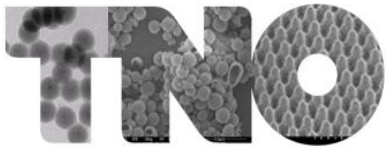
WORKSHOP NANOTECHNOLOGIES AND ADVANCED MATERIALS PILOT PROJECTS TEST-BEDS FOR INDUSTRY AND PRIVATE INVESTMENTS

CO-PILOT | Dr. Maurice Mourad



TNO innovation for life

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 645993.

OUTLINE

- **The CO-PILOT project**
- The regions around CO-PILOT's pilots
- Organisation model
- CO-PILOT is reaching out

H2020 NMBP PILOT PROJECT

- **Project: CO-PILOT**
- **Topic: Open Access Pilot Line for Cost-Effective Nanocomposites**
- Project Start: 01. January 2015 (- 01. January 2018)
- Duration: 36 Month
- 13 Partners (6 SME, 4 RTO, 2 LE and 1 University)
- Coordinator: TNO (The Netherlands)
- Total Budget: 5.5 Mio.€ (546 Person Month)

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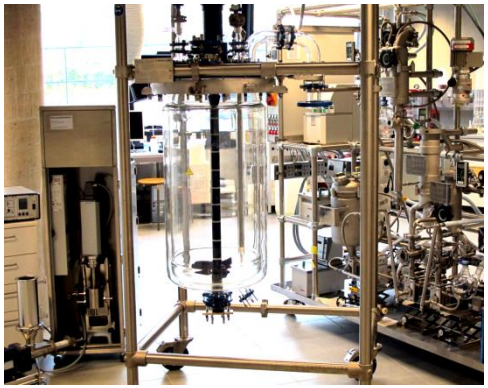
Europe's first pilot network for nanoparticle synthesis upscaling

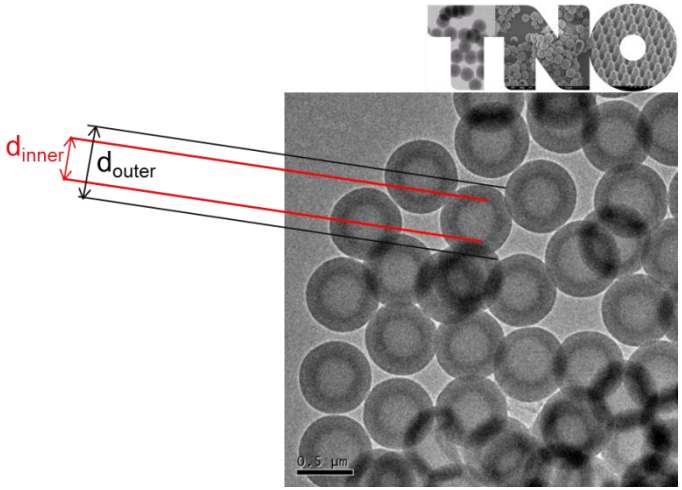
6 SME
4 RTO
2 LE
1 university

AIMS OF THE PROJECT

CO-PILOT aims to develop an open access infrastructure for SMEs and others interested in the pilot scale production of nanoparticles for high quality nanocomposites and coatings with programmable functionality



2L → 15L → 100L



NANOCOMPOSITES

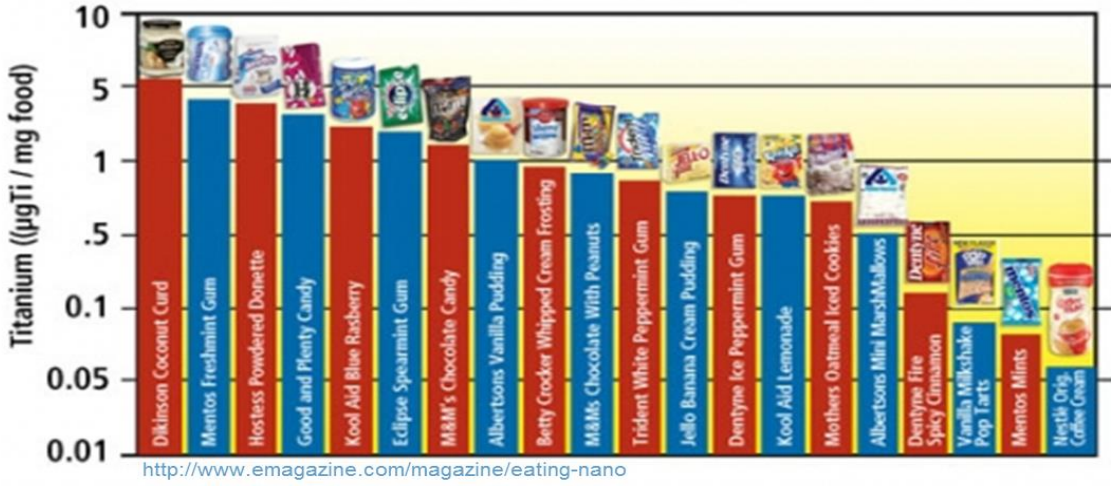
Nanocomposites - materials with novel chemical, physical and mechanical properties due to structure.

- **flame and smoke inhibiting** cables (layered double hydroxides)
- **heat isolating** plastics (hollow/porous silica)
- **light-weight flame inhibiting** composites (layered hydroxides and hollow/porous silica)
- **UV-protective** coatings (zinc oxide, titanium dioxide)
- **high refractive** index coatings (titanium dioxide)
- **low-refractive** index coatings (hollow/porous silica)
- **anti-glare** coatings (hollow/porous silica)
- **Catalyst** carriers (magnetite)

Nanoparticles in our daily life

Tennis rackets with C-fibres

Display screens with 'NANO Lighting Technology'



http://www.emagazine.com/magazine/eating-nano

L'Oréal's Revitalift with nanosomes of Pro-retinal A

Nano-Care™ stain-repellent and wrinkle-resistant fabric

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  - Missing infrastructure for analysis and performance validation of nanocomposites

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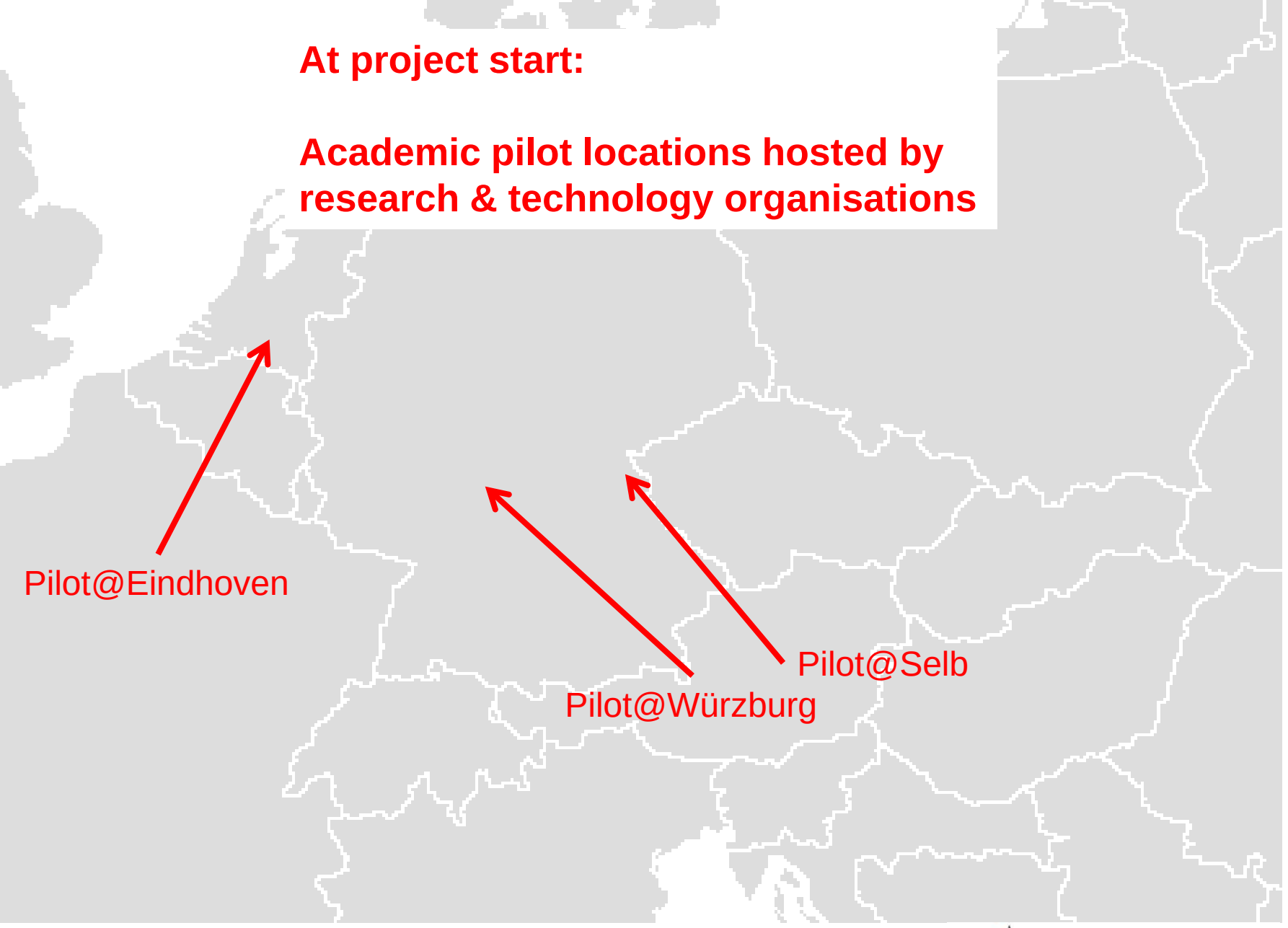
  - Missing infrastructure for analysis and performance validation of nanocomposites
- Co-Pilot Objectives (focused on SMEs)
  - **Pilot** plant reactor development (20 to 100 kg).
  - **Open access** reactor should allow making custom-tailored particles.
  - Infrastructure that provides analytical **expertise**.
  - Infrastructure that provides analytical **instruments**

At project start:

Academic pilot locations hosted by research & technology organisations



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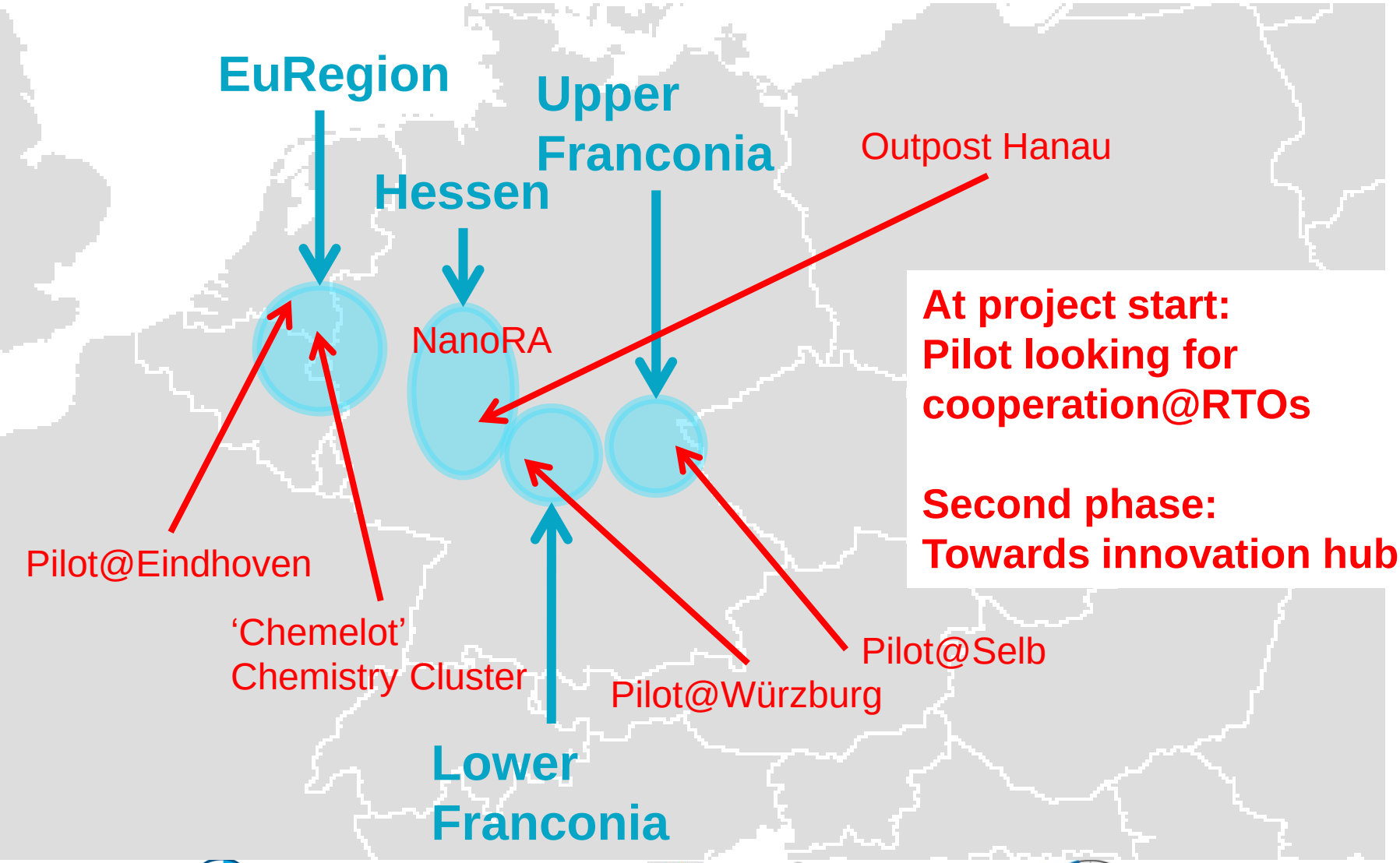
CO-PILOTs identified regions: Physical locations and smart specialisation plan



At project start:
Pilot looking for cooperation@RTOs

Second phase:
Towards innovation hub(s)

TNO innovation for life · SONAXIS · MOMENTIVE · NanoHouse · SKZ · KRIYA MATERIALS · CEPA · Fraunhofer ISC · IOM · LS instruments · Nabaltec · UCC · Ioniqa Technologies · - PILOT Navigates you through nanocomposites

TOWARDS INNOVATION HUBS

DEFINITIONS

Competence centres

- Provider of infrastructure and technology platforms
- Explorer/developer of (technological) expertise on innovative opportunities
- Expert in the field of the application of digitisation technologies
- Platform for the experimentation in real-life environments
- Creator of showcases on digitization technologies in pilot factories, fab-labs

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- Creator of awareness on development in their region
- Connector research to business development
- Developer of the innovation ecosystem
- Organizer of the development of qualified personnel
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PROPOSED ORGANISATION MODEL

- Long term (beyond project date) strategic endorsement required → ***Fraunhofer Ges. & TNO***

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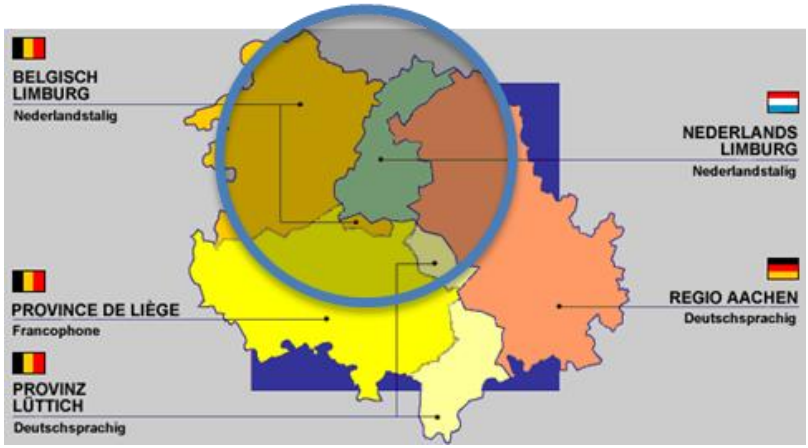
- **SMEs** will be invited for **innovation power** and own development. We hope to accommodate them through dedicated finance instrument ('**user compensation scheme**')

BRIGHTLANDS MATERIALS CENTER

- **Public-private partnership** initiative founded March 19, 2015 by TNO and the Province of Limburg
- **LEs** are invited to become paying partner
- Focusing on sustainable innovations in **polymeric materials**
- Programmatic R&D along the chain of knowledge driven by **application challenges**
- R&D programs supported by **basic academic knowledge**
- Collaboration of industrial partners in shared R&D leading to **shorter time-to-technology**



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REACHING OUT

- Identification of other regions with adjacent or overlapping specialisations for direct collaborations

- Teaming up to learn from other regions' approaches / best practice
- Jointly act as Innovation hubs

- Personal shortlist / established contact
  - Eindhoven Brainport
  - Bergen op Zoom / Antwerpen
  - Oresund region
  - Lyon/Grenoble area
  - Basque country

ACKNOWLEDGEMENT

- Open Pilot Facilities in South Netherlands (NL); Bavaria (D)
- Instrument makers (CH; D; F)
- Occupational Health & Safety / Business Planning

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- PILOT
Navigates you through nanocomposites


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