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The European Nanotechnology Community Informatics Platform: Bridging data and disciplinary gaps for industry and regulators

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Abbreviations

APIs: Application Programming Interfaces

CEINT: Center for the Environmental Implications of Nanomaterials

CERN: European Council for Nuclear Research

CSN: Center for Sustainable Nanotechnology

DB: Database

DoA: Description of Action

DW: NanoCommons Data Warehouse

EC: European Commission

ELN: Electronic Lab Notebook

ERIC: European Research Infrastructure Consortium

EU: European Union

EUON: European Union Observatory for Nanomaterials

FAIR: Findable, Accessible, Interoperable, and Reusable

GDPR: General Data Protection Regulation

GUI: Graphical User Interface

H2020: Horizon 2020

INERIS: French National Institute for Industrial Environment and Risks

KB: Knowledgebase

NIKC: NanoInformatics Knowledge Commons

NSC: NanoSafety Cluster

SG: Steering Group (of NSC)

WP: Work Package

TA: Transnational Access

Project acronyms

ACEnano: Analytical and Characterisation Excellence in nanomaterial risk assessment: a tiered approach (Horizon 2020 project)

caLIBRAte: Performance testing, calibration & implementation of a next generation system-of-systems risk governance framework for nanomaterials (Horizon 2020 project)

Gov4Nano: Implementation of Risk Governance: meeting the needs of nanotechnology

NanoInformaTIX: Development and Implementation of a Sustainable Modelling Platform for NanoInformatics.

NANORIGO: Establishing a Nanotechnology Risk Governance Framework

NanoSolveIT: Innovative Nanoinformatics models and tools: towards a Solid, verified and Integrated Approach to Predictive (eco)Toxicology

OpenRiskNet: Open e-Infrastructure to Support Data Sharing, Knowledge Integration and in silico Analysis and Modelling in Predictive Toxicology and Risk Assessment (Horizon 2020 project)

RiskGONE: Risk Governance of Nanotechnology

Summary

This deliverable is part of Work Package 2 (WP2) Networking Activity 1: Community building, and it presents the actions performed by the NanoCommons consortium to address the need to build a nanoinformatics for safety community and bring together researchers from the different fields of nanosafety research in order to collectively move the field forward and bridge the gap between academic nanosafety informatics research and industry / regulatory adoption of the various nanoinformatics tools and approaches developed and/or made accessible via NanoCommons. The community approach will facilitate two-way communication between the various stakeholders and drive the co-development of nanoinformatics solutions for nanomaterials safety assessment and facilitate safe design of nanomaterials.

The community building actions planned, and delivered to date and thus reported here, are based on the feedback acquired from the EU NanoSafety Cluster (NSC) Steering Group (SG) and plenary meetings as the current NSC projects are some of the likely early adopters of the tools and solutions developed by NanoCommons. The actions promoted by the NanoCommons consortium are a mix of stakeholder workshops, webinars and the establishment of an annual nanosafety conference in collaboration with other NSC, national and international nanosafety projects. This deliverable report describes the actions taken in the first year of the project and outlines plans for the coming period.

Introduction

Work Package 2 aims to bring together researchers from all aspects of nanosafety research and create a community that will embed their knowledge, expertise and interests to promote research and data innovation and societal engagement. To achieve this, NanoCommons needs to survey the community and identify the needs of the different stakeholders, and based on these needs to identify the means to meet these needs in a systematic manner, and to communicate these solutions effectively among the research and stakeholder communities. Key to this provision of community-driven services is the project's visibility at various scientific, industrial, regulatory and public events as well as its facilitation of two-way communication with stakeholders at these events. During these events, NanoCommons needs to significantly contribute by showcasing its services and results, and discussing the match between our services and the stakeholders' and communities' needs. Other core activities include being part of organisational efforts for key nanosafety events and continuous assessment of the latest research and data developments and incorporating the most significant of these into the NanoCommons platform, thereby making the developments available to the nanosafety community via the Transnational Access (TA) component of NanoCommons.

The need for community building and knowledge sharing within the nanosafety community has been clearly expressed through the EU NanoSafety Cluster's (NSC) Steering Group and Plenary meetings. One way to achieve this is through support for NSC events, including the Young Scientists forum, and facilitation of an annual conference for the European nanosafety community. As a significant number of the NanoCommons partners are members of, and actively involved with, the NSC (Coordination Team, Steering Group, Dissemination Team, Secretariat members), NanoCommons provides an excellent vehicle to move this community effort forward. Key events that could facilitate the community building and knowledge exchange processes are the NSC annual conference and nano-exploitation days, as well as the initiation of public engagement events.

The list of all events organised or co-organised by NanoCommons are included on the project website https://www.nanocommons.eu/news-events/.

Nano-exploitation days

NanoCommons aims to organise and run and/or participate in a wide number of stakeholder workshops (academia, industry, regulatory). At the same time, NanoCommons is looking to introduce a new networking feature, called Nano-exploitation days. Nano-exploitation days will target industrial stakeholders and the general public and will demonstrate the benefits of nanotechnology and FAIR data to research innovation in different industry sectors. The drive behind this is the acknowledgment that data innovation and FAIR data are strongly interconnected. In fact, FAIR data barriers have a direct effect on data driven innovation. A characteristic example is the study produced, in March 2018, for the Danish Agency for Science and Higher Education directly linking FAIR data to societal growth [1]. According to the study's main scenario, which assumed the most conservative calculation assumptions found in literature and disregarding any benefit from international collaborations, if 50% of all the data produced in Denmark complied with the FAIR principles the socio-economic net gain would be around €268 million over a period of 40 years.

NanoCommons will try to build on these findings and promote data collaboration and interoperability using the FAIR principles [2]. To achieve this, NanoCommons will introduce a new feature called Nano-exploitation days. These events will target industry and the general public to showcase how nanotechnology is supporting the knowledge-economy in different industry sectors, and how NanoCommons can underpin progress by collating, organising, and integrating data making it FAIR and thus enabling new uses of the existing data. The first nano-exploitation day, targeting SMEs and industry, will take place in collaboration with the Nanotechnologies Industries Association (NIA) probably during the third quarter of 2019. It is intended to target different industry sectors, and assess different regulatory regimes and how NanoCommons and its related projects can address these sectors.

Stakeholder workshops

A number of stakeholder workshops were organised or co-organised by NanoCommons during the first year of the project's lifetime, including:

Workshop on making data FAIR: This event i was co-organised with the H2020 EC4SafeNano project. It took place as a satellite meeting, during the NanoSafe 2018 conference in Grenoble, France (see section A1 in the Annex for agenda) in November 2018, and focussed on how to overcome barriers to making data FAIR and integrating data management into the data generation workflows. The plenary presentation of the workshop was given by Dr. Anastasios Papadiamantis (UoB) and focussed on FAIR data and the links to data innovation, the benefits of implementing data management in everyday scientific practice and case-studies of increasing complexity where data management and curation were implemented. The workshop also contained presentations from NanoCommons partners Thomas Exner (DC) on the "ACEnano approach integrating and streamlining data analysis and output formats for nanomaterials characterisation" and Antreas Afantitis (NM) on "Adapting data management tools and platforms to industry stakeholders – stand-alone versus cloud applications". The former presented the ACEnano Knowledge Warehouse (ACEnano KW) that will be integrated into the NanoCommons KB and the latter gave an overview of the tools developed by Novamechanics and that will be offered as services during the NanoCommons open calls. Another presentation was given by the coordinator of Nanoreg2 project Emeric Frejafon (INERIS), on the "NanoReg2 activities on data management beyond the project supporting FAIR approach".

The main outcomes of the specific workshop were that NanoCommons would help with the curation, FAIRness and storage of the Nanoreg2 data and make it available through its KB. At the same time, NIA representatives showed strong interest on the tools developed by NanoCommons. NIA representatives believed that some of the tools on offer would be of great interest to their SME members and it was agreed to plan a relevant webinar for the NIA members and will take place on 7 May 2019 as part of the NIA's Nano in Action webinar series. Another positive outcome was that NanoCommons reached an agreement with the French National Institute for Industrial Environment and Risks (INERIS) to work on a case study for creating the framework for the semantic annotation of traceability data. This event targeted researchers, industry and regulators.

Hackathons on data curation: NanoCommons has also co-organised two hackathons on data annotation. The first was during the NanoCommons general assembly in October 2018 in Athens, Greece in collaboration with the OpenTox Europe 2018 conference (see section A5 in the Annex for agenda).

During that hackathon, and following two presentations on ontologies given by Anastasios Papadiamantis (UoB) and Luke Slater (UoB), the Biomax ontology browser and KB was introduced by Dieter Meier (Biomax). The presentations were followed by a hands-on hackathon, during which the participants annotated a model dataset provided by the project and originated from data curated from the FP7 NanoMILE project. The event was also attended remotely by members of the Center for Sustainable Nanotechnology (CSN, Wisconsin, USA). CSN has approached NanoCommons with the wish to align their curation and data management efforts with those of NanoCommons. Following this, UoB arranged and repeated the hackathon just for members of CSN in December 2018. The collaboration with CSN is now ongoing and the NanoCommons partner CEINT is in charge of training the CSN members to use the NIKC data curation template (see deliverable D3.2), which was identified as the most appropriate for their needs (i.e. in light of the need to store US-generated data in the US). This first hackathon targeted mainly researchers.

Ontology harmonisation workshop: NanoCommons co-organised with H2020 OpenRiskNet an Ontology workshop in December 2018 (see section A2 in the Annex for agenda). The goal of the meeting was to identify the ongoing ontology activities in the toxicology area, harmonise these efforts and the developed ontologies therein, and to extend the existing toxicology ontology to support the OpenRiskNet and NanoCommons tasks. The meeting was divided into two parts. The first dealt with the ontological annotation of the OpenRiskNet Application Programming Interfaces (APIs) as used on their cloud (https://home.prod.openrisknet.org/). The second session focussed on finding the best way forward for building complex annotations and extending the used ontology with missing terms and commence the writing up of a guidance document.

US data harmonisation workshop: NanoCommons partners CEINT, UKRI, UoB and Biomax have been developing a roadmap to adopt the approaches and platforms developed by Duke University in the CEINT NanoInformatics Knowledge Commons (NIKC) within a European environment. The aim is to have a European based equivalent database that is interoperable with both the CEINT NIKC and the NanoCommons Knowledgebase (and through that to the EUON) that is capable of capturing the complex data likely to be generated through environmental fate and toxicity studies, in particular mesocosm studies. To facilitate these discussions a one-day workshop (see section A6 in the Annex for agenda) was held on 4th September 2018 prior to the 13th International Conference on the Environmental Effects of Nanoparticles and Nanomaterials (ICEENN 2018; Duke University, North Carolina) that brought together the relevant NanoCommons partners and representatives for Duke University, NanoFASE and ACEnano projects. This meeting was used to discuss the approaches used within the NIKC, how they might be adopted within Europe, the technical issues to be resolved, the funding profile for this work and the ideal timeline for these initiatives. This successful workshop has led to further work that will be reported in later deliverables from WP2 of NanoCommons.

NSC internationalisation efforts: NanoCommons is also an active part in the EU's scientific diplomacy delegations to promote international collaborations with third countries. So far, NanoCommons representatives have organised and/or taken part in the 2nd EU-Asia Dialogue on Nanosafety (October 2018, Vienna, Austria, see section A9 in the Annex for agenda) and the 7th Korea-EU NanoWorkshop (November 2018, Seoul, South Korea, see section A10 in the Annex for agenda). The 2nd EU-Asia Dialogue on Nanosafety was co-organised by NanoCommons partners Andreas Falk (BNN), Iseult Lynch (UoB) and Eugenia Valsami-Jones (UoB). NanoCommons had a strong presence and Anastasios Papadiamantis (UoB) also participated and chaired the Scientific Data Collaboration breakout session, where he presented the

data management actions and potential routes for collaboration between the EU and NSC projects with the Asia Nano-Forum members and is in talks to organise a data management webinar for the Thailand scientific community. The 7th Korea-EU NanoWorkshop was organised by NanoCommons Barry Hardy (DC) and was also attended by Thomas Exner (DC) and Anastasios Papadiamantis (UoB). The workshop focussed on the nanosafety modelling and prediction nanomaterials characterisation latest advancements. Barry Hardy, Anastasios Papadiamantis and Thomas Exner gave presentations on the "European Nanosafety and Informatics from FP7 through Horizon Europe - History, Roadmaps and Perspective on New Initiatives", "Sustainable Community Development of NanoSafety Knowledge Resources" and "Knowledge Infrastructure Development supporting Well-Characterised Nanomaterials" respectively. These presentations either focussed or contained, among others, elements of the NanoCommons project with respective invitations for further collaborations or participation to the NanoCommons open calls.

NSC review: Finally, NanoCommons representatives took part in the EU NanoSafety Cluster (NSC) Scientific Meeting 2018 (March 2018, Athens, Greece, see section A7 in the Annex for agenda) and contributed to the successful H2020 midterm review of the NSC. NanoCommons members took part as representatives of the NSC's Working Group F (WGF) on Data Management. The presentations included an overview of the NanoCommons activities on data management and annotation, the tools offered via NanoCommons, how interested parties could participate in the NanoCommons Open Calls and the collaboration opportunities with other NSC projects.

1st Annual Conference and general conference presence

NanoCommons has the responsibility to organise, in conjunction with other NSC projects, the annual EU Nanosafety Conference focussing on different application/regulatory areas of NMs, e.g. industrial, food, cosmetics, drugs/pharma and medical devices. NanoCommons had agreed with the EC4SafeNano projects to jointly organise the next conference, however due to the uncertainty on granting the extension of the EC4SafeNano project duration the timing might no longer suit the EC4SafeNano final conference. An alternative co-organiser has been identified as the CaLIBRAte project, which is planning its final meeting for October 2019[1], and thus it makes sense to combine the events. The two new modelling projects (NanoSolveIT and NanoInformaTIX) are also likely to be involved in the organisation, and the 3 new nano-governance projects (Gov4Nano, RiskGONE, NANORIGO) will be strongly encouraged to attend as part of the hand-over from CaLIBRAte but also to ensure good connectivity with the NanoCommons tools and services including data management. Due to the heavy event load between September and December 2018, it was decided to move the conference in October 2019 to allow for proper planning and advertising and to give both projects the opportunity to also present the results of their collaboration. The event will take place in Copenhagen, and the co-organisation with the CalibRATe final meeting will facilitate the maximum presence of stakeholders. The 2nd annual conference will be planned for Brussels since very many NGOs and regulatory organisations are based there, as well as the Commission (DG SANCO, Environment, Research etc.) representatives, consumer organisations and other interested stakeholders.

NanoCommons, since its commencement in 2018, has had a strong presence in conferences with oral and poster presentations. Some of the conferences that NanoCommons took place are: the OpenTox

[1] http://www.nanocalibrate.eu/calibrate-conference-advancing-risk-assessment-nanomaterials

Asia 2018 (Tokyo, Japan, see section A12 in the Annex for agenda), OpenTox Europe 2018 (Athens, Greece, see section A13 in the Annex for agenda), Industrial Technologies Workshop 2018 (Vienna, Austria, see section A14 in the Annex for agenda), NanoSafe 2018 (Grenoble, France, see section A15 in the Annex for agenda), 28th SETAC Annual Meeting (Rome, Italy, see section A11 in the Annex for agenda) and the 3rd NanoSafety Forum for Young Scientists (Valletta, Malta, see section A4 in the Annex for agenda).

NanoCommons also provided support for the EU participation in the **1st International NanoOlympiad** held in Tehran, Iran in April 2018 (see section A3 in the Annex for agenda). Iseult Lynch (UoB) and Andrea Haase (BfR) organised the European heats and selected the 3 teams that participated for Europe. Andrea also participated as a judge in the event.

Building community awareness of NanoCommons Transnational Access

Link for pre-registration of potential Transnational Access Users

The NanoCommons consortium published a pre-registration subscription section (https://www.nanocommons.eu/) on the NanoCommons website to collect names of potential TA users right from the start of the project, even before the 1st call was ready for launch. Interested Users provide their email address and are subscribed to a specialised mailing list to be notified when the next TA call opens.

Currently (December 2018) there are 11 subscribed Users, with the majority coming from European countries (Greece, Ireland, United Kingdom, Belgium, Slovenia, Austria, Bulgaria), as well as Japan, Tunisia and New Zealand. Eight are from academia, 3 from industry and 1 from a policy body.

Road-testing of the Transnational Access community portal

The NanoCommons website (https://www.nanocommons.eu/) has been modified accordingly to facilitate and promote the 1st TA call. A new section was implemented, called e-infrastructure, which contains three subsections:

1. Transnational Access
2. Services Overview
3. Transnational Access services

The Transnational Access section provides the gateway to the TA call portal (https://www.nanocommons.eu/apply-for-access/) where users can register and access the TA application form (Figure 1). The TA application form has been built to provide Users with the ability to have their personal data automatically filled in, based on the details they provided during registration. It also provides them with the opportunity to save a draft of the application and continue working on it at a later date. The portal and its functionalities are being continuously tested both at UoB, where development takes place, and through NanoCommons consortium partners to ensure that any bugs or glitches are identified and corrected when the Users begin submitting their applications. Similarly, the NanoCommons Helpdesk is now fully functioning having been established and tested by our partners

Biomax Informatics (see Deliverable 7.1).

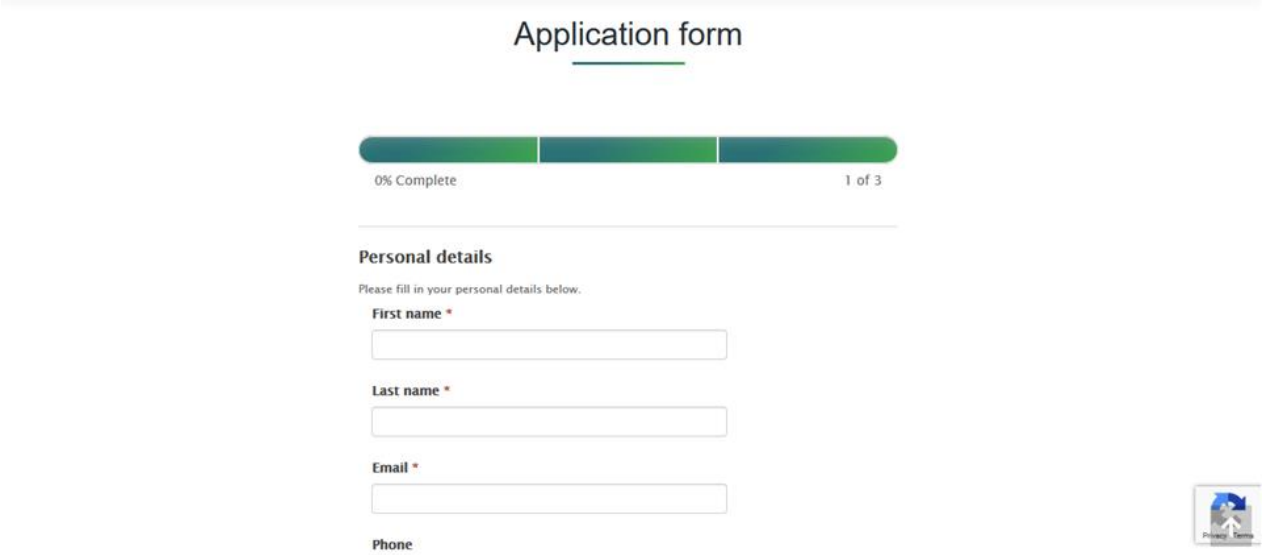

Figure 1. The NanoCommons TA application form can be accessed through the NanoCommons website

Brief summary of tools and services offered in 1st TA call

Deliverable D5.1 contains the full report on the 1st services available for TA, so just a very brief summary is given here to match the brief provided in the DoA. The offered services cover many of the needs of different stakeholder groups (academia, industry, regulatory bodies and experts):

- Data curation best practices and implementation into everyday experimental practice: NanoCommons is working with interested Users to identify, refine and use the data and metadata curation template(s) (see Deliverable D3.4) that best fit their needs.
- Ontological annotation of datasets, including metadata: NanoCommons experts are working closely with Users to ensure that existing and produced data and metadata is properly semantically annotated using recommended ontologies (e.g. the eNanoMapper ontology). The efforts are meant to complete as much as possible the annotation of all finished and ongoing EU, nationally and internationally funded projects' raw, processed and published data. NanoCommons in collaboration with OpenRiskNet and the relevant nanosafety projects ensures that new terms are added to the ontologies to cover the needs of the Users.
- Data management ensuring FAIR principles: NanoCommons is offering to design, refine and implement data management plans that are able to cover the entire data lifecycle (Figure 2). To achieve this, the NanoCommons partners are working with Users to design and implement experimental workflows using electronic lab notebooks (ELN) with complete data curation templates incorporated. The data curation templates are, as far as possible, pre-annotated and transferred to the NanoCommons data warehouse (DW) hosted by Biomax or other specialised databases integrated in the NanoCommons Knowledgebase. All datasets are assigned unique identifiers (NanoCommons IDS, DOIs or both) to be easily citable and facilitate further exploitation through reporting and/or publications.
- Omics data analysis tools on: NanoCommons is offering services for:
  - Evaluation of data quality

- Normalisation
- Differential Expression Analysis
- Functional Enrichment Analysis
- Network reconstruction

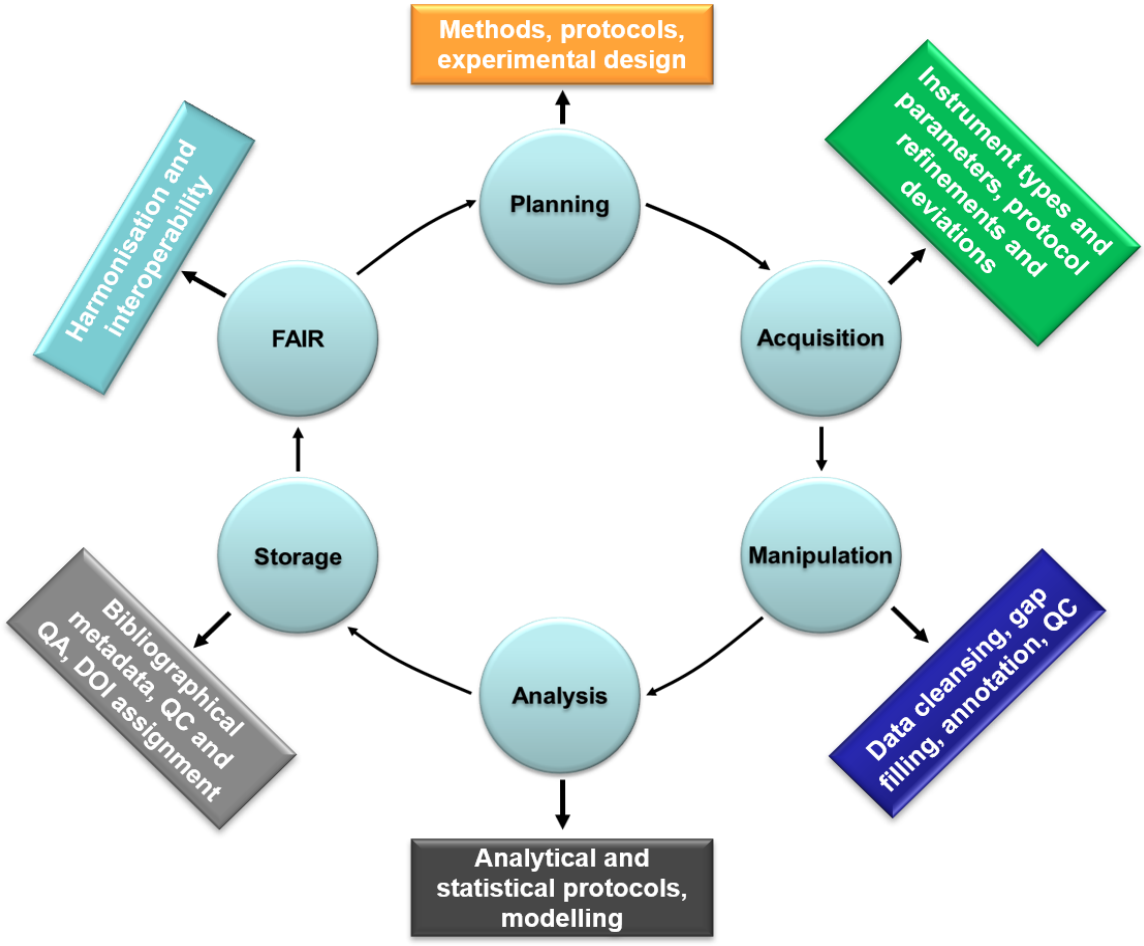

Figure 2 NanoCommons will design, refine and implement data management plans that are able to cover the entire data lifecycle and ensure FAIR principles.

- A library of protocols repository, integrating optimised experimental and computational protocols from our collaboration with other Horizon 2020 (H2020) projects (e.g. ACEnano, NanoFASE, OpenRiskNet): These protocols are made available for use as is, or through further refinement and optimisation to meet specific Users needs.
- Risk assessment and mitigation strategies for nanomaterials enabled products throughout their entire lifecycle: The respective tool developed by Framework Program 7 (FP7) GUIDEnano are being integrated into the NanoCommons services. The results obtained from the GuideNano project, as well as other past and ongoing projects and publications, have been incorporated into this tool, which guides the nano-enabled product developers (industry) into the design and application of the most appropriate risk assessment & mitigation strategy for a specific product. Correct implementation of this guidance ensures that risks associated to a nano-enabled product,

throughout its life cycle, have been appropriately evaluated and mitigated to an acceptable level.

- Jaqpot computational platform for *in silico* modelling: Jaqpot is a computational platform for *in-silico* modelling of chemical compounds that provides access to its services both over a Graphical User Interface (GUI) and an Application Programming Interface (API). It is a cloud-ready application that uses the benefits of Java, R and Python, having incorporated functionality by various established and open-source machine learning and data analysis toolkits. Further algorithms in any programming language can be added to Jaqpot. At the same time, third parties can easily contribute and integrate their services into the Jaqpot infrastructure provided that they make them API compliant. Thus, Jaqpot's architecture paves the way to the creation of a modeling ecosystem where independent systems contribute and collaborate while maintaining their autonomy, provided that they adhere to the API.
- NanoImage (https://app.jaqpot.org/nanoImage), part of the Jaqpot Platform: This module offers tools for analysis of electron microscopy images of spherical particles and carbon nanotubes. It allows the User to derive descriptors for the materials directly from images, offering distinct advantage over manual procedures in terms of speed and ability to represent the whole sample. The foundation of the application is the popular open source ImageJ software, used extensively within the research community.
- EcoToxicology Laboratory Workflows: The Ecotoxicology & Chemical Risk Group at the Centre for Ecology & Hydrology (CEH) is an important node within the European Nanosafety infrastructure providing expertise and facilities in support of ecological effect and risk assessment studies with nanoparticles including detection of toxicity and biodiversity effects in soils and surface waters.
- CEH is offering support in the design of optimised workflows and the underpinning sample and data management needs, to maximise the suitability of the dataset for implementation into the community database and to ensure that data is suitable for use in subsequent modelling tools. Services are applied to existing experimental set-up(s) or can support experimental facility design and subsequent access to data processing services.
- Nanomaterial-Biological Interactions Knowledgebase: Novel toxicological methods need to look at realistic exposure levels during first-pass hazard identification studies to minimise the time and materials required for testing and rapidly identify materials of high concern. The embryonic zebrafish assay (EZ Metric assay) utilises developing zebrafish embryos (*Danio rerio*) as an integrated sensing and amplification system that is easy to evaluate non-invasively, providing the power of whole-animal investigations with the convenience of cell culture. The EZ Metric assay requires minimal equipment to assess and involves no experimental treatments such as dyes or other indicators that could alter the impacts of the nanomaterials. Data produced using the assay are available through the Nanomaterial- Biological Interactions (NBI) knowledgebase (nbi.oregonstate.edu). The NBI thus serves as a repository for annotated data on nanomaterial characterisation (e.g. purity, electronic and photonic properties, size, shape, charge, composition, functionalisation, agglomeration state, etc.), synthesis methods, and nanomaterial-biological interactions (EZ Metric) defined at multiple levels of biological organisation (e.g. molecular, cellular, or organismal). NBI is not only an online KB, but computational and data mining tools are currently being developed and incorporated into the NBI to provide a logical framework to conduct species, route, dose, and scenario extrapolations and identify key data required to predict the biological interactions of nanomaterials.
- The Enalos Cloud platform, developed by NovaMechanics Ltd, is an online, freely available toxicity

and drug discovery platform, that hosts predictive models released as web services, which address the need to reduce the time and cost of experimental testing during the drug discovery and the risk assessment procedures for small molecules and NMs. Several predictive models, based on open source and in house algorithms and software, are already available within the Enalos Cloud platform, including models for NMs toxicity, biological activity and properties evaluation.

- NanoXtract is a unique online tool for the calculation of image descriptors based on Transmission Electron Microscopy (TEM) images of nanomaterials (NMs) which was developed and made available through the Enalos Nanoinformatics platform. The tool can generate a set of 18 image descriptors that greatly enhance and enrich the information extracted from images (currently only size, size-distribution and qualitative information on shape and morphology), and which can be explored using quantitative structure activity relationship (QSAR) models to identify those descriptors most predictive of NM behaviour and /or biological effects. This tool fulfils the need for generation of larger sets of nano-specific descriptors with minimal experimental data requirements. Within a simple and user-friendly interface, the user can upload a NM TEM image and with just a few clicks to select the core and coating descriptors, obtain a broad set of NM image descriptors.

Conclusions

Since its commencement, NanoCommons has been actively participating or presenting in a large number of conferences and stakeholder workshops. This way, NanoCommons has been building its relationships with academic, industrial and regulatory stakeholders all over the world and has already established new collaborations with interested parties internationally.

NanoCommons is continuously working to expand its reach and further advance the nanosafety knowledge development and utilisation. The project has also started to embed stakeholders' knowledge, expertise and interests into the starting community activities. With the launching of targeted workshops/webinars and the annual nano-exploitation days and the NSC conferences, NanoCommons aims to become even more visible and is confident that will be able to firmly establish itself among the significant infrastructure communities of nanosafety research.

Planning for the NanoCommons international conference 2019 is well underway, and will be held in October in Copenhagen. The event is being co-organised by the NSC projects CaLIBRAte and the new nanoinformatics project (NanoSolveIT and NanoInformaTIX). The call for abstracts opens early March 2019 with the full programme to be announced in May 2019.

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Annex - Agendas of NanoCommons community-building activities to date

A1. Workshop 3: Overcoming barriers to making data FAIR – integrating data management into data generation workflows - a joint workshop with H2020 NanoCommons

(Organised by Iseult Lynch, I.Lynch@bham.ac.uk, UoB)

Aim: The workshop aims to gain feedback on utility and user acceptability of proposed solutions to knowledge management and FAIR data and based on the user / stakeholder feedback to develop recommendations regarding solutions to maximise data sharing and data accessibility for the entire community and all stakeholders. Among the barriers to be considered, and for which best-practice solutions will be developed, are: Primary publication of data before the data are made available in a database; Labelling of the data (ontology); Confidentiality of the data; Security of the data storage and access (trust that the data are protected); Format of the data for long-term accessibility and sharing etc.

Agenda

15:30 – 16:15 Opening and introduction to the data life cycle and the NanoCommons solution – online notebooks and their applicability to experimental scenarios of increasingly complexity up to mesocosms: Iseult Lynch & Anastasios Papadiamantis (UoB)

16:15 – 16:35 ACEnano approach integrating and streamlining data analysis and output formats for nanomaterials characterisation: Thomas Exner (Douglas Connect)

16:35 – 16:55 Adapting data management tools and platforms to industry stakeholders – stand-alone versus cloud applications: Antreas Afantitis (NovaMechanics)

16:55 – 17:25 Discussion on the solutions presented and other key barriers – suggestions to improve / adapt etc. Collection of other examples of low-cost / Open Source tools for data management / data sharing from the stakeholder community. Facilitated by Iseult Lynch and Anna-Kaisa Viitanen (FIOH)

17:25 – 17:30 Wrap-up and key recommendations: Iseult Lynch (UoB)

Expected Outcome: A set of recommendations for EC4SafeNano data providers on how to capture, process and share their data to maximise its FAIRness, i.e., its Findability, Accessibility, Interoperability and Re-useability, which is essential to enable EC4SafeNano partners to provide their proposed services. Potential case studies where solutions are still missing will also be identified, which could be taken up within NanoCommons, e.g. with EC4SafeNano as the "User" of the NanoCommons research infrastructure expertise. Feedback to NanoCommons and ACEnano on their tools and services will also be provided.

A2. OpenRiskNet and NanoCommons Ontology meeting 2018

13-14 December 2018
Meeting organised jointly by OpenRiskNet and NanoCommons H2020 projects –
Location: UoB Brussels office, 22-28 Avenue d'Auderghem/Oudergemselaan B-1040 Brussels, Belgium https://goo.gl/maps/b9hWJaFQyzy
Website: https://openrisknet.org/events/45/

The goal of this meeting is to get a picture of the ongoing ontology activities in the toxicology area, harmonize these efforts and the developed ontologies therein, and extend the existing toxicology ontology to support OpenRiskNet and NanoCommons tasks. Part of this will be the ontological annotation of OpenRiskNet Application Programming Interfaces (APIs) as used on their cloud. Other goals include extension of the ontology with missing terms (if any), potentially write up guidance documents, and annotation of data sets (possible via OpenRiskNet data APIs).

Agenda
13 December 2018

13:00 - 14:00 Arrival and Lunch
14:00 - 15:00 Opening - What ontologies are out there and can we combine them to a toxicology application ontology: Egon Willighagen, George Gkoutos , Thomas Exner

15:00 - 15:30 Workshop Ontology Hacking: Egon Willighagen

15:30 - 18:00 Ontology Hacking: All participants

14 December 2018

08:30 - 09:00 Data and software schema: How much ontology do we need to annotate complex services: Thomas Exner, Anastasios Papadiamantis, Egon Willighagen

09:00 - 13:00 Ontology Hacking: Target Groups

13:00 -13:30 Group Reporting: Target Groups

13:30 - 14:00 Wrap up: Thomas Exner, Anastasios Papadiamantis, Egon Willighagen

Resources

- Tutorial: Browsing the eNanoMapper ontology with BioPortal, AberOWL and Protégé
- Tutorial: Adding ontology terms
- Guidance: eNanoMapper Ontology IRIs for the JRC representative industrial nanomaterials
- Guidance: eNanoMapper Ontology IRIs for the OECD nanomaterials
- Ontologies: CHEMINF
- Ontologies: EDAM
- OpenAPI: https://www.openapis.org/

A3. 1st International NanoOlympiad 2018

April 10-16, 2018

DATE/ TIME	Day 0	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6
	Monday	Tuesday	Wednesday	Thrsday	Friday	Saturday	Sunday
	20-Farv.	21-Farv.	22-Farv.	23-Farv.	24-Farv.	25-Farv.	26-Farv.
	09-Apr.	10-Apr.	11-Apr.	12-Apr.	13-Apr.	14-Apr.	15-Apr.
07:00-09:00	Transfer to Hotel	Breakfast	Breakfast	Breakfast	Breakfast	Breakfast	Breakfast
09:00-10:30		Reception (9:00-9:30) S1-Opening Ceremony (9:30-10:30)	MC-Creativity Session (9:00-10:30)	MB-Business Workshop (8:30-10:30)	MCO-Nano Product Commercialization Workshop	Demo Session#2(Business &Impact)	
10:30-10:50		Break	Break	Break	Break	Break	Award Ceremony (10:00-12:00)
10:50-12:00		S2-INO Event Overview	ME-Workshop on Environmental Aspects of Nanotechnology Application	MP-Pitching Workshop SSC (2)	MCO-Nano Product Commercialization Workshop	Demo Session#2(Business &Impact)	
12:00-13:30		Lunch	Lunch	Lunch	Lunch	Lunch	Lunch
13:30-14:45		MS-Workshop on Safety, Standardization and Regulatory Aspects of Nanoproducts	MX(1)-Mixed Team Challenge(Session 1) (13:30-15:00)	T2-Tehran Tour(1) & Dinner at INIC	MIP-IP Licensing, Partnering	Demo Session#2 (Business &Impact)	Departure
14:45-15:45		T1-Pardis Tech. Park Tour SSC (1)	Break (16:00-16:20)		Demo Session#1 (Technical)	T3-Tehran Tour(2) & Dinner J2	
15:45-17:40		MV-Visit Company (15:45-16:45) J1	MX(2)-Mixed Team Challenge (Session 2)				
17:40-19:00		Teamwork	Teamwork				
19:00-20:00	Dinner	Networking Dinner	Dinner		Dinner		
20:00-21:00	Student Networking (Optional)	Teamwork	Teamwork		Teamwork		

Colour Guide:

Dark Green	Sessions for INO judges and INO Steering Committee members
Dark Blue	Steering committee members
Orange	Students and instructors
Blue	The mixed team challenge
Yellow	Tours for all except those in parallel sessions

A4. 3rd NanoSafety Forum for Young Scientists

10-11 September 2018, Valletta, Malta

Programme Monday 10th September 2018

08:45-09:30	**Registration**	
09:30-09:45	**Welcome**	**Iseult Lynch**
09:45-10:15	**Keynote**	**Mark Miller**
Theme: Understanding the toxicity mechanisms associated with nanomaterial hazard (Chair: Emily Guggenheim)		
10:15-10:30	Targeted Metabolomics: a promising tool to support nanomaterial grouping	Anne Bannuscher
10:30-10:45	Exploring the effect of the medium conditions on the interaction mechanisms between silver nanoparticles and Artificial Model Membranes	Marcos Arribas Perez
10:45-11:00	Evidence for altered genotoxic behaviour of dextran-coated-superparamagnetic-Fe_3O_4 in a Physioxic culturing conditions	Michael K.T. Theodoulides
11:00-11:30	**Coffee Break**	
Theme: Human health and nanomaterials (Chair: Emily Guggenheim)		
11:30-11:45	Comparison of two 3D human lung co-culture models cultured at air-liquid interface to assess the (pro-)fibrotic potential of carbon nanotubes	Hana Barosova
11:45-12:00	Cytotoxicity of different types of layered silicates nanomaterials	Krystyna Maciaszek
12:00-12:15	Interactions of allergens with nanomaterials - structural aspects and biologicals effects	Robert Mills-Goodlet
12:15-12:30	Human dendritic cells (DCs) as target of gold NPs (AuNPs): potential impacts on LPS-induced immune response	Sara Michelini
12:30-14:00	**Lunch**	
Theme: Physicochemical, structural and computational characterisation of nanomaterials (including safer-by-design) (Chair: Sophie M Briffa)		
14:00-14:15	Computational studies of nanoparticle toxicity pathways	Matt Schneemilch
14:15-14:30	Characterization of nanomaterials surface hydrophobicity for risk assessment	Loïc Burr
14:30-14:45	Chemical Characterisation of (Core-Shell) Nanoparticles using PCA assisted ToF-SIMS and XPS	Thomas Heinrich
14:45-15:00	Developing spICP-TOF-MS for the Characterization of Multi-element Nanoparticles and Application to Complex Systems	Manuel Montaño

15:00-15:15	Characterization of Nanoparticles and related Metals in Tattoo Ink using Asymmetrical Flow Field-Flow Fractionation coupled with ICP-MS	Roland Drexel
15:15-15:30	Development of protein corona isolation techniques for characterisation with capillary electrophoresis mass spectrometry	Andrew Chetwynd
15:30-16:00	**Coffee Break**	
Theme: Alternative biological systems for nanomaterial hazard assessment (both in vitro and in silico) (Chair: TBC)		
16:00-16:15	Assessing iron oxide nanoparticle genotoxicity and metabolic changes within an in vitro liver 3D model	Jefferson de Oliveira Mallia
16:15-16:30	Investigating Alternative Models to Evaluate the Impact of Nanomaterials on Neutrophils during Inflammation	Suzanne Gillies
Theme: Risk assessment and standardisation of nanomaterials (Chair: TBC)		
16:30-16:45	Assessing current regulatory methods for nanomaterial toxicity testing with Daphnia magna: updating traditional methods for novel materials to accurately determine risk	Fatima Nasser
16:45-17:00	In vitro Cytotoxicity of a Water-Stable Covalent Organic Framework	Marisa Sarria Pereira Passos
17:00	**Poster Session**	
19:30	**Conference Dinner – Pepe Nero (Valletta Waterfront)**	

Programme Tuesday 11th September 2018

08:30-09:00	**Registration**	
Theme: Relationship of nanomaterials' physicochemical properties and toxicity (Chair: Nicola William)		
09:00-09:15	Investigations of the neurotoxic effects of engineered nanoparticles in the mouse brain – The N3RvousSystem project	Adriana Sofranko
09:15-09:30	Bio-membrane interaction of silver nanoparticles studied via cyclic voltammetry: effect of nanoparticle coating	Faith Bamiduro
09:30-09:45	Rapid Cyclic Voltammetry: Novel Characterisation of Nanomaterial-Induced Membrane Conformational Dynamics	Sophia Winter
09:45-10:00	The interaction of SiO_2 nanoparticles with the neuronal plasmamembrane: modulation of ionic currents and calcium influx	Marianna Dionisi
10:00-10:15	Exposure medium and nanomaterial aging effect the chronic toxicity of Daphnia magna; a Multigenerational study	Laura-Jayne Ellis
Theme: Data modelling, handling and management (Chair: Tassos Papadiamantis)		
10:15-10:30	Read-across nanoinformatics models for the assessment of NPs zeta potential based on image nanodescriptors	Dimitra-Danai Varsou
10:30-10:45	Adaptation of geochemical modelling tools to predict bioavailable metal concentrations in agricultural soils amended with metal oxide nanoparticles	Sónia Morais Rodrigues
10:45-11:00	Subspace Clustering as a tool for the Read-Across and Categorization of Nanomaterials	Gianpietro Basei
11:00-11:30	**Coffee Break**	
Theme: Nanomaterials in the environment (Chair: Marta Baccaro)		
11:30-11:45	Modelling nanoparticle transport and bio-availability in soil mesocosms	Geert Cornelis
11:45-12:00	Multigenerational exposure of Folsomia candida to copper agrochemicals: conventional and nano-pesticides	Joana Neves
12:00-12:15	3D Chemical imaging with ToF-SIMS to elucidate TiO_2 NPs and freshwater algae interactions	Pietro Benettoni
12:15-12:30	Laser desorption ionization mass spectrometry as a useful tool for nanoparticle coating characterization	Konstantinos Giannopoulos
12:30-14:00	**Lunch**	
14:00-14:30	**Keynote**	**Susana Loueiro**

14:30-15:00	**Closing Remarks & Awards**	
15:00-15:30	**Coffee Break**	
15:30-17:30	**DLS theory session**	**Malvern Pananalytic**

Theme: Understanding the toxicity mechanisms associated with nanomaterial hazard.		
1.	Life span-resolved nanotoxicology in the nematode C. elegans: the gut – neural axis	Annette Piechulek
2.	Toxicokinetics of silver nanoparticle effects to the nematode C. elegans	Carolin Schultz
3.	Coating matters: An electrochemical based study of effect of coating in CeO2 NPs with model membranes.	Natalia Domenech-Garcia
4.	A Model for Competitive Adsorption in Blood Plasma and Lung Lining Fluid	Stefano Poggio
5.	Mechanistic insights into aluminum nanomaterial uptake and metabolism after co-exposure to vitamin A and D	Yves Hachenberger
Theme: Human Health and nanomaterials		
6.	Advanced in vitro cell culture module for long-term cultivation and toxicity screening of nanomaterials	Michelle Hesler
7.	Human renal proximal tubule epithelial TH1 cells as in vitro kidney model	Patricia Bégerová
8.	The challenge of detecting engineered nanomaterials in biological matrices – From sample preparation to characterization via Field-Flow Fractionation	Roland Drexel
9.	The intrinsic metal content of individual A549 cells as a baseline for cellular exposure to metal nanoparticles	Benjamin Fryer
Theme: Physicochemical, structural and computational characterisation of nanomaterials (including safer-by-design)		
10.	Optimizing concentration of biological media at different temperatures for silica nanoparticle stability	Pirutchada Musigapong
Theme: Screening nanotechnology for nanomaterials		
11.	Development of a microfluidic flow system for toxicity screening of nanomaterials	Joshua Owen
12.	Enhancing the use of *in vitro* (neutrophil) and zebrafish embryo models as alternatives to rodent testing for assessing immunological responses to nanomaterials (NMs)	Suzanne Gillies
Theme: Standardisation of analytical methodology and protocols		
13.	Are existing standard methods suitable for the evaluation of nanomedicines: some case studies	Sabrina Gioria
14.	The development of a guidance protocol for selection of the most appropriate and effective methods for detecting reactive oxygen species and oxidative stress in response to nanomaterials	Veronica Turcu

Theme: Data modelling, handling and management		
15.	ACEnano Knowledge Warehouse to support documentation and collection of nanomaterials physicochemical characterisation data	Lucian Farcal
16.	Read-across in silico investigation of the bioactivity and toxicity behaviour of carbon nanotubes	Dimitra-Danai Varsou
17.	Making use of available and future data to predict the properties, interactions and hazards of engineered nanomaterials by means of in silico tools: a critical review	Gianpietro Basei
Theme: Nanomaterials Exposure and Fate		
18.	Cytotoxicity of Silver Nanoparticles: Zebrafish cells a new experimental model to evaluate nanoparticles' toxicity	Ana Isabel Carrazco Quevedo
19.	Sulfidized silver nanoparticles induce lower toxicity than pristine ones to the pond snail Physa acuta	Carlos Pinheiro
20.	The influence of differing soil properties on the uptake of different Ag nanoparticle forms from soil by plants exposed from seed	Elma Lahive
21.	Comparison of the toxicity and bioaccumulation of different types of Cd-based Quantum Dots for model plants	Pavlína Modlitbová
22.	Determination of spatial distribution of selected lanthanides contained in upconverting nanoparticles in plant tissues by laser induced breakdown spectroscopy	Tereza Švestková
23.	Shape Dependent Transformation and Translocation of Ceria Nanoparticles in Plant	Peng Zhang
24.	Microscopy methods for assessing the biological uptake and effects of ENP	Emily Guggenheim
Theme: Nanomaterials in the environment		
25.	New insights into the interaction of GMs with bacteria film	Zhiling Guo
26.	Effect of electric current and zero-valent iron on bacterial consortia in site polluted by chlorinated ethenes	Nhung H.A. Nguyen
27.	A comparison of analytical techniques for measuring the attachment rate of nanomaterials to soil in kinetic batch tests	Jessica L. Adams

A5. 1st NanoCommons Hackathon on "Ontological Annotation of Datasets

9 October 2018, Athens, Greece

Agenda

Time	Title	Presenter(s)
15.30-15.45	What is an Ontology?	Iseult Lynch, Anastasios Papadiamantis (UoB)
15.45-15.55	How eNM ontology works	Luke Slater (UoB)
15.55-16.15	Annotation Procedure	All
16.15-16.25	NanoCommons KnowledgeBase intro	Dieter Meier (BIOMAX)
16.25-17.25	Groups work on subset of dataset	All
17.25-17.45	Groups present to each other their work while DB team uploads the results to NanoCommons KnowledgeBase	All
17.45-18.00	Discussion and final comments	All

A6. NIKC - NanoCommons workshop (satellite to the ICEENN 2018 conference)

NIKC & Friends Strategy Meeting Agenda
Location: Erwin Mill 103A
Date: September 4, 2018
Time: 9:00-4:00pm

Agenda details:

I. Demonstrate capacity for global data entry to NIKC
   A. Web interface
   B. Excel Sheet
   C. Data dictionary – current state
II. Demonstrate modeling and analysis tool
   A. Query manipulation ability
   B. Visualization and outputs
III. Expanding dataset to include Exposure – and specifically, exposure across nano-enabled product value chain
   A. Data dictionary/ontology implications
   B. Strengthened partnerships around common seam of data
IV. Open discussion on next steps
   A. First – how do we achieve the functionalities we need for our projects in ways that meet all our individual project goals.
   B. Second – how do we align incentives and goals with partners to grow the broader NIKC modularly so we can converge ontologies and terms while diverging and expanding our analytical goals and datasets.

A7. NanoSafety Cluster Scientific Meeting 2018

Date: 22-23 March 2018

Location:
Hotel Royal Olympic Athens
Athanasiou Diakou 28
Athens, Greece

AGENDA:

DAY 1 (22 March)

Time	Item	Lead
09:00 – 09:15	**Welcome and introduction / European Commission Intro**	**George Katalagarianakis**
09:15 – 09:45	**General NSC presentation on: activities update (scientific, regulatory, industry, etc.)** Purpose of days ● Data Harmonisation Workshop ● Delegations ● Mid-term Review	**Eva Valsami-Jones** [Slides]
09:45 – 10:15	**Coffee**	
10:15 – 11:00	**Dissemination Team & Working Group A – Communication, Training and Education**: ● Defining Safe by Design for international recognition and development ● WGA: Activities, priorities and planning for the next 12 months	**Claire Skentelbery** [Slides] **Tommaso Serchi** [Slides]
11:00 – 11:45	**Working Group B – Materials and Standards**: ● Nanomaterials for biomedical applications	**Laura Asín** [Slides]
11:45 – 12:30	**Working Group C – Exposure and Hazard Assessment**: ● Various presentations on the new structure of the WG C, scientific developments in exposure and hazard assessment, workshops and achievements of various projects (e.g. GRACIOUS, PATROLS, BIORIMA, REFINE). ● Structure of the new WG C ● Release, human exposure measuring/modelling/database ● Risk management measures ● Harmonisation & Networking ● Environmental Fate Modelling	**Wouter Fransman, Claus Svendsen** [Slides]

12:30 – 13:30	**Lunch**	
13:30 – 14:15	**Working Group D – Models and Tools for Risk Assessment**: ● Human risk assessment models: requirements and applicability during product innovation stage-gates ● Low-toxicity dusts and CLP regulation: a need to integrate rules ● Innovate Nanoinformatics Models for the Risk Assessment of Nanoparticles	**Wouter Fransman** [Slides] **Damjana Drobne** [Slides] **Antreas Afantitis** [Slides]
14:15 – 15:00	**Working Group E – Safer by Design, Innovation and Regulation**: ● An Update on the EU Nanosafety Cluster and OECD coordinated actions ● Safe-by-Design experiences from studying to implementation potential ● Open discussion: The key assets of safety-research along the innovation process	**Tom van Teunenbroek** [Slides] **Andreas Falk** [Slides] **Andreas Falk (Moderator)**
15:00 – 15:45	**Working Group F – Data Management**: ● Management of data and protocols for non-standard and emerging methods for nanomaterial characterisation ● The Odyssey of date curation… Or how to make curation fun and promote data harmonisation ● Exposure ontology - Collaboration of NECID with eNanomapper ● Making project data available through eNanoMapper database: NANoREG, Nanoreg2, caLIBRAte and Gracious ● Overview of draft proposal to enhance data sharing and collaboration on DMP planning and resources across projects	**Thomas Exner** [Slides] **Anastasios Papadiamantis** [Slides] **Wouter Fransman** [Slides] **Georgia Tsiliki** [Slides] **Danail Hristozov [Slides]**
	– Live streaming closes –	
15:45 – 16:15	**Coffee**	

16:15 – 17:15	**H2020 Mid-term review – presentations**: • **Working Group A – Communication, Training and Education & Dissemination Group** • **Working Group B – Materials and Standards** • **Working Group C – Exposure and Hazard Assessment** • **Working Group D – Models and Tools for Risk Assessment** • **Working Group E – Safer by Design, Innovation and Regulation** • **Working Group F – Data Management**	**Tommaso Serchi [Slides]** **Costas Charitidis, Ioannis Xiarchos [Slides]** **Wouter Fransman [Slides]** **Tommaso Serchi [Slides]** **Andreas Falk, Tom van Teunenbroek [Slides]** **Thomas Exner [Slides]**
17:15 – 18:00	**Open plenary discussion**	
18:00	**Close of Day 1**	
18:00	**OPTIONAL – Guided tour**	
19:30	**OPTIONAL – Social dinner**	

DAY 2 (23 March)

Time	Item	Lead
09:00 – 10:30	**Task Force Presentations:** • **Nano-TiO_2 Safety Communication** • **Safer-by-Design Definition** • **Publicly Accessible Exposure Database**	**Damjana Drobne [Slides]** **Claire Skentelbery [Slides]** **Wouter Fransman [Slides]**
10:30 – 11:00	**Coffee**	
11:00 – 11:45	**Case study: INSPIRED/NanoFASE**	**Claus Svendsen, Christa Schimpel [Slides]**

11:45 – 12:45	**H2020 Mid-term review – comments by the reviewers** **Interventions from meeting participants about their vision of NanoSafety in the next framework programme** **Section on Cross-cutting - Reflection**	**Sally Tinkle, Pedro Silva**
12:45 – 13:00	**Final plenary** **Dates for next meetings, Farewell**	
13:00	**End of NSC Meeting**	
13:00 – 14:00	**Lunch**	
14:00 – 17:00	**OPTIONAL** **WG Breakout sessions, TF discussions** **Open sessions & rooms available to use as needed**	
14:00 – 18:00	**Greek Forum**	

A8. Workshop on linking Malta Initiative projects with the Nanosafety Cluster

30 October 2018, Vienna, Austria

The Federal Ministry for the Environment, Nature Conservation and Nuclear Safety

NanoSafety Cluster

30 October PROGRAMME

9:00	**Registration**	
9.30	Welcome and introduction: aim of the workshop	Thomas Kuhlbusch / Flemming Cassee
9:40	OECD test guidelines, their status and how they are developed?	Mar Gonzales / Peter Kearns
10:10	REACH Annex and testing demands as an example where and how regulation demands for test methods being fit for testing nanomaterials	Celia Tanarro
10:50	How can NSC projects contribute to Technical Guidelines/Guidance documents developments Opportunities for current projects and within upcoming Calls in Nanosafety Research	Georgios Katalagarianakis
11:15	The Malta initiative: why, its aims and reasons behind the focus	Anke Jesse / Thomas Kuhlbusch
11:45	Round table exchange and Q&A: How can NSC research and regulation be (in)formally better linked?	Flemming Cassee
12:15	**Lunch**	
13:00	Introduction and explanation of various MI projects	
	New TG on Determination of the **Specific Surface Area** of NMs	Juan Riego-Sintes
	New TG on Determination of the **Dustiness** of NMs	Olivier Le-Bihan
	Determination of **solubility and dissolution rate** of NMs in water and relevant synthetic biologically mediums – TG105	Keld Alstrup Jensen
	Studies on **bioaccumulation** of NMs in fish – GD for TG 305	Maria Luisa Fernandez-Cruz
	Applicability of the TG 442D **in vitro skin sensitisation** for NMs	Blanca Suarez-Merino
13:30	**Exchange in small groups about the TG development / meet & greet between leaders of MI project presented and NSC project representatives**	
14:00	Introduction and explanation of various OECD TG projects	
	Identification and quantification of the **surface chemistry** and coatings on nano- and microscale materials	Keld Alstrup Jensen
	Aquatic (Environmental) **Transformation** of NMs	Frank von der Kammer
	TG on **Particle Size and Size Distribution** of NMs	Thomas Kuhlbusch
	GD on the Adaptation of **In Vitro Mammalian Cell Based Genotoxicity** TGs for Testing of NMs	Juan Riego-Sintes
	TG on **toxicokinetics** or Amendments to OECD TG 417 to accommodate nanomaterials	Eric Bleeker
14:30	**Exchange in small groups about the TG development / meet & greet between leaders of MI project presented and NSC project representatives**	
15:00	Wrap up and closure of the workshop	Flemming Cassee & Thomas Kuhlbusch
15:30	Adjourn with coffee and tea and time for informal discussions	

A9. 2nd EU-Asia Dialogue on NanoSafety

AGENDA

2nd EU-Asia Dialogue on Nanosafety

Asia Nano Forum and EU NanoSafety Cluster Event

29th of October, 2018, 10:00 – 19:00

Austrian Funding Agency FFG (Sensengasse 1, A-1090 Vienna)

09:30 – 10:00	Welcome & Arrival
10:00 – 10:10	**Welcome addresses** [in room "Seidl"] **Alexander Pogàny** (Austrian Ministry for Transport, Innovation and Technology) **Georgios Katalagarianakis** (European Commission) **Toshihiko Kanayama** (Asia Nano Forum - President)
10:10 – 10:20	**André Gazso**, (Austrian Academy of Science): "Risk governance in Austria"
10:20 – 10:40	**Ali Beitollahi** (Iran Nanotechnology Initiative Council): **"**Asia-EU Dialogue on Nanosafety an Nanocertification: A Platform Towards Enhanced Synergy"

10:40 – 12:00 Key Note Lectures

- **Chunying Chen** (National Venter for Nanoscience and Nanotechnology, Chinese Academy of Science): „Interaction of Living Systems with Engineered Nanoparticles – between Medical Benefit and Toxicity"
- **Barbara Rothen-Rutishauser** (Adolphe Merkle Institute, Switzerland): „Assessing the hazard of nanomaterials for humans with *in vitro* tools – how far we are and where to go"
- **Il Je Yu (**Institute of Nanoproduct Safety Research, Hoseo University, Korea**): "**Biokinetics of Co-exposed Nanomaterials"
- **Claus Svendsen** (Center of Centre for Ecology & Hydrology, United Kingdom): "Realistic environmental exposure and ecological risk assessment"
- **Ramjitti Indaraprasirt** (Nanotec Thailand): „Nano-safety & Standardization Initiative in Thailand"
- **Rawiwan Maniratanachote** (Nanotec Thailand): "Safety Assessment of Nanomaterials using Alternative Methods".

12:00 – 12:15 Q&A Session

12:15 – 12:30 **Anke Jesse** (Federal Ministry for the Environment, Nature Conservation and Nuclear Safety, Germany): "Malta Initiative – a joint approach to adopt the OECD TG to the needs of nanomaterials"

12:30 – 13:30 ***Lunch***

13:30 – 15:00 **Breakout sessions** *Locations: Seidl, Brühl, Segel 4 and Segel 5*

i) **Scientific Data Collaboration**, Chair: Iseult Lynch (University of Birmingham, United Kingdom

ii) **Nano-Certification, Nanostandardisation**, Chairs: Damjana Drobne (University of Ljubljana, Slovenia), Emeric Frejafon (INERIS. France)
iii) **Social Dialogue and Governance**, Chairs: Andreas Falk (BioNanoNet, Austria), Flemming Cassee (RIVM, Netherlands)
iv) **Nanosafety and Nanomedicine Characterisation**, Chair: Matteo Santin (University of Brighton, United Kingdom)

15:00 – 15:30 Coffee break

15:30 – 16:00 Presentations of breakout session results (session chairs) "Seidl"

16:00 – 17:00 Best practice examples & projects of EU NanoSafety Cluster

- **Keld A. Jensen** (National Research Centre for the Working Environment, Denmark): "caLIBRAte - Creating a Web-based HUB for tested Tools for Governance of Emerging and Existing NanoRisks"
- **Andrew Nelson** (Eindhoven University of Technology, Netherlands): "Third generation high throughput on-line platforms for nanosafety screening"
- **Vicki Stone** (Heriot-Watt University, Scotland): "GRACIOUS framework for grouping and read-across of nanomaterials for regulatory risk assessment and safe-by-design"
- **Emeric Frejafon** (INERIS, France): "How to move forward on the harmonisation of the expertise in nanosafety for a safer innovation in Nanotech, lessons learned from EC4SafeNano"
- **Peter Ertl** (Technical University Vienna, Austria): "Next generation luminescence upconversion nanomaterials for bioimaging with approved nanosafety by microfluidic cell assays"

17:00-17:05 Group photo of 2nd EU-Asia Dialogue on NanoSafety

17:05 – 17:30 pre-IndTech2018-conference talk: "Role of Nanosafety in Industrial Technology" by Peter Droell (EC)

17:30 – 18:00 Discussion, wrap-up of the day and way towards the 3rd EU-Asia Dialogue on Nanosafety; Chair: Alexander Pogany (Ministry for Transport, Innovation and Technology) Panel: Peter Dröll (European Commission), Ali Beitollahi (Iran Nanotechnology Initiative Council), Anke Jesse (Federal Ministry for the Environment, Nature Conservation and Nuclear Safety), Eugenia Valsami-Jones (University of Birmingham)

18:00 – 19:00 Networking cocktail

A10. 7th Korea-EU NanoWorkshop

November 12th (Mon.), 2018 Garnet --Suite (37F), Lotte Hotel		
Opening Session	09:00-09:30	§ Registration
	09:30-09:40	§ Welcoming Remarks · **Mi-Jung Choi**, Director General (Ministry of Science and ICT, Convergence Technology Division) · **Jorge Costa Dantas Faria**, Policy Officer (European Commission, DG RTD D)
	09:40-10:20 (15min/talk +5min/Q&A)	§ Keynote presentations · **Jae Yong Song** (National Reseasrch Foundation) - Nanotechnology Policy and R&D in Korea · **Jorge Costa Dantas Faria**, Policy Officer (European Commission, DG RTD D) - Nanotechnology and Advanced Materials Policy: From Horizon 2020 to Horizon Europe
10:20-10:30		Coffee Break & Group Photo
Session I **Nanosafety; Modeling & Prediction**	10:30-11:10 (15min/talk +5min/Q&A) *Chairs: Tae Hyun Yoon (Hanyang Univ.) / 1 from EU	§ Political presentations · **Tae Geol Lee** (Korea Research Institute of Standards and Science) - *Korean Nanosafety Roadmap to 2027* · **Barry Hardy** (Douglas Connect) - *European Nanosafety and Informatics from FP7 through Horizon Europe - History, Roadmaps and Perspective on New Initiatives*

	11:10-12:30 (15min/talk +5min/Q&A) *Chairs: Tae Geol Lee (KRISS) / Barry Hardy (Douglas Connect)	§ Technical presentations · **Tae Hyun Yoon** (Hanyang University) - *Bridging the gap between excellence in nano R&D and Profits in nano Industry: S2NANO-AToolbox for NanoSafety Assessments*
		· **Anastasios Papadiamantis** (University of Birmingham) - *Sustainable Community Development of NanoSafety Knowledge Resources*
		· **Hyung-Gi Byun** (Kangwon National University) - *Towards a Generalized Toxicity Prediction Model for Oxide NanoMaterials*
		· **Geert Cornelis** (Swedish University of Agricultural Sciences) - *Exposure Modelling and Fate of NanoMaterials in the Environment*
12:30-14:00		Luncheon Astor Suite (36F), Lotte Hotel
Session I **Nanosafety**	13:40-14:40 (15min/talk +5min/Q&A)	· **Hyun Kil Shin** (Korea Institute of Toxicology) - *In silico approach to analyse nanotoxicity data on Daphnia Magna*

	*Chairs: Tae Geol Lee (KRISS) / Barry Hardy (Douglas Connect)	· **Thomas Exner** (Douglas Connect) - *Knowledge Infrastructure Development supporting Well-Characterised Nanomaterials*
		· **Tommaso Serchi** (Luxembourg Institute of Science and Technology) - *Models and Tools for Risk Assessment and Governance of Nanomaterials*
Session II **Characterization of Nanomaterials**	14:40-15:20 (15min/talk +5min/Q&A) *Chairs: Si-Young Choi (POSTECH) / Olivier Douhéret (Materia Nova)	§ Political presentations · **Seungbum Hong** (Korea Advanced Institute of Science and Technology) - *Next generation imaging technology of materials* · **Matteo Fasano** (European Materials Characterisation Council) - *Critical Issues of Advanced Characterisation in Europe*
	15:20-17:20 (15min/talk +5min/Q&A) *Chairs: Si-Young Choi (POSTECH) / Jorge Costa Dantas Faria (EC DG RTD D)	§ Technical presentations · **Jonghwan Kim** (Pohang University of Science and Technology) - *POSTECH accelerator photometric analysis(3rd and 4th Generation accelerator/2D materials)*
		· **Argiris Laskarakis** (Aristotle University of Thessaloniki, Greece) - *Intelligent In-line Optical Metrology for the optimization of manufacturing of Flexible Organic Electronic Devices*
		· **Jae-Hyuk Jang** (Korea Basic Science Institute) - *TEM(Monochromated/Cs corrected STEM/functional oxides)*

		· **Olivier Douhéret** (Materia Nova, Belgium) - *Probing (di)electric properties of organic photovoltaic nanostructures with near-field scanning microwave microscopy*
		· **Yunseok Kim** (Sungkyunkwan University) - *SPM(PFM, AFM/ in-situ)*
		· **Matteo Fasano** (Politecnico di Torino, Italy) - *Open characterisation and modelling environment in nanoarchitectured hard/soft interfaces*
Closing Session	17:20-18:30	§ Discussion and Wrap up
		§ Workshop Summary
		§ Closing Remarks
18:30-		Banquet Astor Suite (36F), Lotte Hotel

A11. SETAC Europe 28th Annual Meeting, Rome, Italy

	Monday 14 May			Tuesday 15 May			Wednesday 16 May			Thursday 17 May	
	AM1	AM2	PM	AM1	AM2	PM	AM1	AM2	PM	AM1	AM2
	8:30 a.m.–10:05 a.m.	10:50 a.m.–12:25 p.m.	1:55 p.m.–3:30 p.m.	8:30 a.m.–10:05 a.m.	10:50 a.m.–12:25 p.m.	1:55 p.m.–3:30 p.m.	8:30 a.m.–10:05 a.m.	10:50 a.m.–12:25 p.m.	1:55 p.m.–3:30 p.m.	8:30 a.m.–10:05 a.m.	10:50 a.m.–12:25 p.m.
Room A	3.16 - Pesticides Fate & Exposure		3.14 - Mercury	6.01 - Specific Protection Goals for PPPs	7.01 - Anthropogenic vs Natural Sources of Contamination	6.02 - Environmental Quality Benchmarks	2.02 - Multiple Stressors			4.08 - Chemical Mixtures	
Room B	3.11 - Hydrophobic Chemicals		3.05 - Bioavailability Organic Chemicals	3.13 - Microbial Activity for In Situ Remediation	3.17 - Biodegradation Assessment	2.04 - Microbial Community Ecotox	6.05 - PBT/vPvB Assessment		4.11 - Improve Quality of Ecotox Tests & ERA	4.02 - Soil Ecotox & ERA	
Room C	5.05. - Uncertainty in Translating LCA Results	5.07 - LCIA Method Developments		5.08 - Life Cycle Inventory Data Collection & Model	5.04 - Sustainable Circular Economy		5.09 - Positive Life Cycle & Sustainability Assessment	5.06 - LCA to Improve Decision Support		5.02 Social LCA in Industry & Policy	5.03 - Emerging Technologies & Raw Materials
Room D	3.07 - Emerging Contam: Analytical Challenges			2.03 - Behavioural Toxicology	6.04 - Informed Substit of Hazardous Chemicals	6.07 - Safe & Sustainable Chemistry	3.02 - Remedy Effectiveness in Soils & Sediments	6.03 - ERA & Management of Soil Material	4.09 - ERA of Sediments	4.06 - Exposure & Risk Assessment with Bioassays	
Room E	2.09 - Wildlife Ecotoxicology		5.01 - Inventories of Emissions & Resources for Env. Footprints	7.02 - From Trends in Wildlife Populations to Improved Regulation	2.01 - Big Data Analysis	2.06 - Pollinators	3.04 - Emerging Contaminants under Water Scarcity		4.16 - Wastewater	3.10 - Fluorinated Compounds	7.03 - Indigeneity & Science
Room P	1.06 - Fish Model Species		1.02 - Animal Alternatives	1.12 - Invertebrate Model Species		1.08 - Integrate Experimental Tox & Mechan Modelling	1.13 - OMICS		1.11 - Obesogens & Lipid Disruptors	1.01 - Adverse Outcome Pathways	1.10 - Endocrine Disruptors
Room Q	8.04 - Safeguard Cultural Heritage	8.06 - Sustainable Development Goals	8.03 - Migratory Bird Species at Risk	8.05 - Solutions for Emerging Pollutants			8.02 - Plastics in the Mediterranean Sea	8.07 - Balance the Inevitability & Hazard of Chemicals in Society		8.01 - Environmental Specimen Banks	1.03 - Bio-transformation & Elimination Rate
Room M	4.12 - ERA of Biocides & Vet Med	4.05 - ERA in Time and Space	4.13 - Mechanistic Effect Modelling for ERA	4.15 - Bioavail, Effects & ERA of Metals		3.19 - Exposure to Chemical in Urban Systems	4.14 - Testing & ERA of Pharmaceuticals & Metabolites		4.03 - Antibiotics Fate, Resistance & Effects	3.12 - Environmental Exposure Assessment	
Room N	3.18 - Nano-Materials Fate & Toxicity		3.09 - Micro & Nanoplastics Detection	3.15 - Microplastics Fate & Monitoring			2.05 - Plants	1.05 - Nanoparticles Interactions	3.06 - Incidental Nanoparticles & Nanoplastics	6.06 - ERA of Nanomaterials	1.04 - Mechanistic Ecotox Macro & Micro Plastics
Room O	3.01 - Effects & ERA of Oil Spills			3.03 - Air Pollution & Human Health		2.08 - From Ecotox to Trophic Ecology	3.08 - Terrestrial Ecological Biomonitors	4.10 - ERA of Aquaculture Blue Revolution	1.09 - Luminescent Biomonitoring	4.07 - Natural Toxins & Harmful Algal Blooms	

A12. OpenTox Asia 2018, Tokyo, Japan

OpenTox Asia Conference Program

Thursday 24 May

8.45 Introduction and Overview, Barry Hardy (President, OpenTox Association and CEO, Douglas Connect)

Session 1: Systems Toxicology/ Toxicogenomics Chair: Jun Kanno (Japan Bioassay Research Center)

- 8.55 Overview by Chair
- 9.00 Natalia Polouliakh (Sony Computer Science Laboratories, Inc.)
- "Garuda/Shoe and Percellome analytic workflow"
- 9.30 Yayoi Natsume (National Institutes of Biomedical Innovation, Health and Nutrition) "Percellome toxicogenomics data handling by Garuda"
- 10.00 Satoshi Kitajima (National Institutes Health Sciences)
- "Percellome-Project on Sick-Building-Syndrome level inhalation for the prediction of neurobehavioral toxicity"
- 10.30 Coffee break

Session 2: Integrated Testing and Safety Assessment Applications Chair: Chair: Barry Hardy (Douglas Connect, Switzerland)

- 10.55 Overview by Chair
- 11.00 Morihiko Hirota (Shiseido, Japan)
- "Development of an artificial neural network model for risk assessment in skin sensitization using multiple in vitro sensitization tests and in silico parameters"
- 11.30 Anastasios Papadiamantis (University of Birmingham, United Kingdom)
- "Data management in nanosafety research: From bench to database thus streamlining analysis and publication"
- 12.00 Jaeseok Kim (Research Institute of Standards and Science, Republic of Korea)
- "Activities of Center for NanoSafety Metrology in Korea"
- 12.30 Hajime Kojima (National Institute of Health Sciences, Japan)
- "New trend on alternative to animal testing in Japan"

13.00 - Lunch

Session 3: Integrated Alternative Methods in Predictive Toxicology Chair: Daniele Zink (Agency for Science, Technology and Research, Singapore)

- 14.00 Overview by Chair
- 14.05 Daniele Zink (Agency for Science, Technology and Research, Singapore)
- "How to Build a Predictive In Vitro Method?"
- 14.30 Michael Riediker (Swiss Centre for Occupational and Environmental Health, Switzerland)
- "Predictive toxicology and big data - about the challenge of knowing which dots to connect"
- 15.00 Hao Fan (Agency for Science, Technology and Research, Singapore)
- "Toward an automated computational platform to predict compound binding and toxicity through specific protein targets"
- 15.30 Barry Hardy (Douglas Connect, Switzerland)
- "Collaborative Development of Predictive Toxicology and Safety Assessment Resources - Connecting People and Data for Decision-Making"

15.30 - Coffee break

16.00 - Panel Discussion

17.00 - Poster Session

20.00 - Conference Dinner

Friday 25 May

Session 4: Systems Toxicology Developments supported by Big Data and Artificial Intelligence Chair: HirokaiKitano (The Systems Biology Institute, Japan)

- 8.55 Chair Remarks
- 9.00 Chun-Wei Tung, PhD (Kaohsiung Medical University, Taiwan)
- "ChemDIS: in silico analysis of chemical-disease association"
- 9.30 Samik Ghosh (The Systems Biology Institute (SBI), Japan)
- "New Horizons in Computational Toxicology"
- 10.00 Prof. Wataru Fujibuchi (Kyoto University, Japan)
- "scChemRISC: A Japanese consortium for sharing chemical risk information assessed by gene networks of human stem cells and machine learning"

10.30 - Coffee break

Session 5: New horizons in toxicology at the intersection of science and technology, Chair: Dr. Samik Ghosh (The Systems Biology Institute (SBI), Japan)

- 10.55 Chair Remarks
- 11.00 Yachie Ayako (The Systems Biology Institute, Japan)
- "Predictive systems toxicology: challenges in mechanistic modeling and structure-based assessment"
- 11.30 Takeshi Hase (Tokyo Medical and Dental University, Japan)
- "DTOX: Deep neural network-based computational framework to analyze omics data in Toxicology"
- 12.00 Vipul Gupta (The Systems Biology Institute, Japan)
- "Garuda: An integrated analytics platform towards toxicity assessment and beyond"
- 12.30 Nick Hird, (Aikomi Corp. Japan)
- "Digital solutions to improve QoL in dementia care"

13.00 - Lunch

14.00 - OpenTox Workshop

16.00 - Panel Discussion

17.00 - Close of Conference

A13. OpenTox Europe 2018, Athens, Greece

Conference Theme: Bridging the gap between experimental and computational work in safety and risk assessment

Venue: Titania Hotel, Athens, Greece, Map

Dates: October 9-11, 2018

Organising Committee: Barry Hardy (Douglas Connect), Thomas Exner (Douglas Connect), Iseult Lynch (University of Birmingham), Philip Doganis (NTUA), Thomas Carney (University of Birmingham), Haralambos Sarimveis (NTUA)

OPENTOX EURO 2018 CONFERENCE PROGRAM TUESDAY, 9 OCTOBER

WEDNESDAY, 10 OCTOBER

	S1.	Session 1: Experimental and Computational Toxicological Evaluation of Engineered Nanomaterials, Session Chairs: Costas Charitidis (NTUA) and Vladimir Lobaskin (UCD)
9.00		Chair's Introduction
9.10		Health and Safety Issues in the development of (nano) carbon-based materials and composites, Kyriaki Kyriakidou (University of Athens)
9.40		Effect of nanostructured titanium dioxide on photoinduced cancer treatment, Nefeli Lagopati (NTUA)
10.10		Multi-Scale models: from atoms to organs, Vladimir Lobaskin (UCD)
10.40		Coffee Break
	S2.	Session 2: Industrial Applications in Safety Assessment, Session Chair: Barry Hardy (Douglas Connect)
11.00		Chair Introduction
11.05		New Developments in Toxicogenomics Applications, Roland Grafstrom (Karolinska Institute)

11.35	Predictive Modelling of Adverse Outcomes, Ola Spjuth (Genetta Soft)
12.05	Advances in Skin Sensitisation, Christoph Chesne (Biopredic)
12.35	Collaboration in Integrated Testing and Assessment, Barry Hardy (Douglas Connect)
13.00	Lunch
S3.	Session 3: Hands-on Workshop on Biokinetics Modelling, Led by Haralambos Sarimveis and Philip Doganis (NTUA)
14.00	Aim: understanding the use, form, inputs and outputs of physiologically based (PBPK) pharmacokinetic models. Presentation of software applications for developing PBPK models. Customising PBPK to individual time-drug concentration data. Creating optimal drug dosage regimens
16.00	Poster Session
17.00	End of Workday
19.00	Dinner

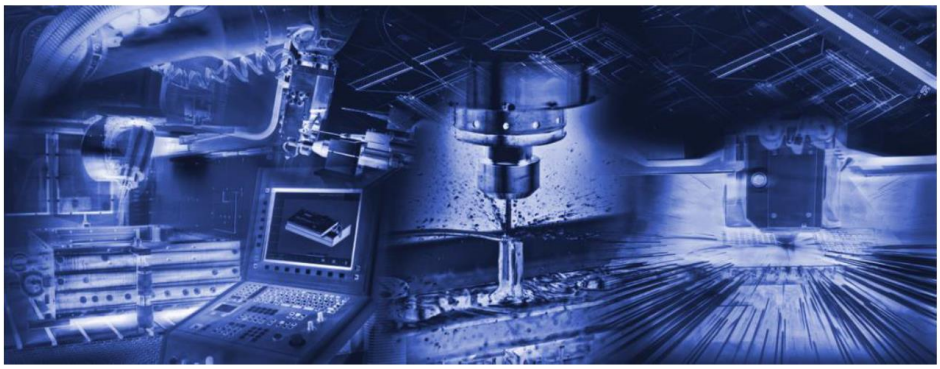
THURSDAY, 11 OCTOBER

S4.	Session 4: Organ-on-a-chip: combining the in-vitro and in-vivo approaches, Session Chair: Andrew Nelson (University of Leeds, UK)
9.00	Chair Introduction
9.10	Chip-based platform: An in vitro for toxicity screening, Yvonne Kohl, (Fraunhofer IBMT)
9.50	Third Generation Rapid High Throughput Screening Platform for Pharma, Toxicants, and Nanomaterials, Andrew Nelson, (University of Leeds, UK)
10.30	Coffee Break

	S5.	Session 5: In-silico approaches for risk assessment from a regulatory perspective, Session Chair: Andrea Haase (BfR)
11.00		Chair Introduction
11.05		On the regulatory use of in silico methods under REACH and CLP, Matthias Herzler (BfR)
11.35		PBPK based approach towards risk assessment, Barbara Wisniowska (Jagiellonian University)
12.05		Towards Nanomaterial Grouping, Andrea Haase (BfR)
12.30		Evaluation of the applicability of existing QSAR models and Read Across strategies for predicting the genotoxicity of pesticides and their metabolites, Olga Tcheremenskaia (Istituto Superiore di Sanità)
13.00		Lunch
14.00	S6.	Session 6: Hands-on Workshop - Building Predictive Models with OpenRiskNet, led by Philip Doganis (NTUA) and Thomas Exner (Douglas Connect)
16.00		End of OpenTox Euro 2018 conference

A14. Industrial Technologies Workshop 2018, Vienna, Austria

INDustrial TECHnologies 2018
Innovative Industries for Smart Growth



INDustrial TECHnologies 2018

Innovative industries for smart growth

PROGRAMME OVERVIEW

29 October, 2018 | Pre-conference workshops
30–31 October, 2018 | Conference
Vienna, Austria

www.indtech2018.eu
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FFG Promoting Innovation.

Federal Ministry Republic of Austria Transport, Innovation and Technology

e2018 at

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 767162.

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Version of 31.10.2018

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FFG Promoting Innovation
Federal Ministry Republic of Austria Transport, Innovation and Technology
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Programme Overview

Pre-conference workshops – 29 Oct 2018

The following events will take place additionally to the INDTECH2018 conference:

- *The future of batteries | 09:00 – 12:00 | Room Schubert 2*
- *How will biology influence future technologies? | 09:00 – 12:00 | Room Schubert 3*
- *ClusterNanoRoad: Validation of preliminary findings | 10:00 – 12:30 | Room Schubert 1*
- *AMANAC workshop: Branding innovations beyond the technical: Life Cycle Assessment and the trade-offs of sustainable growth | 12:30 – 17:30 | Room Schubert 2*
- *NAMEC workshop on advanced materials and nanotechnologies for chemical energy storage | 13:00 – 16:00 | Room Business Suite 1-2*
- *LowCarbonFuture – Exploitation of projects for Low-Carbon future steel industry | 13:00 – 17:00 | Room Room Business Suite 3-4*
- *Photonics 4 Industrial Production | 13:00 – 18:00 | external: Marriott Courtyard, Trabrennstraße 4, 1020 Vienna, room Krieau 1+2*
- *A New Vision for EU Industrial Partnerships | 13:00 – 17:00 | Room Schubert 1*
- *European Materials Characterisation Council: new challenges for advanced materials characterisation in Europe | 13:00 – 18:00 | Room Schubert 3*
- *Advanced Materials and Related Technologies Governance – From a sector-based to a problem-solving oriented programme | 14:00 – 18:00 | Room Schubert 5*
- *Consortia Building Workshop: Blueprint for Sectoral Cooperation on Skills – Industrial Symbiosis and Energy Efficiency | 13:00 – 17:00 | Room Schubert 4*
- *Safe Chemicals Innovation | 13:30 - 15:00 | external: FFG, Sensengasse 1, 1090 Vienna, room 7th floor*
- *2nd EU-Asia Dialogue on Nanosafety | 10:00 – 19:00 | external: FFG, Sensengasse 1, 1090 Vienna, Room Franziska Seidl*

Please find further information via: **https://www.indtech2018.eu/thematic-workshops/**

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Programme Overview

	First day – 30 Oct 2018				
	Live in PLENARY room + Broadcasting in room STRAUSS 2 & 3				
09:00	*Registration*				
10:00	Welcome & Opening *- Jean-Eric Paquet, Director General, European Commission, DG Research & Innovation* *- Andreas Reichhardt, Secretary General, Austrian Ministry for Transport, Innovation and Technology* *- Klaus Pseiner, Managing Director, FFG Austrian Research Promotion Agency*				
10:20	Plenary – keynote 1: Innovative Thinking for Clean Growth *Bertrand Piccard, Solar Impulse Foundation*				
10:40	Plenary – keynote 2: KETs as enabler for an innovative industry *Sabine Herlitschka, CEO & CTO, Infineon Technologies Austria AG and member of the High Level Group of Industrial Technologies*				
11:00	Plenary – panel discussion Are KETs underpinning Europe's global leadership of different industries? *Moderated by Jean-Eric Paquet, Director General, European Commission, DG Research & Innovation* *- Sabine Herlitschka, CEO & CTO, Infineon Technologies Austria AG and member of the High Level Group of Industrial Technologies* *- Egbert Lox, Senior Vice President Government Affairs, UMICORE* *- Bertrand Piccard, Solar Impulse Foundation* *- Lucilla Sioli, Director for "Artificial Intelligence and Digital Industry", European Commission, DG CONNECT* *- Ariane Thomas, Head of Strategic development Operations L'OREAL and Member High Level Industry 2030 EU Roundtable* *- Lucyna Woźniak, Vice rector for Science and International Affairs and Head of Department at Medical University*				
12:00	Horizon Prize on Materials for Clean Air Award ceremony				
12:15	Lunch break				12:15-12:30 Official opening of the exhibition area
	PILLAR 1: Technologies for sustainable growth	**PILLAR 2:** Innovative industry for citizens	**PILLAR 3:** Ecosystem/framing conditions	**Networking & policy support**	
Room	PLENARY	STRAUSS 2	STRAUSS 3	STRAUSS 1	Exhibition
13:30	1.1 – Green growth and circular economy	2.1 – Risk governance and management of innovation	3.1 – Networks/lab to fab/ecosystems	Matchmaking 1	
14:30		2.2 – Medical technologies			
15:30	Coffee break				
16:00	1.2 – Sustainable and efficient energy	2.3 – Role of design inside industry processes	3.2 European Innovation Council (EIC) – SME Instrument	Matchmaking 2	
17:00		2.4 – Skills needs	3.3 – Co-funding/other funding		
18:00	End pillar 1	End pillar 2	End pillar 3	Matchmaking 3	
18:30	Networking buffet				
21:30	End day 1				

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Programme Overview

	Second day – 31 Oct 2018					
	Live in PLENARY room + Broadcasting in room STRAUSS 2 & 3					
08:00	*Registration*					
09:00	Welcome - *Video message from Norbert Hofer, Federal Minister for Transport, Innovation and Technology* - *Video message from Carlos Moedas, Commissioner, European Commission Research, Science and Innovation* - *Hélène Chraye, Head of Unit, Advanced Materials and Nanotechnologies, European Commission, DG Research & Innovation* - *Michael Wiesmüller, Head, Unit III/I5 Key enabling technologies for industrial innovation: ICT, Manufacturing and Nanotechnologies, Austrian Ministry for Transport, Innovation and Technology*					
09:20	Plenary – keynote 3: The Key Role of Nanotechnology in Innovative Industries *Lisa Friedersdorf, Director of the NNCO US (National Nanotechnology co-ordination Office of the USA)*					
09:40	Plenary – keynote 4: Research on Nanotechnology and Advanced Materials at the Chinese Academy of Science *Tao Zhang, Vice President, Chinese Academy of Sciences*					
10:00	Plenary – keynote 5: Human Centric Agile Transformation *Tomas Hedenborg, President of ORGALIME*					
10:20	Coffee break				**First Forum on batteries prize**	Exhibition & site visits
	PILLAR 1: Technologies for sustainable growth	**PILLAR 2:** Innovative industry for citizens	**PILLAR 3:** Ecosystem/framing conditions	**Networking & policy support**		
Room	PLENARY	STRAUSS 2	STRAUSS 3	STRAUSS 1	SCHUBERT 2	
11:00	1.3 – Environment and decarbonisation	2.5 – Standard setting	3.4 – Co-programming partnerships	World Café – Industry for people		
12:00	1.4 – Resources/critical materials	2.6 – Artificial intelligence/Ethical issues of data management	3.5 – International cooperation			
13:00	Lunch break					
14:30	1.5 – Efficient manufacturing and automation	2.7 – Biotechnologies and biomaterials	3.6 – Metrology – next steps	Fishbowl – Governance systems		
15:30		2.8 – Frugal innovation process				
16:30	Coffee break					
17:00	Plenary – final wrap-up and ending - *Hélène Chraye, Head of Unit, Advanced Materials and Nanotechnologies, European Commission, DG Research & Innovation* - *Michael Wiesmüller, Head, Unit III/I5 Key enabling technologies for industrial innovation: ICT, Manufacturing and Nanotechnologies, Austrian Ministry for Transport, Innovation and Technology*					
17:30	End day 2					

A15. NanoSafe 2018, Grenoble, France

Dear Colleagues,

Nano objects represent a powerful "enabling technology" leading to revolutionary breakthroughs in many different areas vital for humanity including medicine, energy, environment, etc. and also preserving the rare mineral resources by rendering matter more efficient.

Following the successful outcome of the five past international conferences on Safe Production and Use of Nanomaterials: Nanosafe 2008, 2010, 2012, 2014 and 2016, the Platform NanoSafety "PNS" has the pleasure to welcoming you again to Minatec, Grenoble, for this sixth edition with some of the most famous experts in the field.

We hope that you will enjoy this Nanosafe edition!

Jean-François Damlencourt
Chairman of NanoSafe 2018

OVERVIEW SESSIONS

SESSION 1 - Measurement and characterization of nano-objects
Chairman: Daren Chen

SESSION 2 - Exposure
Chairman: Christof Asbach

SESSION 3 - Manufactured nano-objects
Chairman: Wendel Wohlleben // Co-Chairmen: Araceli Sanchez, Claire Skentelbery

- 3.1 Nano-objects release from nano-enabled products
- 3.2 Safe-by-Design nano-enabled products and process
- 3.3 Pilot plant production / Industrial issues

SESSION 4 - Risks
Chairman: Keld Alstrup Jensen
Co-Chairmen: Bruno Debray, Ana Sofia Fonseca, Alexander Jovanovic, Thies Oosterwijk, Dimiter Prodanov, Mar Viana

- 4.1 Occupational risk assessment
- 4.2 Environmental risk assessment
- 4.3 Tools and commercial equipment
- 4.4 Risk management
- 4.5 Nano responsible development and sustainability

SESSION 5 - Nano objects and Health / Hazard
Chairman: Claude Emond
Co-Chairmen: Peter Hoet, Henri Schroeder

- 5.1 Toxicology
- 5.2 Environmental interactions of nanomaterials
- 5.3 Safe use of nano objects for medicine applications

SESSION 6 - Regulation / Standardization
Chairman: Anthony Bochon

SESSION 7 - Urban particles and emerging pollutants
Chairman: David Pui

Monday 5th - Satellite meetings

09:00		**EC4SafeNano Day** Workshop 1 Establishment and operation of Focus Network *Chrome 1* 9:00 - 12:00	
10:00			**EquipEx NanoID** *Chrome 2/3* 10:00 - 13:00
12:00		Lunch Break *Chrome 1*	
13:00		**EC4SafeNano Day** Workshop 2 Blueprint for National Nanosafety Centres Development & Sustainability *Chrome 1* 13:00 - 15:00	Lunch Break *Titane1/2*
14:00	**CERASAFE Annual Meeting** *Palladium 1* 14:00 - 18:00		**Labex Serenade** *Chrome 2/3* 14:00 - 17:00
15:00		Coffee Break *Titane1/2*	
15:30		**EC4SafeNano Day** Workshop 3 Overcoming barriers to making data FAIR - integrating data management into data generation workflows-a joint workshop with H2020 NanoCommons *Chrome 1* 15:30 - 17:00	
17:00			
17:30			
18:00			

CONFERENCE AT A GLANCE

Tuesday 6th

08:30 - 10:15	**Opening Ceremony** *Platine*			**Satellite Meeting ACEnano** *Chrome 1* 08:30 - 12:00
10:15 - 10:45	Coffee Break *Titane 1/2*			
11:00 - 12:00	**Opening Ceremony** *Platine*			
12:00 - 12:30	Session 1 *Platine*			
12:30 - 14:00	Lunch Break *Titane 1/2*			
14:00 - 15:45	Parallel Session 1 *Platine*	Parallel Session 2 *Palladium 1*	Parallel Session 5.3 *Chrome 2/3*	**Final workshop from the NanoMONITOR and CERASAFE** *Chrome 1* 15:45 - 17:00
15:45 - 16:30	Poster session *Palladium 2*			
16:30 - 18:00	Parallel Session 1 *Platine*	Parallel Session 4.2 *Palladium 1*	Parallel Session 5.3 *Chrome 2/3*	
18:00 - 19:00	**Welcome Cocktail**			

Wednesday 7th

08:30 - 10:00	Plenary session 2, 3 and 4 *Platine*		
10:00 - 10:30	Coffee Break *Titane 1/2*		
10:30 - 12:30	Parallel Session 2 *Palladium 1*	Parallel Session 3.3 *Chrome 1*	Parallel Session 4.1 *Platine*
12:30 - 14:00	Lunch Break *Titane 1/2*		
14:00 - 15:45	Parallel Session 3.1, 3.2 *Palladium 1*	Parallel Session 4.2 *Chrome 1*	**Workshop on Safety Aspects in Pilot Lines** *Chrome 2/3*
15:45 - 16:30	Poster session *Palladium 2*		
16:30 - 18:00	Parallel Session 3.2 *Palladium 1*	**Round table 1** *Platine*	

Thursday 8th

08:30 - 10:15	**Plenary Session 5, 6 and 7** *Platine*			
10:00 - 10:45	Coffee Break *Titane 1/2*			
10:45 - 12:30	Parallel Session 3.2 *Platine*	Parallel Session 4.5 *Chrome 2/3*	Parallel Session 5.2 *Palladium 1*	Parallel Session 7 *Chrome 1*
12:30 - 14:00	Lunch Break *Titane 1/2*			
14:00 - 15:45	Parallel Session 5.1 *Palladium 1*	Parallel Session 5.2 *Chrome 1*	Parallel Session 6 *Chrome 2/3*	Parallel Session 7 *Platine*
15:30 - 16:15	Poster Session *Palladium 2*			
16:15 - 17:30	Parallel Session 1 *Chrome 2/3*	Parallel Session 4.3 *Chrome 1*	Parallel Session 5.1 *Palladium 1*	**Round table 2** *Platine*
18:00 - 18:30	Departure to Sassenage			
19:00 - 23:30	**Gala evening**			
22:30 - 23:35	Departure to Grenoble			

Friday 9th

08:30 - 10:00	Parallel Session 4.4 *Palladium 1*	Parallel Session 5.1 *Platine*	Parallel Session 6 *Chrome 1*
10:00 - 10:30	Coffee Break *Titane 1/2*		
10:30 - 11:00	**Prizes and conference closure** *Platine*		