NanoDome

H2020-NMP-2014-two-stage

NMP-20-2014 Widening materials models

Grant Agreement n. 646121

DELIVERABLE 8.1

Communication Guidelines

WP number: WP8	**Lead Beneficiary: UNIBO**
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Executive Summary

The objective of the NanoDome Communication Guidelines is twofold: to provide a framework to ensure consistent communication among project partners and from the project consortium to its target audiences. The Communication Guidelines will outline the main communication activities that will take place within the NanoDome project, detail the aims of those activities, identify key audience that would benefit from the project outcomes, characterising their information needs and the best tools and channels to reach them.

The NanoDome Communication Guidelines have been developed by UNIBO. The document is a live guide that will be regularly updated during the project duration to account for adjustments in the project development and new opportunities to communicate.

NanoDome *Communication Guidelines* start with introductory sections on the project, the consortium and the expected outcomes. This is followed by NanoDome internal communication procedures - based on NanoDome governance and internal procedure- and NanoDome external communication procedures - based on the analysis of the target audience (stakeholders) and descriptions of communication tools/channels. The final section presents a summary overview of key stakeholders, their information needs, the relevant NanoDome outcomes and suitable communication tools/channels to reach them.

1. Background

1.1. NanoDome in a nutshell

"Nanomaterials via Gas-Phase Synthesis: A Design-Oriented Modelling and Engineering Approach" - NanoDome is a project funded under the European Union's Horizon 2020 Research and Innovation Programme. NanoDome started on the 15th of September 2015 and will run over 3 years during which the project partners will work together to reach the project's objectives.

The main objectives of the NanoDome project are

- to develop a robust model-based design and engineering toolkit for the detailed prediction of complex nanomaterial structures produced in a commercially-relevant generic bottom-up gas-phase (GP) synthesis process,
- to improve the control of the nanomaterial production and the industrially-scalable GP synthesis process for more accurate final product properties (e.g. particle size, surface area, structure, chemical composition, morphology and functionalization coatings), and
- to provide potential end-users with a validated tool based on scientific principles that enables predictive design of novel nanomaterials and novel GP production routes thereby shortening their development process.

This will be pursued by combining computational modelling, software development and systematic validation activities at lab- and industrial-scale within this three-year project. Existing mesoscale nanomaterial GP synthesis modelling approaches (Lagrangian and stochastic) will be extended and integrated with continuum-scale reactor models to provide a fully functional single discrete mesoscopic model for the evolution of the nanoparticle population inside a control volume as a function of time, together with detailed description of nanoparticle composition and internal structure (e.g. core-shell, multi-layer, radially-dependent composition), particle interaction, coagulation and morphology. Industrial and lab-scale validation will focus on a set of target materials of great impact for the EU, using technologies currently at TRL4-6.

The work proposed in the NanoDome project addresses the aforementioned challenges by delivering a modelling and analysis tool for the detailed prediction of complex nanomaterial structures formation in a single-step and industrially scalable GP synthesis process, in order to optimize existing processes, shorten the development of new processes and increase the production rates.

1.2. The NanoDome consortium

The NanoDome consortium offers a balanced, multidisciplinary research and innovation effort that consists of **6 organizations** located in **4 EU countries**, including 1 research institute, 3 universities, 1 SME and 1 large industry.

The partnership is composed so that all necessary disciplines such as chemistry and physics, engineering, materials science, modelling, process development and industrialization, and application testing are covered within the project.

All partners share a long experience in the field of nanoparticles synthesis and production by means of GP synthesis and a deep knowledge of the involved fundamental mechanisms. The partnership is characterized by strong disciplinary intersections and complementarity. The partners' expertise covers all the spectrum of the activities, from the fundamental research to the industrial exploitation.

Through the consortium's broad national and international networks NanoDome will get access to different stakeholder groups. All partners will act as NanoDome ambassadors and contribute to the communication and dissemination of the project outcomes.

2. NanoDome internal communication procedures

2.1. Governance structure

The governance structure of the NanoDome consortium comprises the following bodies:

- The **Coordinator**, being the legal entity acting as the intermediary between the Parties and the Funding Authority.
- The **Scientific and Management Board** (SMB), composed of one member for each beneficiary, as the ultimate decision-making body of the consortium.
- The **Management Support Team**, assisting the Coordinator and the Scientific and Management Board in administrative and financial duties.
- **Work Packages (WPs) leaders**, supporting operatively the SMB and coordinating and monitoring the progress of the tasks included in their respective WP.

2.2. Communication procedure

The communication among partners is very important, since it allows the smooth realization of the project activities, and furthermore encourages exchange and research creativity. Apart from project meetings, e-mails and telephone will be the preferred communication tool among partners. Proper minutes for all important exchanges, also those involving only a limited number of partners, will be prepared and circulating among partners by UNIBO.
The NanoDome website will be the main tool to facilitate exchange of information among partners and to enable partners to upload and download project relevant data and information in an easy way. The project website will include a section with access restricted to project partners. This will facilitate internal communication between the partners, such as for internal reports and project deliverables. More details can be found below in subsection 3.4.2.

2.3. Deliverable preparation

In order to ensure an efficient and accurate deliverable preparation and to guarantee the timing of the submissions, for each deliverable will be identified with:

- one leading person, in charge of collecting contributions and drafting the document;

- one internal reviewer, in charge of reviewing the deliverable draft.

The following preparation and delivery procedure is established:

WHO	WHAT	WHEN
Deliverable leader	Collects contributions for the involved partner, drafts a first version of the deliverable and sends it to the internal reviewer	4 weeks before the delivery date (end of month due)
Deliverable internal reviewer	Reads the deliverable draft and sends a revised version to the deliverable leader	3 weeks before the delivery date
Deliverable leader	Sends the second draft to all the partners for a final ok	2 weeks before the delivery date
Deliverable leader	Sends the final version of the deliverable to UNIBO	1 week before the delivery date
Coordinator	Sends the deliverable to the European Commission	Within the deadline

3. NanoDome external communication procedures

The research findings generated within the NanoDome project are relevant, not only to the scientific community, but also to a wide range of other stakeholders – from industry to standardisation bodies. Thus, it is crucial to establish an efficient dissemination and communication strategy and to reach relevant stakeholders.

The overall objectives of NanoDome communication activities are:

1. To spread information and increase awareness about NanoDome in general to a wide European audience;
2. To disseminate specific outcomes of the project to relevant stakeholders in an effective way.

In the initial phase of the project the communication activities will naturally strive towards the achievement of the first aim. As the project progresses and research brings results, communication messages will shift towards the second aim.

3.1. Partners responsibilities

The coordination of communication activities within the consortium will be developed by UNIBO, the coordinator of NanoDome project, while dissemination activities within NanoDome are led by UCAM. All partners involved in the project have an important role in reaching out to the target audiences with information about the project.

UNIBO, in its role of coordinator of NanoDome and leading WP8 Management and Coordination is responsible to:

- establish and update an effective communication strategy for facilitating the exchange among partners (internal communication) and with relevant stakeholders outside the consortium (external communication),
- install and maintain the governance structure of the NanoDome project,
- coordinate, together with UCAM, CMCL and UDE, peer-reviewed international journal publications and conference presentations.

UCAM, in its role of dissemination and networking work package leader (WP7) is responsible to:

- setup and update the NanoDome website, continuously populating it with more and more contents, throughout the duration of the project, with contributions from all partners,
- design the NanoDome logo and visual image,
- coordinate, together with UNIBO, CMCL and UDE, peer-reviewed international journal publications and conference presentations. Preprints and slideshows will be made available to the public through the NanoDome website,
- participate in networking activities, together with all NanoDome partners.

CMCL (industrial partners) are responsible to:

- release, together with UNIBO and UDE, an open source version of the developed software, in order to ensure a wider usage of the developed toolkit by the scientific community,
- disseminate NanoDome results at industry trade shows and expositions,
- organise the end-user model-testing workshop: a three-day user-conference for end-users testing of the model will be held towards the end of the project. All potential stakeholders and users will be invited and the main aim of the workshop will be to give them the possibility to test and learn the software mechanisms,
- develop a representative case study to be delivered with the NanoDome toolkit.

All partners are responsible to:

- prepare and publish journal publications and conference presentations, from NanoDome results,
- inform the coordinator and the SMB about the upcoming deliverables, publications and events (conferences, meetings, workshops, trainings),

- provide the coordinator with the final deliverables and publications,
- provide UCAM with communication and dissemination materials to be posted in the NanoDome website,
- further disseminate communication material through their own networks.

3.2. Expected outcomes

The NanoDome project is organised in 8 work packages, 6 of which are devoted to research, technology development and innovation, by combining computational modelling, software development and systematic validation activities at lab- and industrial-scale. The remaining two WPs cover project coordination and management, dissemination and networking activities respectively.

In this section, the expected project outcomes will be briefly described. This allows identification of potential results to communicate and analysis of potential stakeholders. Identified stakeholders will constitute the target audience(s) for NanoDome external communication activities.

3.2.1. Work package 1 – Reactive atomistic molecular dynamics simulations of fundamentals

Objectives

In this workpackage, classical MD modelling using ReaxFF potentials will be performed to provide information on atomic scale mechanisms such as embryo cluster size and homogeneous/heterogeneous nucleation and sintering rates to be used as fundamental data in the meso-scale model.

Expected outcomes

- Development of ad hoc parameters for atomic-scale materials systems
- Creation of a database of fundamental data regarding nucleation, surface reaction and sintering processes for different materials (Si nanoparticles, ZnO, Pt-) as a function of temperature and species concentrations.

3.2.2. Work package 2 – Chemical kinetic models

Objectives

The main objective of WP2 is gas-phase chemical kinetics of the precursor vapours. The models will also describe the chemical composition of newly incepted nanoparticles.

Expected outcomes

- Development of the chemical kinetics models to be implemented in the discrete mesoscopic model for surface and intra-particle reactions
- Development of a framework for the description of gas phase to CFD and the composition of every single discrete particle in the mesoscopic model.

3.2.3. Work package 3 – Mesoscopic model development

Objectives

The overall objective of WP3 is the development of the mesoscopic model for the simulation of the gas-phase synthesis process of Si nanoparticles, ZnO- and Al2O3-based nanomaterials.

Expected outcomes

- Physical-mathematical description of the mesoscopic model
- Mesoscopic model code and data
- Mesoscopic model code library

3.2.4. Work package 4 – Interface and linking

Objectives

WP4 is devoted to the design of XML-based data formats for non-coupled linking and API functions for coupled linking and customization of CFD reactor models for linking, with different synthesis routes.

Expected outcomes

- Specifications of data format and functions

- Libraries for interfacing CFD software with NanoDome
- Coupling/linking methods implemented for plasma, flame and hot-wall reactors in the framework of popular CFD software using the NanoDome interface libraries, providing a broad range of application for the modelling platform in the GPC synthesis.

3.2.5. Work package 5 – Model validation

Objectives

The objective of WP5 is to provide lab- and production-scale test cases to validate the capability of the model to design synthesis process.

Expected outcomes

- Decision concerning suitable standardized lab-scale reactors
- Validation of Si chemical model
- Definition and implementation of the measurements techniques to be used at lab- and industrial scale to provide data useful for modelling validation
- Report and data on Si nanoparticles formation for different GP synthesis routes to be compared with simulation results for validation
- Report and data on : ZnO nanoparticles formation for different GP synthesis routes and on Pt-Al2O3-based nanomaterial in a spray-flame reactor, to be compared with simulation results for validation.

3.2.6. Work package 6 – Industrial process optimisation and model exploitation

Objectives

The main aim of WP6 is to transfer the model to the end users UDE and UMICORE for a final end user implementation and validation. After a successful transfer this model will be used for further product and process development for the various processes and products.

Expected outcomes

- Report optimised Si for plasma process and hot-wall process
- Report optimised Pt-Al2O3 nanomaterial synthesis for spray-flame process
- Report optimised Pt-Al2O3 nanomaterial synthesis for plasma process
- Chemical kinetics database integration in commercial toolkit
- Final report with end-users feedback on the application of the model on realistic plasma, hot-wall and flame synthesis systems for Si, ZnO and Pt-Al2O3 nanomaterials production.

3.3. Stakeholder analysis

The following analysis identifies and describes NanoDome stakeholders, provides insight into their needs and on how NanoDome outcomes will be useful for them. It also highlights the main communication tools and channels that will be used to reach them.

Based on NanoDome partners' analysis of the expected outcomes, the following stakeholders have been identified:

- ✓ Academics
- ✓ Standardisation bodies/Regulators
- ✓ Industry
- ✓ European networks and initiatives
- ✓ Students, research staff

3.3.1. Academics

Who are they?

The term "academics" here refers to scientists in NanoDome-related areas at universities and public research centres. The broad spectrum of activities taking place within the project will be relevant to

academics in many fields such as CFD, molecular dynamics, chemical synthesis and in multiscale modelling in general.

Information needs & NanoDome contributions

NanoDome research will contribute to the evidence base and development of the research in:

- Nanomaterial synthesis reactor simulation
- Chemical kinetics of some important synthesis routes
- Development of suitable interatomic potential for species of interest in the field of nanomaterial
- Nucleation mechanisms in reactive environment
- Nanoparticle interaction
- Multiscale modelling

Tools/Channels

Scientists will be made aware of the NanoDome project and its outcomes via the following tools:

- Website
- Leaflets
- Conferences
- Trade Exhibition
- E-newsletter
- Scientific publications
- End-users model-testing workshop

3.3.2. Standardisation bodies/Regulators

Who are they?

The terms “standardisation bodies” and “regulators” here refer to public bodies, the European Commission and other institutions at national or European level developing standardisation/legislative proposals as well as measures to implement them.

Information needs & NanoDome contributions

The *NanoDome* model will reduce experimental work, and as such have a positive environmental impact. On a secondary level, by applying the toolkit, processes could be further improved towards reduction of energy consumption and gas flows, reduced powder waste and increased throughput, and as such result in a more environmentally friendly process. On a third level, the end product, being a nanopowder, often offers the advantage of combining two or more properties in one material, or it can offer enhanced performance than the same material with a larger particle size. This is also the case for the materials investigated here: Nano silicon in Lithium-ion batteries offers a ten times higher capacity than current anode materials, and as such a ten times lower amount is required for equal performance. The same is true for the investigated catalyst powders and UV absorbers. Towards the end applications, energy storage and automotive catalyst applications are undoubtedly two of the main pillars of Clean Technology which are the innovative high-impact technologies specifically designed to optimize the use of natural resources and to reduce environmental impacts.

Several partners of the consortium have strong expertise in the Environment, Health and Safety (EHS) aspects of nanopowders. In the framework of the FP7 project SIMBA, both UNIBO and UMICORE have developed a strong expertise in nanopowders through EHS and Life Cycle Analysis (LCA) developments. Different internal trainings and external presentations have been given on this topic, and finally a SIMBA symposium was organized also covering EHS aspects of nanopowder gas-phase synthesis. It has to be mentioned that all processes at UMICORE and UDE are designed from the start to reduce human and environmental exposure to nanopowders.

UMICORE is a partner of the International Life Cycle Chair, a research unit that is part of the globally renowned CIRAIG, the Interuniversity Research Centre for the Life Cycle of Products, Processes and Services. The International Life Cycle Chair, with the support of its partners, will conduct high level academic research on the full impact that products and services have on our society from a total-cycle environmental and social perspective, and it will then put that knowledge into practice.

Within UDE, the Center for Nanointegration Duisburg-Essen (CENIDE) is involved in examining the environmental impact and safety of nanomaterials and is engaged in several national and European EHS boards.

NanoDome experience and results will be used within the EMMC in order to contribute to the standardization of modelling nomenclature/taxonomy within the EC to facilitate interaction between models and software developed by different actors.

Tools/Channels

Standardisation bodies and regulators will be made aware of the NanoDome project and its outcomes via the following tools:

- Website
- Leaflets
- Conferences
- E-newsletter
- End-users model-testing workshop

3.3.3. Industries

Who are they?

The term “Industries” is here used as a generic term for energy, chemical, pharmaceutical and automotive industries that can take advantage from the NanoDome results. Both SMEs and larger companies are included in the term. Within that, the R&D and advanced engineering teams responsible for process design, engineering and optimisation are envisaged to have the direct benefit from the work proposed within the NanoDome project.

Information needs & NanoDome contributions

NanoDome can contribute to speed up the design time for new processes and also optimising the efficiency and performance of processes by giving a more thorough inisight in the physics involved. The use of NanoDome model can reduce experimental tests, thereby reducing associated overall costs.

Tools/Channels

- Website
- Leaflets
- Trade exhibitions
- Industry visits and trade exhibitions/expositions
- Conferences
- E-Newsletter
- Scientific publications
- End-users model-testing workshop

3.3.4. Local/Regional/National/European networks and initiatives

Who are they?

Local/Regional/National/European networks and initiatives refer to research and innovation fora mobilising stakeholders to deliver on agreed priorities and share information across to relevant communities.

Information needs & NanoDome contributions

NanoDome can provide evidence in terms of the technical benefits versus the costs (collectively, the risks and knowledge gaps) trade-off achieved through efficient collaboration across multi-disciplinary areas on a pan-European level.

Tools

The retail sector will be made aware of the NanoDome project and its outcomes via:

- Website
- Social media
- Leaflets
- E-Newsletter
- Presentations
- End-users model-testing workshop

3.3.5. Students and research staff

Who are they?

This kind of stakeholders includes both students and research staff of the NanoDome partners and outside the consortium.

Information needs & NanoDome contributions

The *NanoDome* project will also prove to be an **educational resource** due to its GNU LGPL licensing and public availability of the environment and interface. Moreover, in the framework of the project, the dissemination activities will also cover the development of **online tools for professional training and education** that will lead *NanoDome* to be seen as a **virtual laboratory for scientific training to academia and industry**.

Tools/Channels

- Website
- Online training and education tools
- Social media
- Leaflets
- E-Newsletter
- End-users model-testing workshop

3.4. Communication tools

In this section a description of the main tools and channels that will be used for NanoDome communication activities is provided. What the actual content will be in press releases and articles etc. will be determined along the way as it will depend on the results generated.

The main communication tools and channels for NanoDome communication are:

- Visual identity
- Websites
- Leaflets
- E-Newsletter
- Social media
- Conferences, presentations in fare exhibitions and other relevant initiatives
- Scientific publications – both peer-reviewed and more general publications
- Online training and education tools
- End-users model-testing workshop

3.4.1. Visual identity

Logo and graphical framework

A visual identity for NanoDome has been developed. The identity comprises a logo and a graphic framework that will provide visibility and recognisability to the project throughout its communication efforts.

The visual identity was developed by a graphic designer at CMCL and UCAM, based on input from all partners at the NanoDome kick-off meetings and it has been shared among project partners who voted to make a choice.

The NanoDome logo, together with EU emblem will be included on all external communication materials, together with the statement "This project has received funding from the *European Union's Horizon 2020 Research and Innovation Programme* under Grant Agreement No 646121*".*

NanoDome graphic framework will include power point and word templates that should be used at all times when presenting NanoDome and its results, and for project documentations.

Timing
Project logo and graphical framework, as well as templates will be delivered by UNIBO in time for the March 2016 meeting.

3.4.2. NanoDome website

Project public website

Once the visual identity and logo of NanoDome are defined, a public website will be set up for the project. The website will be developed by UCAM, with feedbacks by the coordinator and the NanoDome consortium. The URL will be: http://www.nanodome.eu.

The public website will be the project main information resource to which all other communication material will be referring to. It will be clearly structured with accurate information that is accessible and understandable.

The NanoDome website will provide an overview of the project – its aims and objectives, information on the consortium and the research that will be undertaken in the project. The website will be regularly updated throughout the project to reflect progress as results are generated.

Communication materials such as leaflets, preprints of accepted scientific publications, as well as conference presentations and posters will be available on the website. Furthermore, there will be a news page to inform visitors on recent happenings within the project.

The NanoDome public website will be kept online for at least three years after the project end. This is to ensure that also research results produced by the end of the project period are disseminated.

The public website will provide information on the consortium and the partners will be presented with their logos and links to their websites. Partners will also be encouraged to link to the NanoDome website from their Institution web sites, in order to drive traffic to the project website.

Project Extranet

For the sake of transparency and to facilitate communications within the consortium, a NanoDome extranet will be set up. Only project partners will have access to the extranet where data, working documents and publications will be shared. The consortium is encouraged to make use of the system to enable efficient **communications between all partners involved.**

Evaluation

The effectiveness of the NanoDome public website will be evaluated through use of:

- Web statistics (number of visitors, countries of origin, referrals)
- Number of citations/links
- Search engine ranking

The NanoDome extranet will be evaluated based on:

- Web statistics on use by partners
- Feedback from partners

Timing

- The domain http://www.nanodome.eu has already been registered.
- A first version of the NanoDome website will be in place by 31 March 2016, and will be continuously populated and extended thereafter.
- Links to partner websites will be available on the NanoDome website. Partners will be encouraged to link to the NanoDome website as soon as this is in place.

3.4.3. Project leaflets

Two NanoDome leaflets will be produced by UNIBO with the contributions of all partners, one at the beginning of the project and one towards its end. The leaflets will serve as an off-line complement to the website. It is a means to increase NanoDome visibility at various events and could be seen as a business card for the project.

The purpose of the first project leaflet is to provide a general description of NanoDome, the partners involved and what the project wants to achieve while the second leaflet will present a summary of the findings from NanoDome.

The leaflets will provide web-address and necessary contact details to get in touch with the project coordinator and communications manager.

Leaflets will be distributed at conferences, meetings, trade exhibitions and other events where stakeholders gather. Partners are encouraged to display and distribute them whenever they are in touch with potential stakeholders as well as during focus groups and interviews. The project leaflets will not only be available in print format, but electronic versions will be available online on the NanoDome website.

Evaluation

The following parameters will be used as indicators for the effectiveness of the leaflets:

- Numbers of leaflets distributed and details on where and type of audience when possible
- Increase in interest indicated by hits on website

Timing

- The 1st NandoDome leaflet will be finalised by 14 September 2016.
- The 2nd NanoDome leaflet will be finalised by 15 September 2018, or before depending on the project results obtained.

3.4.4. E-Newsletter

An efficient way to reach out to the broad spectrum of NanoDome stakeholders is via an electronic newsletter. The e-newsletter will be issued twice a year presenting recent happenings from the project such as new scientific publications and reports from conferences where NanoDome has been present. The electronic format will allow to link to relevant content on the NanoDome website. This will lead to more traffic to the NanoDome website and an increase in awareness of the project.

Stakeholders will subscribe to the newsletter online on the project website. The contact database for the e-newsletter will be complemented with stakeholders attending NanoDome-related meetings and conferences.

Evaluation

The success of the NanoDome e-newsletter will be monitored by:

- Distribution statistics
- Increased interest in the project measured as visitors to the NanoDome website.

Timing

- The e-newsletter will be issued bi-annually with the first issue coming out at the beginning of the second project year.
- The frequency of the newsletter may be adapted to the amount of newsworthy events taking place within the project.

3.4.5. Social Media

The term “social media” refers to media for social interaction via internet and mobile techniques and covers among other social networking services such as Facebook, blogs and mini-blogs like Twitter.

As the use of social media becomes more and more popular and an increasing number of organisations communicate through them, the use of such media for NanoDome communication activities will be considered besides the project website. This would be useful in particular after the project final workshop to create and maintain the community of people interested in the NanoDome results.

The project will also make use of the GitHub collaborative platform for the software release under LGPL. This platform can be classified as a social media for software engineers and will be the main source of information for the specialists in this field.

See also: https://github.com/explore

Evaluation

The evaluation of the social media use will depend on the tools selected, but typically it will be based on:

- Number of subscribers/followers
- Web-statistics

Timing

- If it is agreed that NanoDome will use social media for its communications, the setting up of accounts will take place when the project website has been established, end of April 2016.

3.4.6. Presentations in conferences, fare exhibitions and other initiatives

With the help of the partners, UCAM will put together a calendar identifying suitable conferences and events where NanoDome could have a presence. This will to a certain extent be determined by the target groups to reach and the available results. The activities to be organised may be presentations, posters, seminars and stands (possibly in collaboration with other EC-funded projects). Partners in NanoDome are encouraged to present their results wherever they find it appropriate.
CMCL and UMICORE will play an important role in the dissemination to SMEs and large scale industry, of NanoDome and its outcomes. The NanoDome consortium will focus on industry-standard trade shows such

as ACHEMA/DECHEMA, IChemE, etc. within Europe. In addition, given the significance of the strong collaboration with leading academics in the USA, the AIChE engineering exposition has been identified as a non-European venue to disseminate results and demonstrate software to industrial and R&D stakeholders. It is emphasised that the key aims of the presence at the aforementioned trade shows are technical dissemination and verification as well as obtaining critical feedback from industry to ensure that the toolkits developed within NanoDome are of direct relevance in solving practical technical challenges faced by the nanomaterial industry.
The consortium will participate to activities of the European materials modelling council (EMMC), like metadata establishment to describe databases and software and interoperability. Actions will be taken in order to join international networks in the field of nanomaterials modeling, production and development, to increase the number of potential industrial end-users.

Evaluation

Monitoring of NanoDome activities at conferences and similar events will be done through:

- A record of NanoDome activities (presentations, symposia, conference stands, trade exhibitions etc.)

Timing

- Suitable conferences to disseminate NanoDome results will be identified throughout the project.
-

3.4.7. Scientific publications

The findings generated within NanoDome will be presented to the scientific community via publications in scientific journals. Partners will select the journals to submit their research papers.

Monitoring

The scientific publications will be monitored via:

- Establishment of a record of NanoDome publications in scientific journals.

Timing

- Results will be submitted to scientific journals throughout the project.

3.4.8. Online training and education tools

In the framework of the project, the dissemination activities will also cover the development of online tools for professional training and education that will lead NanoDome to be seen as a virtual laboratory for scientific training to academia and industry.

3.4.9. End-users model-testing workshop

A three-day user-conference for end-users testing of the model will be held towards the end of the project. All potential stakeholders and users will be invited and the main aim of the workshop will be to give them the possibility to test and learn the software mechanisms. The three days of the conference will be structured into technical presentations by the consortium members on the first day, and into actual hands-on testing on the last two days. The presentations and a workshop summary will be made publicly available on the NanoDome Website.

Evaluation

Monitoring of NanoDome end-users workshop efficacy will be done through

- Number of participants and statistics (e.g. # of industry/academia participants, etc.)
- Survey between participants.

Timing

- The workshop will be organised towards the end of the project, indicatively in June/July 2018.

3.5. Communication tools – timing overview

The table below presents the timing of the different communication tools. These are indicative deadlines and might be modified during the project based on NanoDome activities and results.

Tools	Timing
Visual identity	By March 2016
Public website	14 March 2016
Partner extranet	14 March 2016
Mutual links	15 May 2016
Project leaflet 1	14 September 2016
Project leaflet 2	14 September 2018
E-Newsletter	Bi-annually October 2016
Online training and education tools	June/July 2018
End-users model-testing workshop	June/July 2018

3.6. Associations and networks as communication channels

European associations and networks are an important means of communication for NanoDome and its outcomes. Providing European associations and networks with recent and easy-to-read communication material will not only be of value for them when developing their standpoints and strategies, but it will also allow information about the NanoDome project and its results to be widely disseminated.

The table below lists a number of European organisations representing associations and networks of stakeholders that have been identified of potential interest for NanoDome. NanoDome consortium, with contributions from all partners, will extend this list and develop a network of both European and national stakeholders to promote communication and dissemination of NanoDome results to a wide range of different stakeholders at all levels. Partners are encouraged to provide the Coordinator and the WP7 leader (UCAM) with information and contact details of additional stakeholder organisations. During partner meetings UNIBO and UCAM will bring up to discussion the NanoDome stakeholder network and how this can be used in an effective way.

Stakeholders	European Associations & Networks
Industry associations	IChemE
EU networks and initiatives	The European Materials Modelling Council - EMMC
	NANOfutures - European Technology Integrating and Innovation Platform
	ETP4HPC – The European Technology Platform for High Performance Computing
	EU NanoSafety Cluster
	NESSI - The Networked European Software and Services Initiative
	EU-MMC - EU Multiscale Modelling Cluster
	ICMEg - Integrated Computational Materials Engineering Expert Group

4. NanoDome stakeholders, outcomes and tools overview

This section provides an overview of the NanoDome stakeholders, their information needs, which NanoDome outcomes are relevant to satisfy these and by which tools – through which channels – they will be reached.

Stakeholders	Information needs	Work Package	Relevant NanoDome outcomes	Tools
Academics	• Access to high quality research results	WP1	Database of optimised reactive force fields for atomistic and coarse grain simulations.	✓ Scientific publications ✓ Software
		WP2	Chemical kinetics data for relevant precursor reactions	
		WP3	Simulation of gas phase condensation process including wide scale range nanoparticle interaction phenomena such as nucleation, aggregation and coagulation.	
		WP4	Methods for linking/coupling between meso and continuum scale CFD models.	
		WP5	Well-defined reactor systems, methods for measurements	
		WP6	N.A.	
Standardisation bodies/Regulators	• Science based background information to develop standards and strategies and take the appropriate decisions	WP1	N.A.	• Website • Leaflets • Conferences • E-Newsletter • Scientific publications
		WP2	N.A.	
		WP3	Definitions of physical processes and entities for nanomaterial synthesis via gas-phase particle synthesis.	
		WP4	Definition and testing of methods for multiscale linking/coupling between meso/continuum scales.	
		WP5	Model reactor systems and Standard Operation Procedures (SOPs) for particle synthesis and measurement techniques	
		WP6	N.A.	
Industries	•Means to speed up the design time for new processes, thus reducing associated costs	WP1	Database of reactive force fields for atomistic and coarse grain simulations	• Website • Leaflets • Conferences • E-Newsletter
		WP2	N.A.	

Stakeholders	Information needs	Work Package	Relevant NanoDome outcomes	Tools
		WP3	Mesoscopic model and software tool for nanoparticle gas phase synthesis simulation. Database of materials relations.	• Scientific publications
		WP4	Open source library for linking between mesoscopic model and widely diffuse CFD software (i.e. ANSYS Fluent, OpenFOAM)	
		WP5	Experimental validation of models and data for scale-up	
		WP6	N.A.	
Students/research staff	•Training and educational courses on material modelling and process design and optimisation	WP1	Tools for strategic search of low energy structures of nanosized materials; open source database of reactive force fields for atomistic and coarse grain simulations.	• Website • Leaflets • Conferences • E-Newsletter • Scientific publications
		WP2	Kinetics data for selected prcuror systems for implementation in kinetics models	
		WP3	Open source mesoscopic model and software for gas-phase particle synthesis processes simulation.	
		WP4	Open source library and definitions for multiscale linking/coupling.	
		WP5	Well-defined reactor systems, methods for measurements	
		WP6	N.A.	