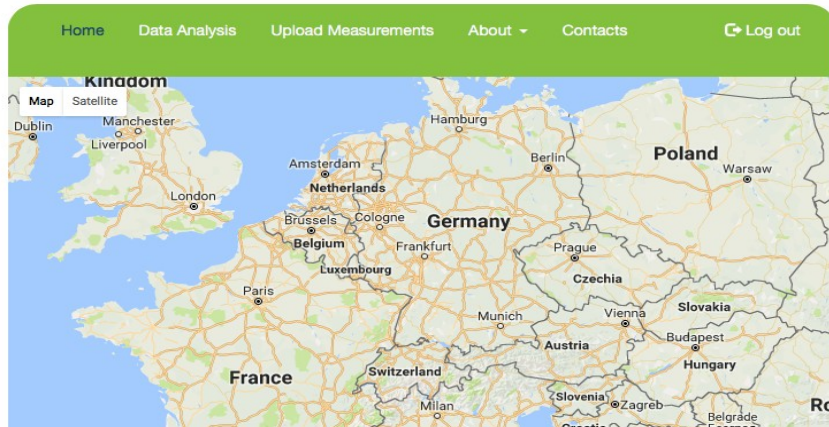
Overall view of the NanoMONITOR LIFE project

3. Progress so far and main results

Overall progress



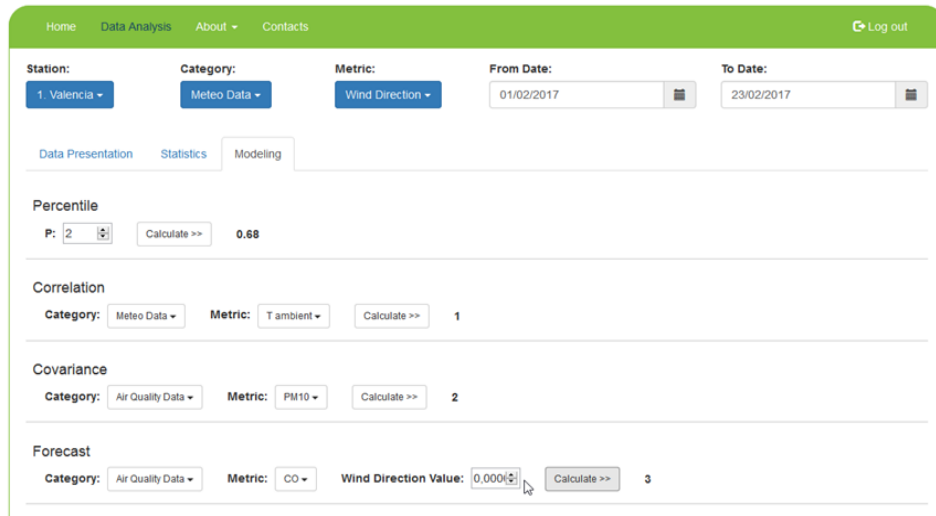
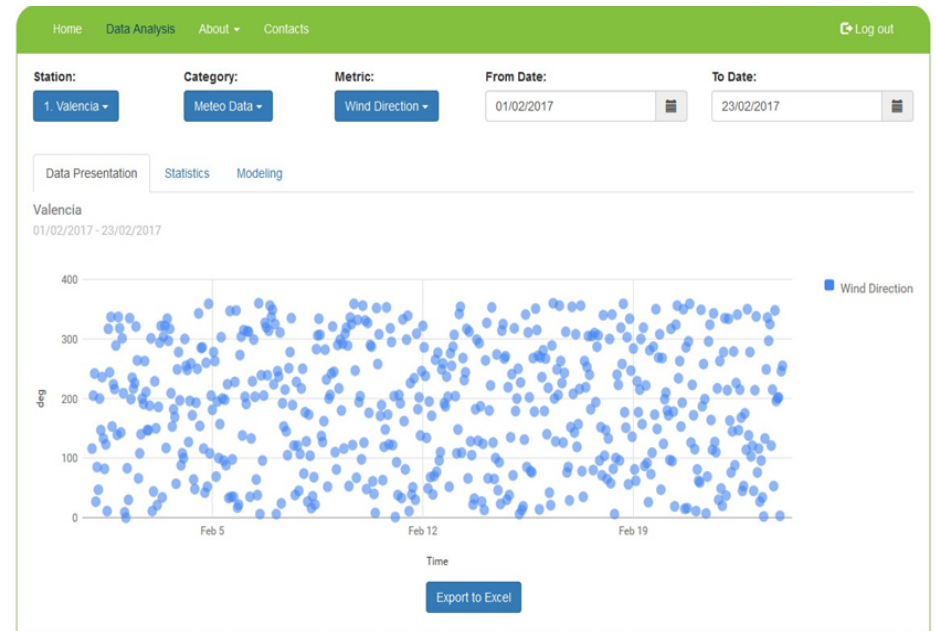
NanoMONITOR software



Work in Progress



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The screenshot shows the NanoMONITOR software interface with the Statistics section selected. The top navigation bar includes Home, Data Analysis, About, and Contacts, along with a Log out button. The main content area displays various calculation options. The Station is set to '1. Valencia', the Category is 'Meteo Data', and the Metric is 'Wind Direction'. The From Date is '01/02/2017' and the To Date is '23/02/2017'. The Data Presentation tab is selected, showing options for Percentile, Correlation, Covariance, and Forecast. The Percentile section shows 'P: 2' and 'Calculate >>' with a result of '0.68'. The Correlation section shows 'Category: Meteo Data', 'Metric: T ambient', and 'Calculate >>' with a result of '1'. The Covariance section shows 'Category: Air Quality Data', 'Metric: PM10', and 'Calculate >>' with a result of '2'. The Forecast section shows 'Category: Air Quality Data', 'Metric: CO', 'Wind Direction Value: 0.00012', and 'Calculate >>' with a result of '3'.

Overall view of the NanoMONITOR LIFE project

3. Progress so far and main results



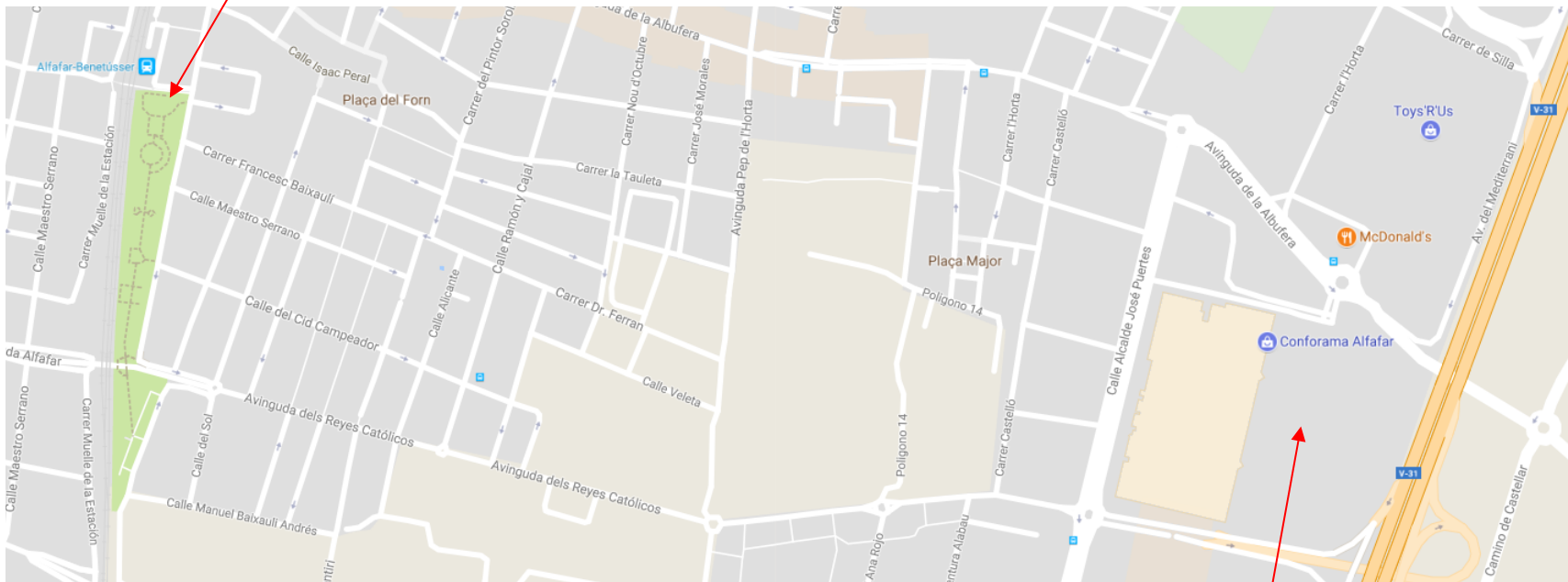
nanoMONITOR

Overall progress

! Monitoring areas



Train Station



Motorway
commercial park

+



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Overall view of the NanoMONITOR LIFE project

3. Progress so far and main results

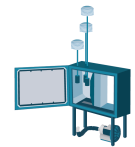
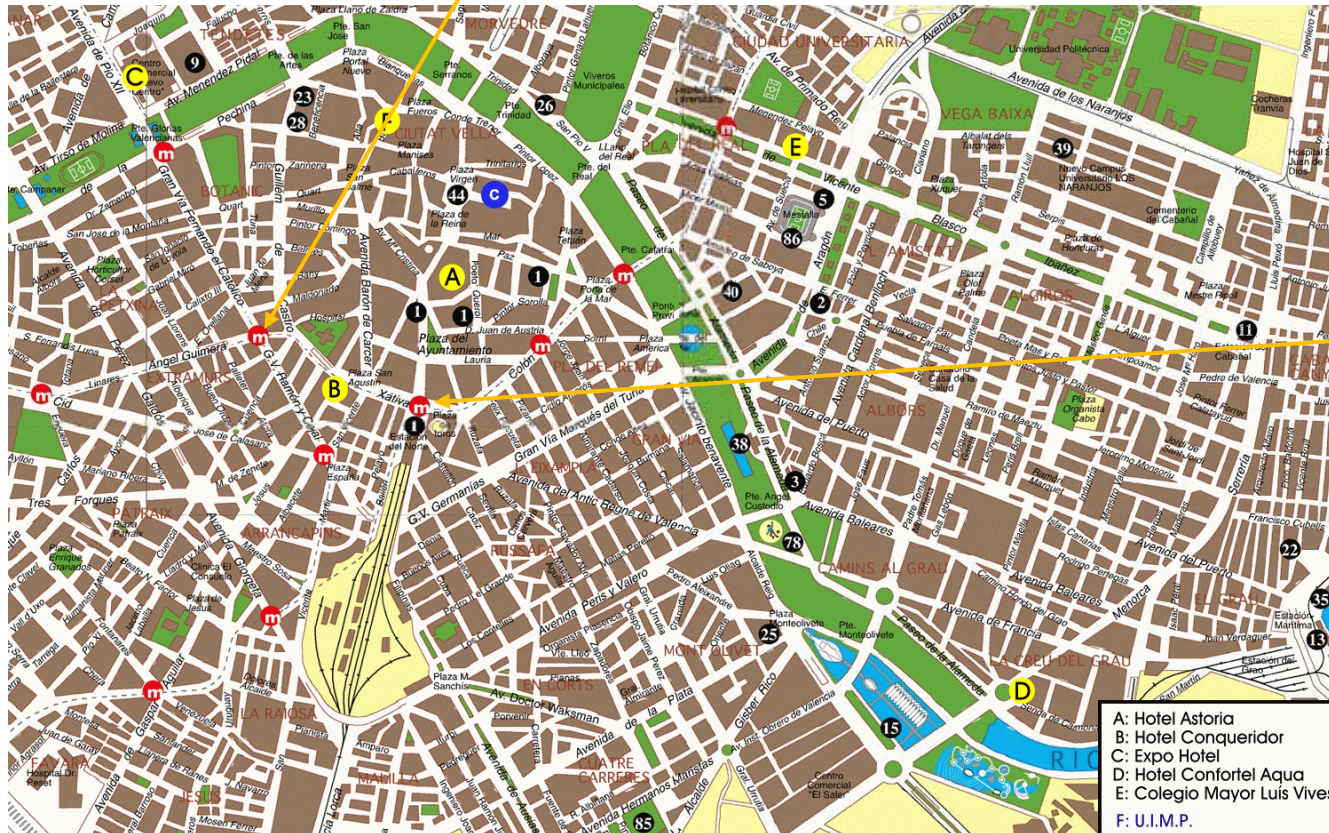
Overall progress

! Monitoring areas



subway station

Work in Progress



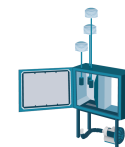
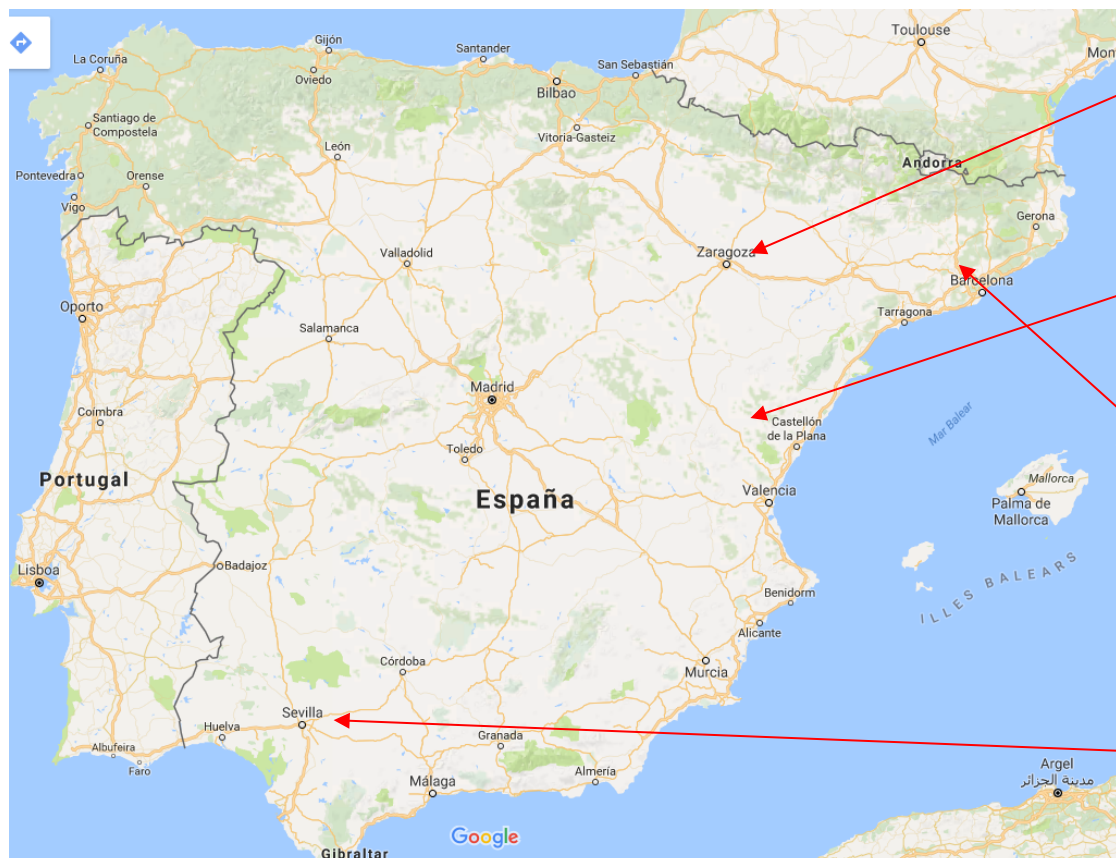
subway station

Overall view of the NanoMONITOR LIFE project

3. Progress so far and main results

Overall progress

! Monitoring areas



Manufacturing site



Manufacturing site



Downstream user



Public areas (ICMS)



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Overall view of the NanoMONITOR LIFE project

3. Progress so far and main results

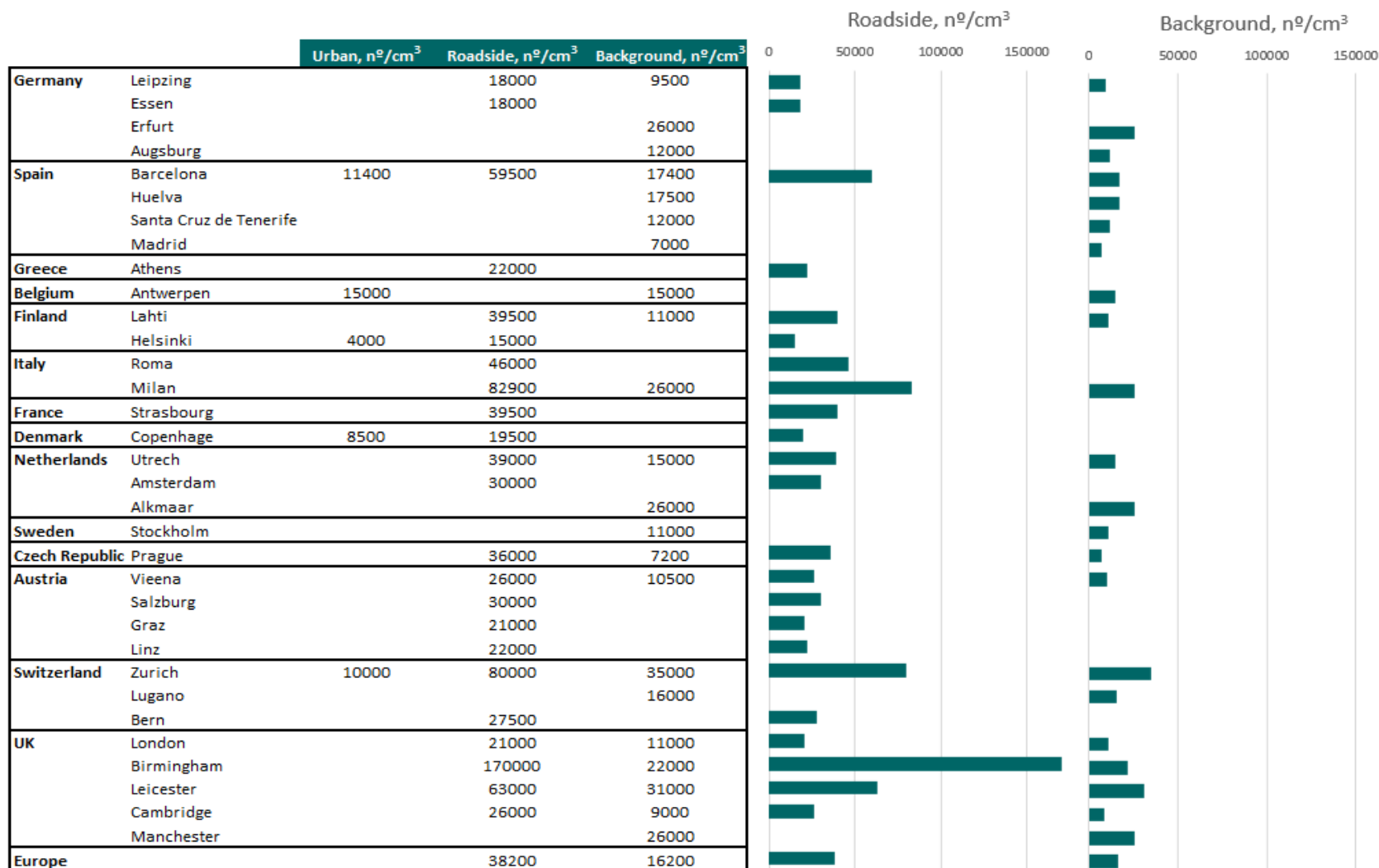
! Inventory of published data on ENMs concentration in the environment

Place / geolocation	Bibliography	Nanomaterial	Compartment	PEC	Unit	Range
Titel		Authors		year		
Switzerland	Exposure Modeling of Engineered Nanoparticles in the Environment	Nicole C. Muller and Bernd Nowack	TiO ₂	Air	1.5 × 10 ⁻³	µg m ⁻³
				Water	0.7	µg L ⁻¹
				Soil	0.4	µg kg ⁻¹
			Ag	Air	1.7 × 10 ⁻³	µg m ⁻³
				Water	0.03	µg L ⁻¹
				Soil	0.02	µg kg ⁻¹
			CNT	Air	1.5 × 10 ⁻³	µg m ⁻³
				Water	0.0005	µg L ⁻¹
				Soil	0.01	µg kg ⁻¹
Switzerland	A dynamic probabilistic material flow modeling method	Nikolaus A. Bornhöft, Tian Yin Sun, Lorenz M. Hilty, Bernd Nowack	2016	CNT	Soil	74 ng/kg
UK	Probabilistic modelling of prospective environmental concentrations of gold nanoparticles from medical applications as a basis for risk assessment	Indrani Mahapatra, Tian Yin Sun, Julian R. A. Clark, Peter J. Dobson, Konrad Hungerbuehler, Richard Owen, Bernd NowackEmail authorView ORCID ID profile and Jamie Lead	2015	Gold	Surface water	440 µg/L 210-730
					STP sludge	470 µg/kg 94-150
					Sludge treated soil	300 ng/kg· years 230-370
					Sediment	290 ng/kg· years 130-450
UK	Current and future predicted environmental exposure to engineered nanoparticles	Boxall, A; Chaudhry, Q; Sinclair, C; Jones, A; Aitken, R; Jefferson, B; Watts, C	2007	CeO ₂	Soil	<0.01 mg/kg
					Water	<1 ng/l
UK	Fate of Manufactured Nanomaterials in the Australian Environment	G.E. Batley and M.J. McLaughlin	2010	Al ₂ O ₃	Water	0.002 µg /L
					Soil	0.01 µg/kg
				CeO	Water	<0.0001 µg /L
					Soil	0.01 µg/kg
				Fullerenes	Water	0.31 µg /L
					Soil	44,7 µg/kg
				Au	Water	0.14 µg /L
					Soil	20,4 µg/kg
				Ag	Water	0,01 µg /L
					Soil	1.45 µg/kg
				TiO ₂	Water	24.5 µg /L
					Soil	1030 µg/kg
				ZnO	Water	76 µg /L
					Soil	3190 µg/kg
				SiO ₂	Water	0.0007 µg /L

Overall view of the NanoMONITOR LIFE project

3. Progress so far and main results

! Inventory of published data on ENMs concentration in the environment



Overall view of the NanoMONITOR LIFE project

3. Progress so far and main results

! Dissemination

Dissemination for awareness
to ensure the existence, aims and objectives of the project are widely known.

- Dissemination / communication framework
- Website

Dissemination for understanding to provide a deep understanding of the scientific output and achievements of the project.

- Trainings
- Workshops
- Scientific publications

Dissemination for action to enable the translation of information generated into actions and decisions

- Dissemination to regulators and other stakeholders
- Networking

Target audience:

- National and international regulatory bodies
- End users in industry
- General public
- Scientific community

Integrated marketing campaigns will cover a broad mix of online and offline **Communication Channels**

- | | | |
|-----------------------------------|----------------------------------|---------------------|
| • Brand framework incl. templates | • Email marketing | • PR / News |
| • Promotional material | • Online marketing incl. website | • Social Media |
| | • Notice boards | • Events / Training |
| | | • Reports |

Overall view of the NanoMONITOR LIFE project

3. Progress so far and main results

! Publishable reports in the project web site

! Dissemination materials



Dissemination

Logo

Download: NanoMONITOR Logo

Promotional Material

Download: NanoMONITOR Trifold Brochure

Download: NanoMONITOR Banner

Download: NanoMONITOR Factsheet

Download: NanoMONITOR 1st Stakeholders' Day Flyer

Newsletters

Download: Newsletter July 2016

Download: Newsletter January 2017

Results

Download: Report on the functionalities and system requirements of the NanoMONITOR integrated system

Posters

Download: NanoMONITOR poster on New Tools and Approaches for Nanomaterial Safety Assessment Conference, 7-9 February 2017, Malaga, Spain

Download: NanoMONITOR poster on SRA Policy Forum: Risk Governance for Key Enabling Technologies, 1-3 March 2017, Venice, Italy

RECENT POSTS

Save the date for the NanoMONITOR 1st stakeholders' day

Save the date 4th April 2017 on your...

Take survey on Eliciting stakeholder requirements on the NanoMonitor monitoring station prototype

This short 5 minutes survey will help us elicit...

Help us collect stakeholders' requirements on the Nanomonitor web platform

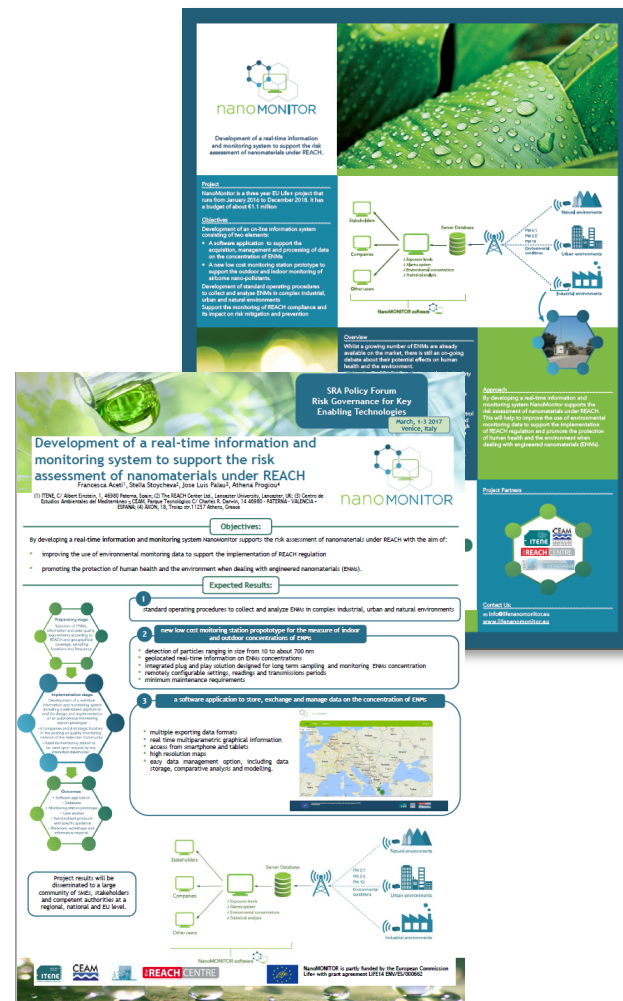
This short survey will help us elicit...

Our July Newsletter is now available

Our first NanoMonitor Newsletter is now...

Take a survey on Risk management measures and conditions of operations for handling engineered nanomaterials

NanoMonitor Project aims to develop a real-time...





4. Summary conclusion



NanoMONITOR – Stakeholder's day

NanoMONITOR is partly funded by the European Commission Life+ with grant agreement LIFE14 ENV/ES/000662



Overall view of the NanoMONITOR LIFE project

4. Summary conclusions



- NanoMONITOR develops an innovative system to monitor the concentration of ENMs in indoor workplaces and the environment.
- NanoMONITOR will increase the current knowledge on the concentration of ENMs in both indoor workplaces and the environment
- A set of tool to support REACH implementation will available before December 2017, including a complete library of common exposure scenarios, an inventory of data on the concentration of ENMs in relevant areas to support PEC calculation and the NanoMONITOR software platform as such.
- Interaction with stakeholders is mandatory to validate the operation of the nanomonitor software and transfer results to regulatory bodies and companies.
- An open form to request / book a satellite monitoring station to be open in March 2018.
- Agreement on methods and protocols for exposure assessment and ENMs detection / characterization in indoor workplaces and environmental matrices on prime importance for regulatory risk assessment.



Thank you for your attention ;



NanoMONITOR - 1st Stakeholder's Day

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