

**Co-Nanomet**

*Co-ordination of Nanometrology in Europe*

European Nanometrology  
Workshop

19<sup>th</sup>-20<sup>th</sup> November 2009

PTB, Braunschweig

# Co-Nanomet

*Co-ordination of Nanometrology in Europe*

Co-Nanomet Programme:

Scientifically and economically nano-metrology is a critical activity supporting progress in nanotechnology

## Programme Focus:

- Bring together key stakeholders;
- Co-ordinate ongoing activity;
- Define needs and bring together the infrastructure, people and capability;
- 2yr programme starting 1<sup>st</sup> Jan 2009.

This EC FP 7 funded programme is *addressing the need within Europe to develop the required measurement frame to successfully support the development and economic exploitation of nanotechnology.*

## Nanometrology – a consumer perspective

- “Nobody Told Me I was a Nano-Consumer:” How Nanotechnologies Might Challenge the Notion of Consumer Rights , Journal of Consumer Policy, H. Throne-Holst and P. Strandbakken published Nov 2009.
- In 1962 President Kennedy issued a ‘Special Message on Protecting the Consumer Interest’ defining the main consumer rights in modern societies as:
  - i) The right to make intelligent choices among products & services
  - ii) The right to have access to accurate information
  - iii) The right to be offered fair prices and acceptable quality
  - iv) The right to have safe and healthful products
- Effective nanometrology invoked by i) to iv) above.

## Motivation:

To address the following issues:

- Low visibility and fragmentation of European metrology infrastructure
- Duplication of efforts across Europe
- Difficult connectivity in the supply chain
- Skills shortage in key areas
- Use of specialised equipment by non-specialists
- Underused fabrication capacities
- Increasing expense of capital equipment
- Need to define essential requirements for nanometrology to support regulations

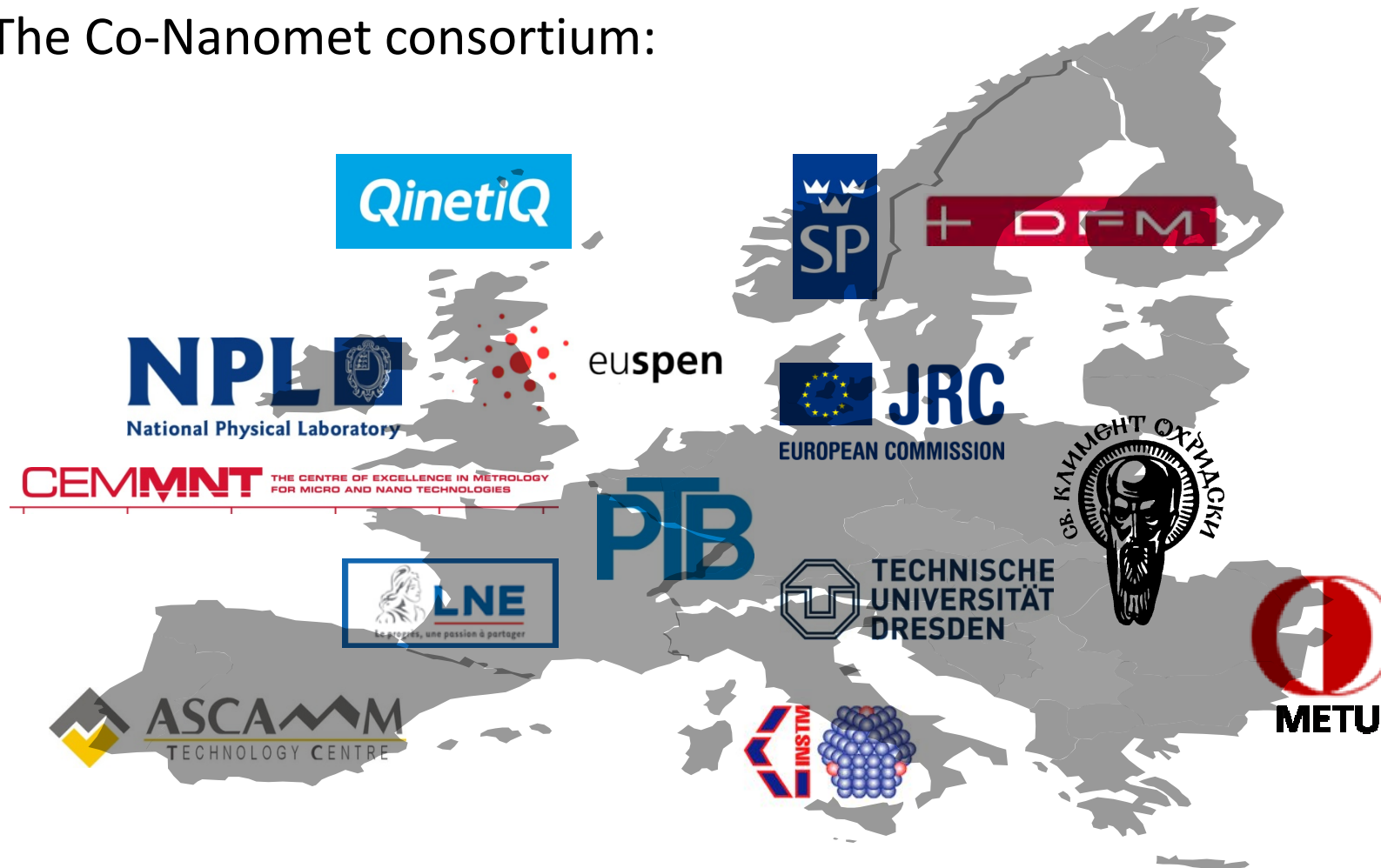
## Programme Aims:

- To define a European Strategy for Nanometrology
- To identify and coordinate leading Nanometrology activity across Europe
- To coordinate European training and education of scientists, engineers and end-users in nanometrology
- To create a central hub that builds on, coordinates and provides visibility to new and existing activities across Europe
- To signpost, network and recommend the development of new nanometrology infrastructures across Europe

# Co-Nanomet

*Co-ordination of Nanometrology in Europe*

The Co-Nanomet consortium:



A body of 14 leading expert organisations in the field of nanometrology, nanotechnology, technology transfer and specialised training

# Co-Nanomet

*Co-ordination of Nanometrology in Europe*

## Core Activities:



European  
Strategy for  
Nanometrology



Nanometrology  
Action Groups



Coordination of  
Education &  
Skills



Exploitation &  
Development  
of  
Infrastructures

# Co-Nanomet

*Co-ordination of Nanometrology in Europe*

## Core Activities:



European  
Strategy for  
Nanometrology

- Review of current and emerging needs for Nanometrology in support of the industrial transformation of nanotechnology.

*Foresight Review completed Nov 2009*

- Issues and opportunities to be evaluated with key stakeholders.
- Strategy for future activities and developments defined.

## Core Activities:



Nanometrology  
Action Groups

- 5 European Action Groups established:
  - Engineered Nanoparticles
  - Nanobiotechnology
  - Thin Films
  - Critical Dimension and Scanning Probe Techniques
  - Modelling and Simulation
- Address requirement for focussed activity, share key developments and best practice.
- Process chain put in place for the dissemination of metrology techniques.
- Traceability to national and international standards will be addressed.

# Co-Nanomet

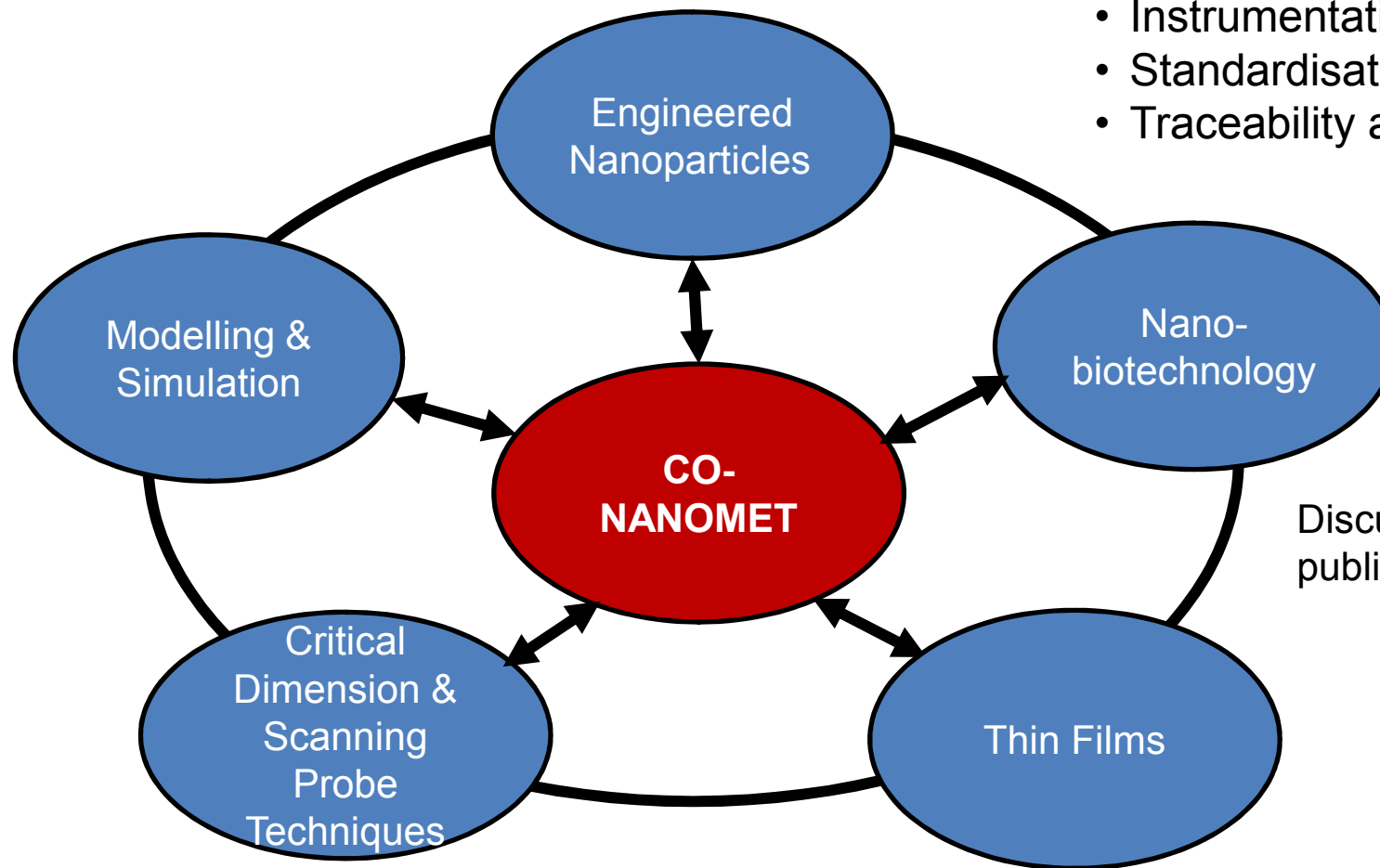
*Co-ordination of Nanometrology in Europe*

European Nanometrology

Action Groups:

Groups will address:

- Measurement technologies
- Instrumentation
- Standardisation requirements
- Traceability and equivalence



Discussion documents  
published Nov 2009

## Core Activities:



### Coordination of Education & Skills

- Educational programmes that address nanometrology across Europe are being reviewed.
- A future training need analysis to be undertaken and recommendations for training curricula made.
- Training provided in basic nanometrology concepts and standardisation.
  - Introductory Guide to Nanometrology (2010)
  - Training workshop: 'Application of Standards Within Nanometrology' (ENF 2009)

## Core Activities:



Exploitation &  
Development  
of  
Infrastructures

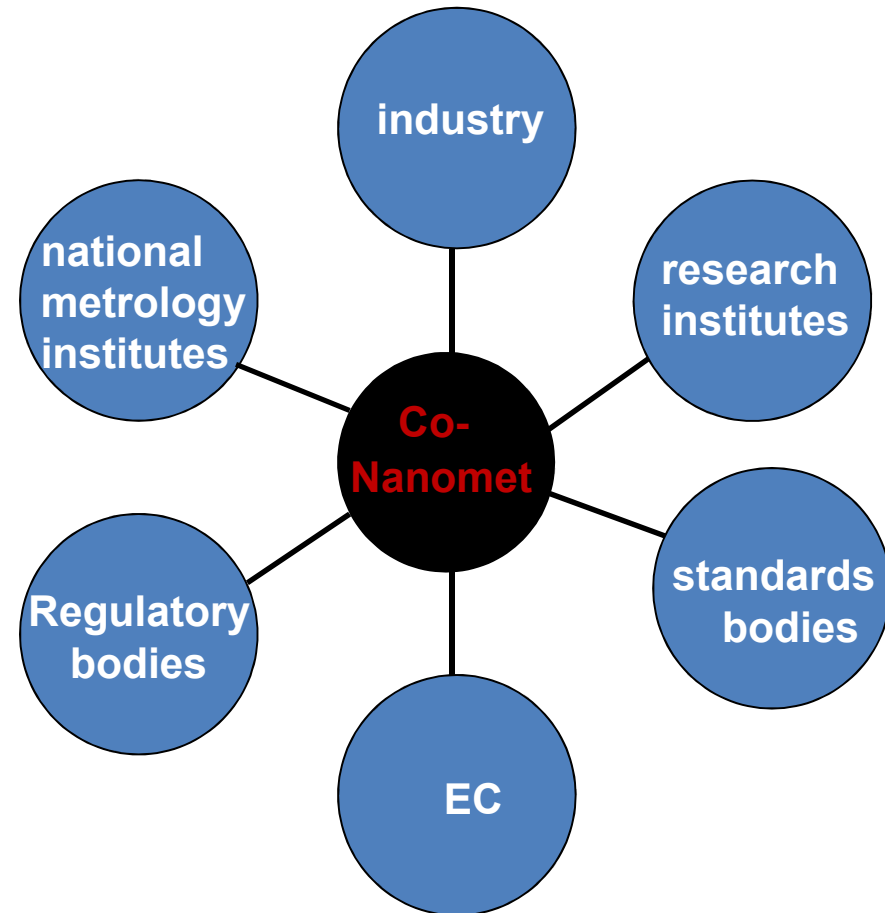
- Map of facilities and capabilities nearing completion to inform both providers and users of nanometrological services.
- Current and future requirements for large infrastructures and capability gaps will be assessed.
- Dissemination of traceable nanometrology to the workplace:
  - Traceability and industrial metrology requirements reviewed and developing approaches shared
  - Recommendations in regard to standards to be derived

# Co-Nanomet

Co-ordination of Nanometrology in Europe

- [www.co-nanomet.eu](http://www.co-nanomet.eu)  
European nanometrology portal highlighting key capability and developments
- In 2010 Action Groups will each coordinate workshop including further discussion forums – open to all interested parties
- European Nanometrology Workshop
  - 140 delegates
  - Over 30 companies represented

*We wish you an excellent meeting*



Participation and further information:

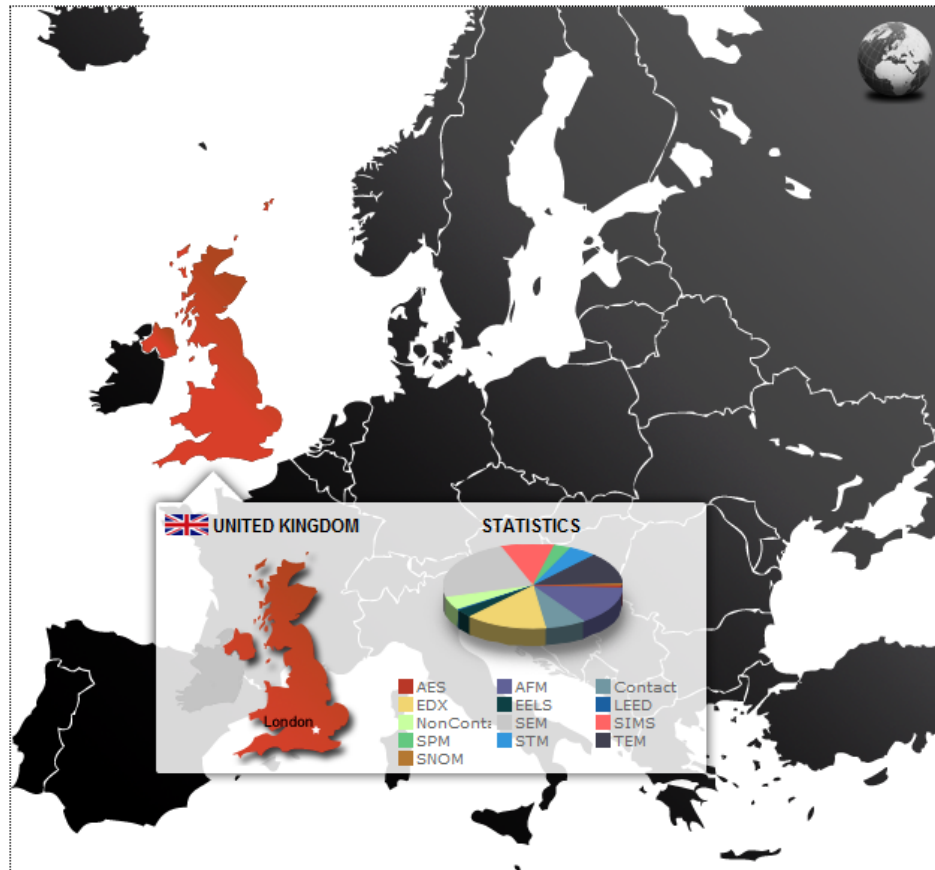
Contact Points			
Co-Nanomet Programme	euspen	Dr Theresa Burke	<a href="mailto:theresa-burke@euspen.eu">theresa-burke@euspen.eu</a>
Strategy	NPL	Prof. Richard Leach	<a href="mailto:richard.leach@npl.co.uk">richard.leach@npl.co.uk</a>
Action Groups	DFM	Dr Joergen Garnaes	<a href="mailto:jg@dfm.dtu.dk">jg@dfm.dtu.dk</a>
Education & Skills	ASCAMM	Dr Alfonso Sanchez	<a href="mailto:asanchez@ascamm.com">asanchez@ascamm.com</a>
Infrastructures	CEMMNT	Dr Christopher Malins	<a href="mailto:christopher.malins@cemmnt.co.uk">christopher.malins@cemmnt.co.uk</a>

Website: [www.co-nanomet.eu](http://www.co-nanomet.eu)

# Co-Nanomet

Co-ordination of Nanometrology in Europe

## Conanomet European Nanometric Capabilities Search



## Analysis

- 20 out of 34 NMIs have no visible nanometrology capability
- Germany, UK, France, Italy and Spain account for >50% of the total nanometrology facilities
- >75% of the nanometrology facilities are from within the public sector
- University research base is the single largest contributor to nanometrology capability
- Government funded *Academies of Science* in Bulgaria, Czech Republic, Hungary, Poland, Romania and Slovakia provide significant nanometrology access
- In Austria, Germany, Italy and Spain regional government support of research infrastructure has created significant nanometrology capability