

## ENEX Company Questionnaire

### Introductory remarks:

1. The Erasmus+ project '**ENEX – Expert in Nanotechnology Exploitation**' aims at developing advanced training courses for (post-)graduates focusing on the rapidly growing importance of nanotechnology in industry, research and the society as a whole. Nanotechnology is a strongly emerging area of research and activity, opening up new markets, and leading to new products, processes and services in almost all industrial sectors. As a result, there is an increasing demand of particularly qualified personnel in companies producing and using nanotechnology, but also research institutes developing the technologies and consulting firms focusing on the nanotechnology research-to-market process. The ENEX training courses will be based on an interdisciplinary approach combining nanotechnology modules with innovation management content.
2. This survey shall help to identify specific needs with regard to nanotechnology and product/process innovation management in companies, R&D institutions and consulting firms and to define/refine the right learning contents for the ENEX course.
3. For the sake of convenience, the term '**company**' in this questionnaire shall refer to any kind of business processing, producing, using and/or focusing on nanotechnology (i.e. manufacturing companies, research institutes, university departments, consulting firms, technology transfer agencies, trade associations etc.).
4. Please be assured that the information disclosed by your company for this survey will be kept strictly **confidential**. Feedback on the questionnaire will be summarized in a final report which will be made available to all participants interested in this information.
5. If you have any further questions regarding this questionnaire, please contact **<name, email address>**.

## **(A) Company Data**

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**A.1 Where is your company located (region, country)?**

**A.2 In which year was the company established?**

**A.3 Type of company** *(select all relevant)*

- |   |  |
|---|--|
| <input type="checkbox"/> Large industry                   | <input type="checkbox"/> Manufacturer                |
| <input type="checkbox"/> SME                              | <input type="checkbox"/> Development/Engineering     |
| <input type="checkbox"/> Start-up/Spin-off/Spin-out       | <input type="checkbox"/> Wholesaler                  |
| <input type="checkbox"/> R&D institution (non-university) | <input type="checkbox"/> Technology service provider |
| <input type="checkbox"/> University                       | <input type="checkbox"/> Consulting company          |
| <input type="checkbox"/> Association/Network              | <input type="checkbox"/> Technology transfer agency  |
| <input type="checkbox"/> Other <input type="text"/>       |  |

**A.4 Is the company an independent entity?**

- Yes  No

**A.5 Statistical data relating to company size and organization:**

**Number of employees of your company**

- <10  10-49  50-99  100-249  250-500  >500

**What is the company's average annual turnover (M€)?**

- <0.5  0.5-1  1-5  5-10  10-50  >50

**How much percent of staff are involved in R&D?**

- 0  <25  25-50  50-75  >75

**How much percent of staff are involved in production?**

- 0  <25  25-50  50-75  >75

**How much percent of staff have an academic degree?**

- 0  <25  25-50  50-75  >75

**A.6 Which target markets are of importance to your company today?**

*(select all relevant)*

- |  |   |
|--|---|
| <input type="checkbox"/> Automotive Industry       | <input type="checkbox"/> Aerospace Industry                 |
| <input type="checkbox"/> Biotechnology             | <input type="checkbox"/> Chemical & Pharmaceutical Industry |
| <input type="checkbox"/> Health/Medical Technology | <input type="checkbox"/> Environmental Technology           |
| <input type="checkbox"/> Energy                    | <input type="checkbox"/> Materials                          |

- |  |   |
|--|---|
| <input type="checkbox"/> Information Technology            | <input type="checkbox"/> Telecommunication                  |
| <input type="checkbox"/> Electronics Industry              | <input type="checkbox"/> Microsystems Technology            |
| <input type="checkbox"/> Measurement & Control             | <input type="checkbox"/> Automation & Production Technology |
| <input type="checkbox"/> Building technology/Construction  | <input type="checkbox"/> Food/Packaging                     |
| <input type="checkbox"/> Mobility/Lightweight construction | <input type="checkbox"/> Consumer Goods                     |
| <input type="checkbox"/> Other _____                       |   |

**A.7 Which target markets will be of importance to your company in 5 years from now? (select all relevant)**

- |  |   |
|--|---|
| <input type="checkbox"/> Automotive Industry               | <input type="checkbox"/> Aerospace Industry                 |
| <input type="checkbox"/> Biotechnology                     | <input type="checkbox"/> Chemical & Pharmaceutical Industry |
| <input type="checkbox"/> Health/Medical Technology         | <input type="checkbox"/> Environmental Technology           |
| <input type="checkbox"/> Energy                            | <input type="checkbox"/> Materials                          |
| <input type="checkbox"/> Information Technology            | <input type="checkbox"/> Telecommunication                  |
| <input type="checkbox"/> Electronics Industry              | <input type="checkbox"/> Microsystems Technology            |
| <input type="checkbox"/> Measurement & Control             | <input type="checkbox"/> Automation & Production Technology |
| <input type="checkbox"/> Building technology/Construction  | <input type="checkbox"/> Food/Packaging                     |
| <input type="checkbox"/> Mobility/Lightweight construction | <input type="checkbox"/> Consumer Goods                     |
| <input type="checkbox"/> Other _____                       |   |

**A.8 What are your geographical target markets?**

- Local/regional       National       International

**(B) Questions relating to nanotechnology**

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**B.1 Does your company have knowledge/skills in the field of nanotechnology?**

- Yes       No       Planned

**B.2 Does your company use nanotechnology or manufacture products/provide services based on nanotechnology?**

- |  |   |
|--|---|
| <input type="checkbox"/> User                        | <input type="checkbox"/> Producer               |
| <input type="checkbox"/> Technology service provider | <input type="checkbox"/> Other service provider |
| <input type="checkbox"/> None of them                |   |

**B.3 If your company does not use nanotechnology, what is the reason? (select all relevant)**

- |   |  |
|---|--|
| <input type="checkbox"/> Lack of knowledge  | <input type="checkbox"/> Lack of experience          |
| <input type="checkbox"/> Lack of technology | <input type="checkbox"/> High health and safety risk |
| <input type="checkbox"/> Too expensive      | <input type="checkbox"/> Not necessary               |
| <input type="checkbox"/> Other _____        |  |

**B.4 What are the expectations of your company concerning nanotechnology for the next 5 years? (select all relevant)**

- We will start using nanotechnology.
- We will intensify our engagement in nanotechnology.
- Nanotechnology is a door opener for new markets.
- Nanotechnology will help us realize new products/services.
- Nanotechnology will bring us competitive advantage.
- From nanotechnology we will gain new knowledge.
- Through nanotechnology we can create new jobs.
- We will **not** use nanotechnology.
- Other

**B.5 Which fields of nanotechnology are of particular interest/importance to your company? (select all relevant)**

- |  |   |
|--|---|
| <input type="checkbox"/> Materials: synthesis or self-assembly | <input type="checkbox"/> Materials: properties, characterization, tools |
| <input type="checkbox"/> Biology & Medicine                    | <input type="checkbox"/> Electronics & Photonics                        |
| <input type="checkbox"/> Patterning & Nanofabrication          | <input type="checkbox"/> Energy at the nanoscale                        |
| <input type="checkbox"/> Sensing & Actuating                   | <input type="checkbox"/> Micro/Nanooptics                               |
| <input type="checkbox"/> Health/Safety issues                  | <input type="checkbox"/> Regulation/Standardization                     |
| <input type="checkbox"/> Not important                         | <input type="checkbox"/> Other <input type="text"/>                     |

**B.6 Which of the following steps of the nanotechnology value chain do you cover in your company? (select all relevant)**

- |  |  |
|--|--|
| <input type="checkbox"/> Numerical simulation  | <input type="checkbox"/> Research and development              |
| <input type="checkbox"/> Prototyping           | <input type="checkbox"/> Pre-series development/Scaling up     |
| <input type="checkbox"/> Industrial production | <input type="checkbox"/> Analytics/Characterization techniques |
| <input type="checkbox"/> None                  | <input type="checkbox"/> Other <input type="text"/>            |

**B.7 Which micro/nanotechnology processes/equipment do you use or focus on in your company? (select all relevant)**

- Colloidal/Supramolecular chemistry
- (Micro-) mechanical treatment
- Laser treatment
- Physical/Chemical vapor deposition
- Lithography and etching
- (Micro) Injection moulding
- Tempering, sintering or annealing
- Spinning/Spraying
- Analytics/characterization
- None
- Other

**B.8 Which materials do you use or focus on in your company? (select all relevant)**

- Carbon nanomaterials
- Ceramic materials
- Liposomes/Micelles/Microemulsions
- Metals
- Polymers
- Semiconductors
- Other organics/supramolecular assemblies
- Hybrids
- None
- Other

**(C) Questions relating to innovation management**

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**C.1 Does your company carry out innovation management?**

- Yes                       No                       Planned

**If 'Yes', in which form?**

- Innovation department                       Innovation team  
 Innovation manager                       Innovation projects  
 Other

**If 'Yes', which of the following innovation phases are considered?  
(Select all relevant)**

- Identification of problems
- Creating/gathering ideas
- Evaluation and selection of ideas
- Realization phase
- Testing phase
- Pre-series development
- Mass production
- Market entry
- Post-implementation/After sales review
- Other

**C.2 How are innovation processes initialized in your company?**

- Reaction on an acute problem
- Future-oriented challenge
- Demand-oriented approach ('Market Pull')
- Technology-oriented approach ('Technology Push')
- Other

**C.3 Which of the following factors trigger innovation processes in the field of nanotechnology?**

	Not important	Less important	Very important
<input type="checkbox"/> Increasing importance of nanotechnology	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> Increasing globalisation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> Increasing competition	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> Increasing market demand	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> New materials	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> New technologies	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> National regulations	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> Public research programmes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> Strategic reorientation of the company	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> Other <span style="background-color: #cccccc; border: 1px solid black; display: inline-block; width: 150px; height: 1em; vertical-align: middle;"></span>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**C.4 Which of the following instruments/tools/methodologies do you use in the framework of innovation management?**

<input type="checkbox"/> Market/Competitive analysis	<input type="checkbox"/> Technology/Patent search
<input type="checkbox"/> Involvement of external experts	<input type="checkbox"/> Creation of interdisciplinary teams
<input type="checkbox"/> Scenario technique	<input type="checkbox"/> SWOT analysis
<input type="checkbox"/> Creativity/Ideas management	<input type="checkbox"/> Risk analysis/management
<input type="checkbox"/> Patent strategies	<input type="checkbox"/> Other <span style="background-color: #cccccc; border: 1px solid black; display: inline-block; width: 150px; height: 1em; vertical-align: middle;"></span>

**C.5 From which sources do you gain stimulations and ideas for new products/services?**

<input type="checkbox"/> Internal sources	<input type="checkbox"/> Customers
<input type="checkbox"/> Market analysis	<input type="checkbox"/> Cooperations
<input type="checkbox"/> Open Innovation	<input type="checkbox"/> Conferences/Workshops
<input type="checkbox"/> Benchmarking	<input type="checkbox"/> Quality management
<input type="checkbox"/> Patent/Technology search	<input type="checkbox"/> Technology assessment
<input type="checkbox"/> Roadmapping	<input type="checkbox"/> Other <span style="background-color: #cccccc; border: 1px solid black; display: inline-block; width: 150px; height: 1em; vertical-align: middle;"></span>

**C.6 How do you rate the following innovation barriers in the field of „nano“?**

	Not important	Less important	Very important
<input type="checkbox"/> High costs	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> Long development cycles	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> Health/Safety risk	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> Lack of patents	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> Problems with upscaling	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> Target markets do not exist yet	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> Weak response of customers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> Only little benefit expected	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> Other <span style="background-color: #cccccc; border: 1px solid black; display: inline-block; width: 150px; height: 1em; vertical-align: middle;"></span>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**C.7 Does your company have its own R&D department?**

- Yes                       No                       Planned  
 R&D is (partly) outsourced/subcontracted.

**C.8 Do you patent your products/technologies?**

- Regularly               Rarely               No

**C.9 Do you register trade marks for your products/services?**

- Regularly               Rarely               No

**(D) Questions relating to education & training**

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**D.1 Do you have qualified staff with knowledge/skills in the field of nanotechnology?**

- Yes                       No

**If 'Yes', how did they acquire this knowledge/skills?**

- Academic education                       Additional qualification  
 Work experience                       Self-study  
 Other

**If 'Yes', what degree of qualification do they have?**

- PhD                       Master  
 Bachelor                       Technical education  
 Other

**D.2 Do you plan to allocate (more) human resources in the field of nanotechnology in future?**

- Yes                       No

**D.3 If you already employ nanotechnology experts, have you experienced any problems in the past when recruiting qualified staff in the field of nanotechnology?**

- Yes                       No

**If 'Yes', what kind of problems?**

**D.4 Does your company make use of vocational education & training (VET) offers in the field of nanotechnology or innovation management?**

- Yes, in nanotechnology                       Planned in nanotechnology  
 Yes, in innovation management               Planned in innovation management  
 None of them

**D.5 Is there any (further) need in your company for VET in the field of nanotechnology or innovation management?**

- Yes, in nanotechnology                       Yes, in innovation management

**If 'Yes', in which areas?**

**D.6 Do you already have experience with e-learning concepts in VET?**

- Yes, in nanotechnology                       Yes, in innovation management  
 Yes, in general                                       No

**(E) Personal details**

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**E.1 Your position in the company**

**If you are interested in the receipt of the summary of this survey, please fill in your personal contact data below.**

**E.2 Your personal contact data**

Name

First name

Company

Address

Email

Telephone