

NanoFASE

Fate and Exposure models for you - www.nanofase.eu



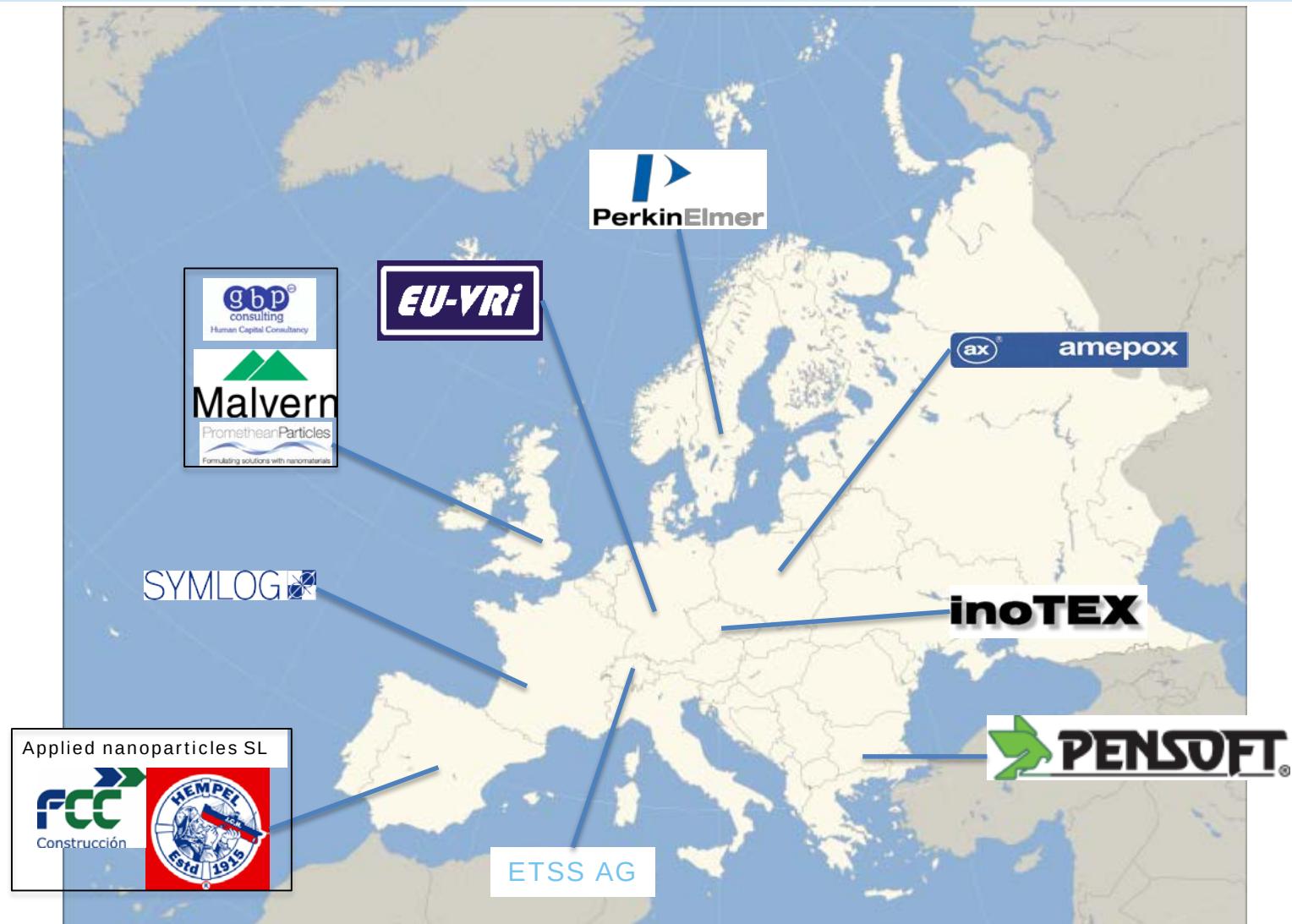
Pacifichem, 15 - 19 December – Honolulu, Hi,
USA



Academic partners Europe wide



Industry partners Europe wide



Advisory partners worldwide



The Vitals & Partners:

Sept 2015 – August 2019

36 EU partners – 23 academia, 13 Industry

11.3 Million €

1361 PM = **113.5 YEARS of work**

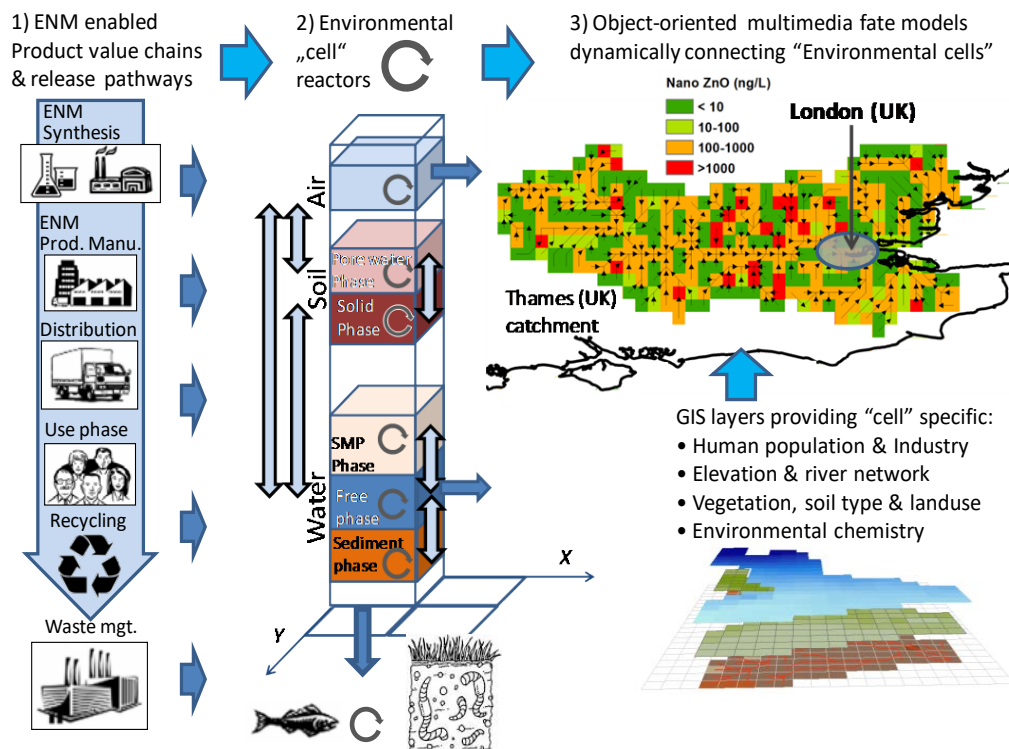
Linked partners in US, Canada, Australia

The Scope and limitations:

- **Focused on Release to and Fate in the environment**
- **Generation of Exposure Assessment Framework**
 - Models and Methods for parameterising these
- **Environmental Fate includes transfer to Biota**
 - EXCLUDED are measures of EFFECT/Hazard
- **Human exposure only through the environment**
 - EXCLUDED are Worker and consumer exposure

NM behaviour and fate is key, but hard to measure.

Need better models for: Where, in what form and for how long?

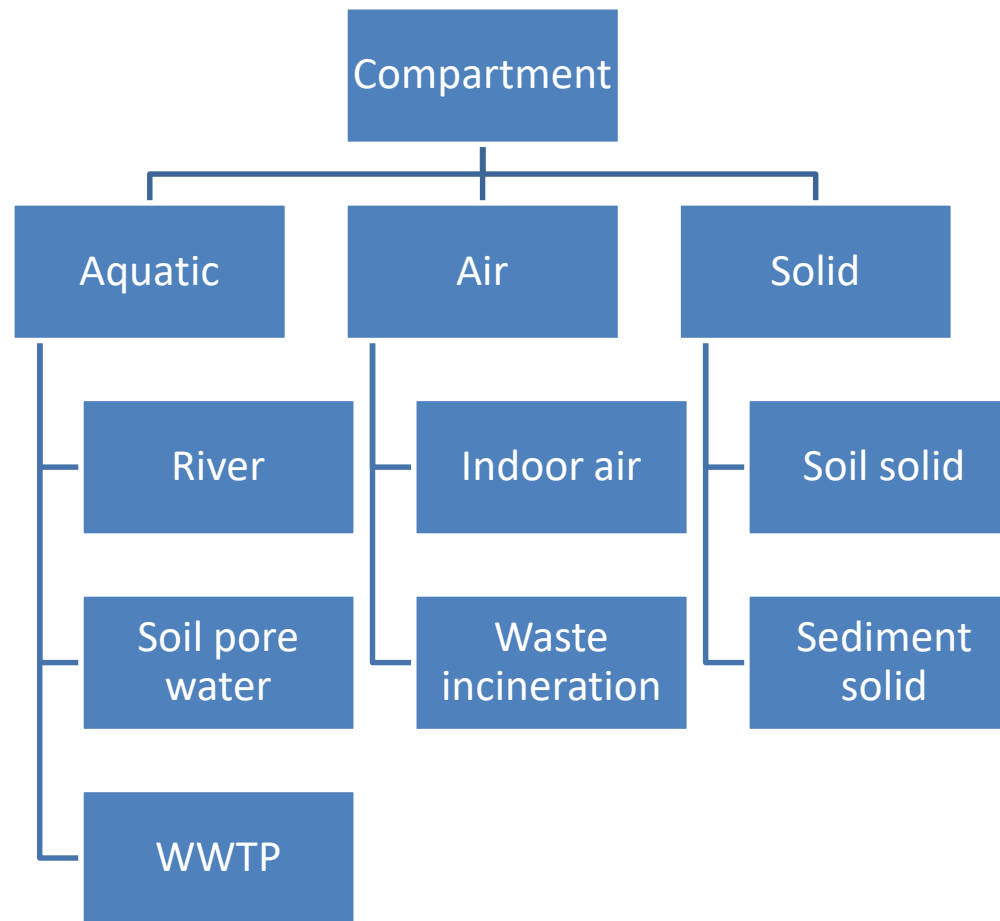


Conceptual workflow for a framework to deliver dynamic multimedia fate prediction both in a generalised model environr

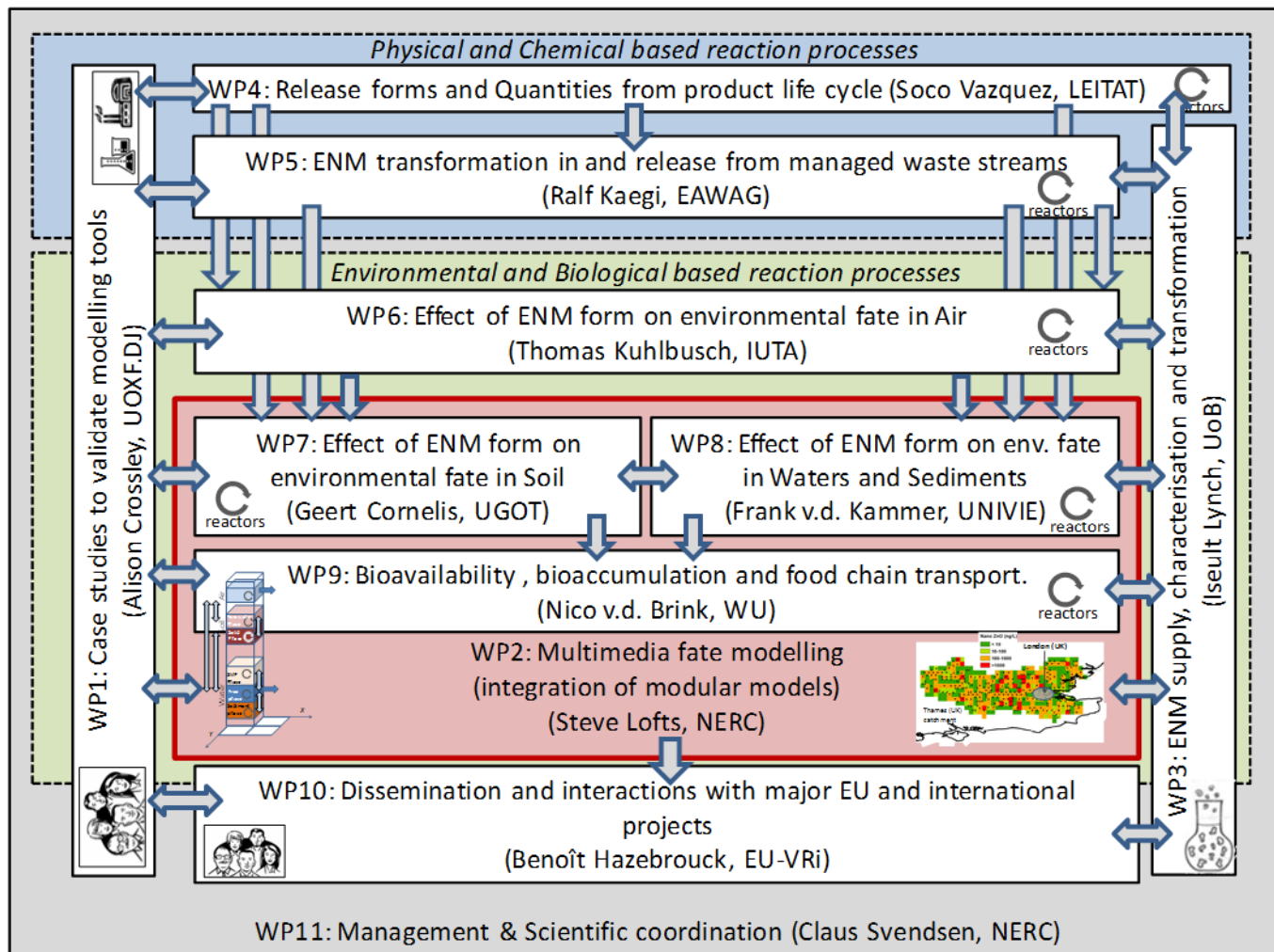
Model format

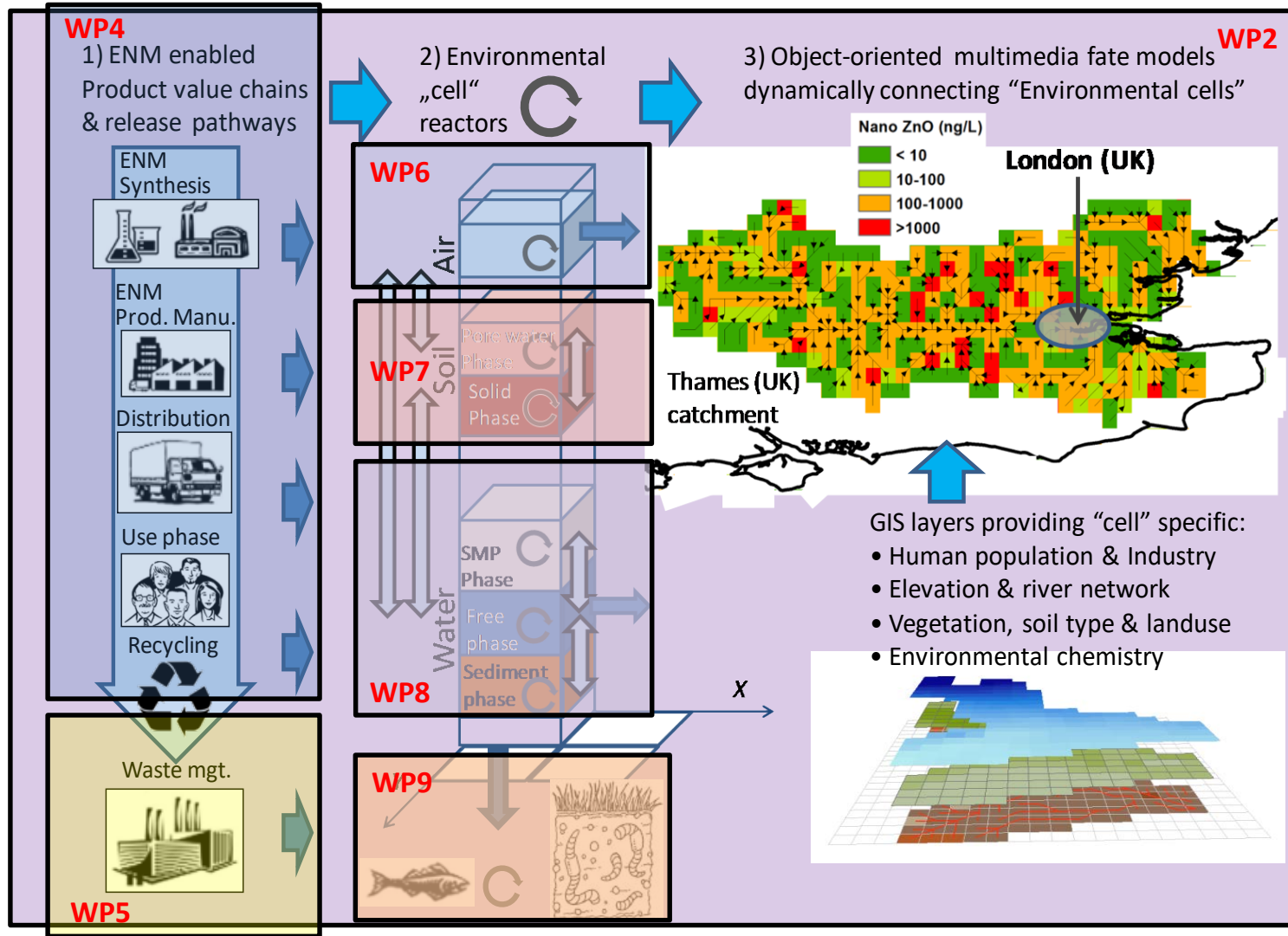
- Object – oriented modules
- Compartments (aquatic, air, solid,...)
 - Attributes (e.g. volumes, flow speed, [phosphate]...)
 - Methods (e.g. sedimentation, heteroaggregation,...)
- Nanoparticles
 - Number concentration
 - Coating
- ...

Model format



How will we do it .





Conceptual workflow for a framework to deliver dynamic multimedia fate prediction both in a generalised model environment and GIS enabled mode.

Better, but usable models.

Key:

- If we can measure it start empirical models
- If we can't measure if and think it important can we model it and validate if it is important

?

Aim:

- Keep it usable and doable

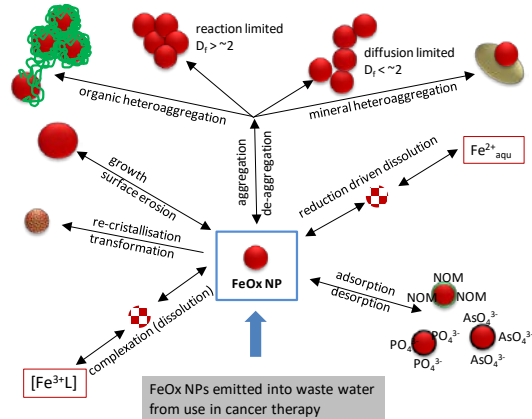


Fig. 1.2 Likely transformations of FeOx NPs in water reactors

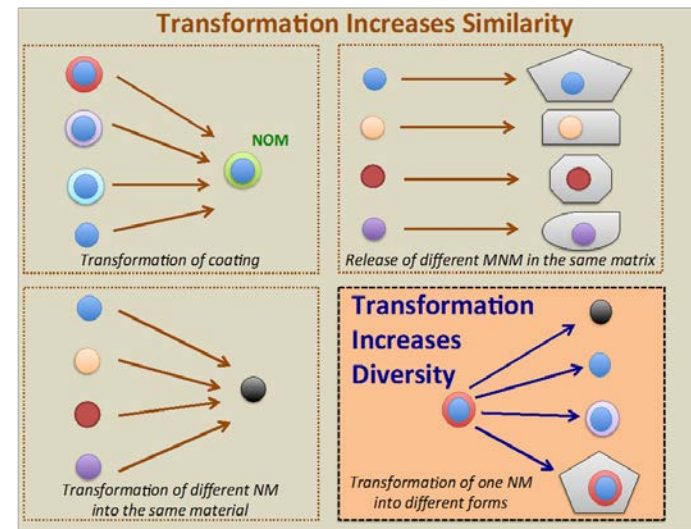
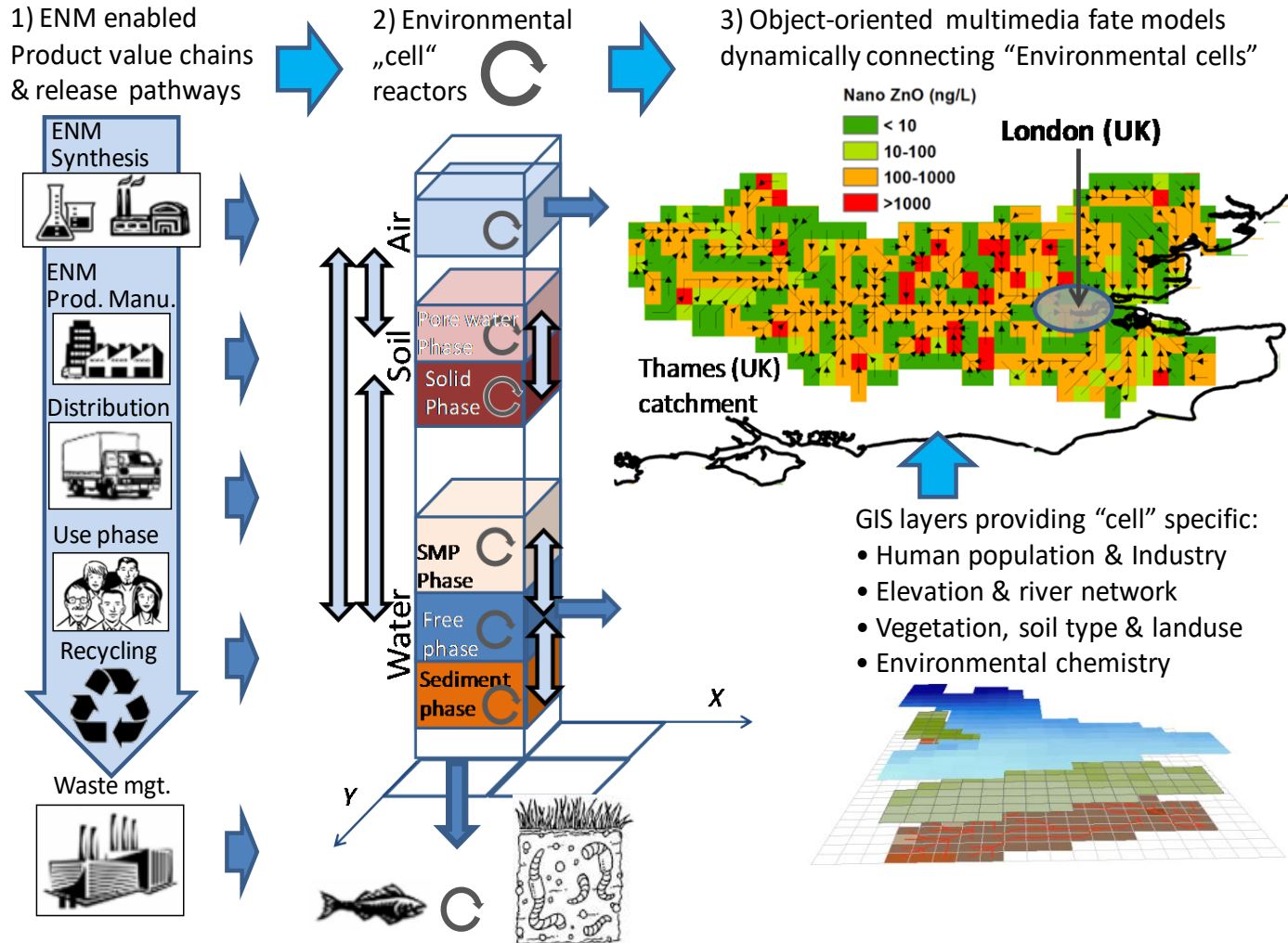


Fig. 1.3 Mitrano & Nowack (EMPA), et al. "Report on environmental transformation reactions" NanoMILE D3.1 – Submitted to ES&T

Delivering the Exposure Assessment Framework;

Its models and the techniques/protocols needed delivered in a modular format.



Conceptual workflow for a framework to deliver dynamic multimedia fate prediction both in a generalised model environment and GIS enabled mode.

Advisory Board Membership

Name	Role	Affiliation	Expertise
Prof. Peter Dobson	Industry Advisor 1 & Chair	Warwick Manufacturing Group, UK	Former Director of Oxford University's Science Park housing 24 nano start-up companies (personally led 3)
Dr Wendel Wohlleben	Industry Advisor 2	BASF, Germany	Involved in nanotechnology product development and applications
Dr David Calander	Industry Advisor 3	Nanotechnologies Industry Association	Contributions to the development of regulatory support of nanotechnology
Fredrick Klaessig	Industry Advisor 4	Pennsylvania Bio Nano Systems LLC	Product development and innovation in nanotechnology
Yasir Sultan	Regulation Advisor 1	Environment Canada, Canada	Chair Steering Group on risk assessment and regulatory programs, OECD WPMN
Dr Kathrin Schwirn	Regulation Advisor 2	UBA, Germany	Lead in national regulatory body for ENM risk assessment
Simon Hoy	Regulation Advisor 3	Environment Agency for England and Wales	Leads in national regulatory body for ENM risk assessment
Steve Morgan	Regulation Advisor 4	Defra, UK	Leads in chemicals and nanotechnology policy
Dr Jenny Holmqvist	Regulation Advisor 5	ECHA (verbally accepted after grant awarded)	Head of Evaluation 1, European Chemicals Agency
Andrej Kobe	Regulation Advisor 5	DG Environment	Chemical and nanotechnology policy oversight

Advisory Board Membership

Prof. Mark Wiesner	Research Advisor 1	Duke University, USA	ENM fate, hazard and risk assessment including categorisation and governance
Prof. Mike McLauchlin	Research Advisor 2	CSIRO, Adelaide, AUS	International expert in environmental chemistry of trace metals
Prof. Enzo Lombi	Expert	Uni South Australia, AUS	Synchrotron and spectroscopy
Dr Greg Lowry	Expert	Uni Pittsburgh, USA	ENM transformations
Dr Natalie Tufenkji	Expert	McGill University	Colloid behaviour
Dr Marie Croteau	Expert	US Geological Survey, USA	ENM bioavailability assessment
Dr Jason Unrine	Expert	Uni Kentucky, USA	Chemistry of ENMs in soils and waters
Prof K. Wilkinson	Expert	Uni Motreal	ENM characterisation

Contacts

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Thank you

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