



Community of Research for Exposure through the Life Cycle

*(Now known as
Exposure through Product Life)*

CoChairs

- **Richard Canady, ILSI Research Foundation,
Washington, DC, USA**
- **Martie van Tongeren, IOM, Edinburg, Scotland**

Plan to initiate the CoR

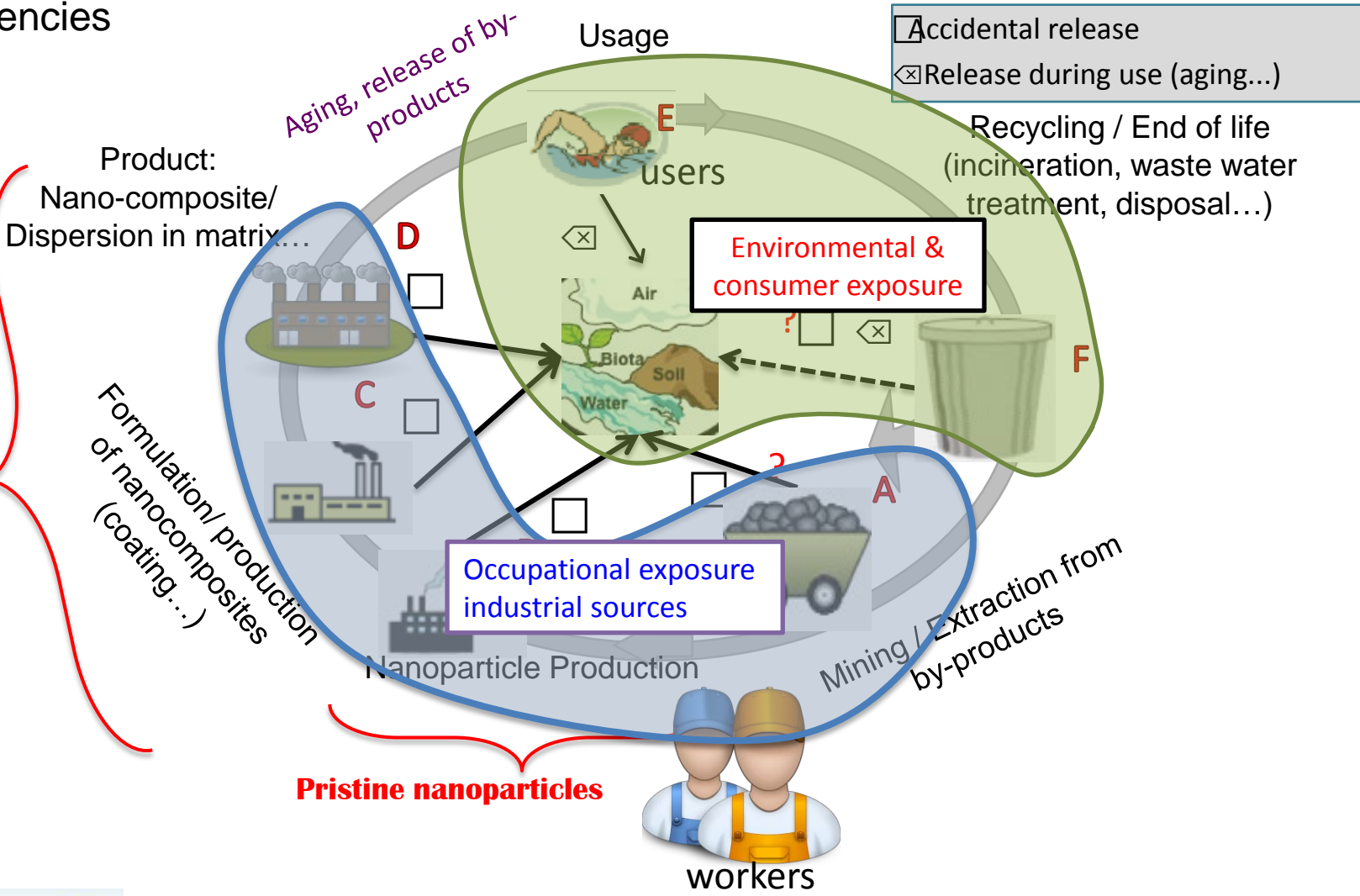
(proposed at 2012 EU-US CoR workshop in Helsinki)

- Provide an online platform for sharing information about
 - Research projects
 - Methods
 - Funding opportunities
- Convene experts on topics within the theme, to
 - Build collaborations
 - Share emerging findings
 - Build knowledge

Exposures Through the Product Life

Context dependencies

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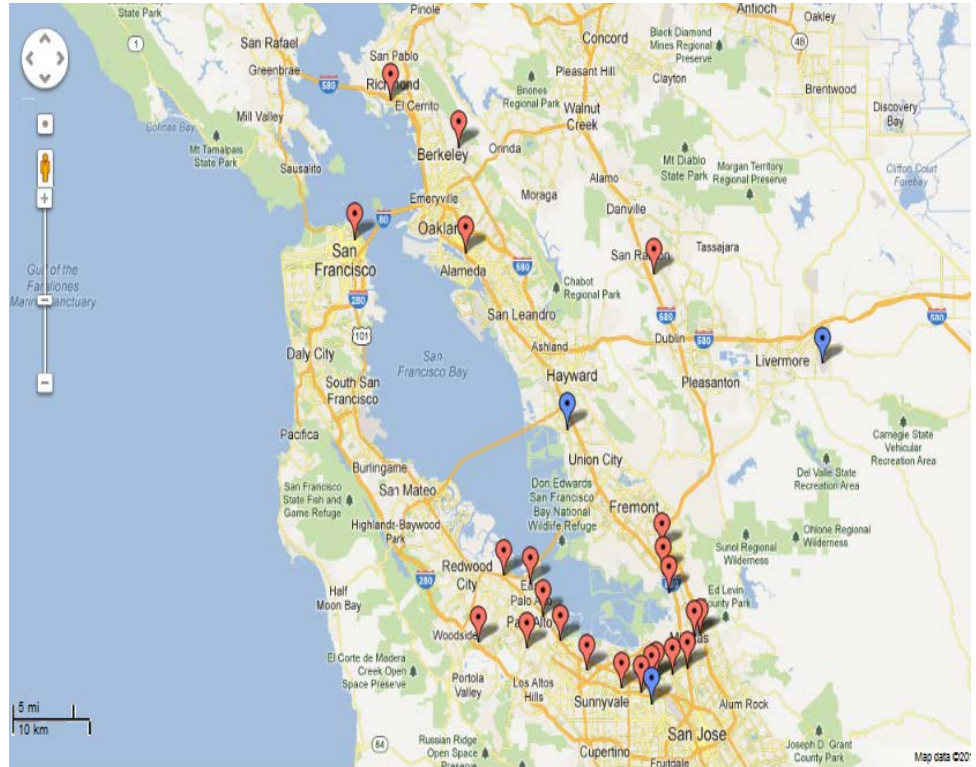
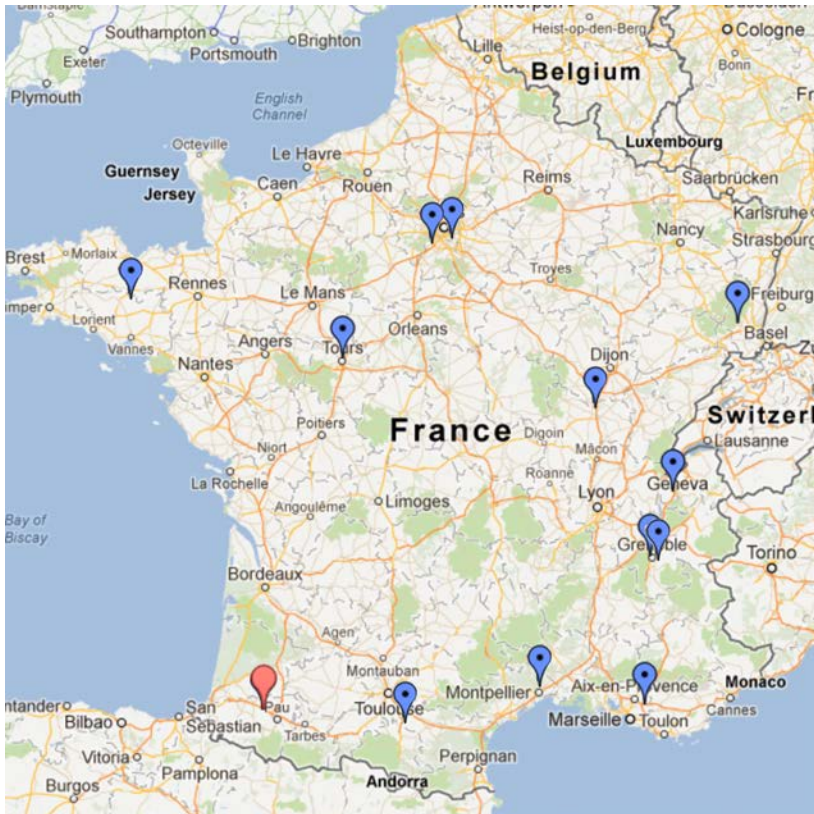
EU-US Community of Research and database as bridging mechanisms

- Concurrent emergence of understanding of “real world” ENM risk evaluation in multiple laboratories and disciplines
 - What makes an ENM mixture biologically relevant?
 - How do we measure these “elements” of the ENM?
 - What is the fate of these ENM elements in the environment?
- Products of nanotechnologies are already in commerce
- Complexity of ENM mixtures analysis and data sets makes it unclear WHICH data are relevant, and makes the data chaotic
- Sharing of emerging data is needed to allow early trend analysis

What does a risk assessor or exposure monitor do when asked if a release has occurred?

Manufacturing ENM in France:
Voluntary declaration by French
companies (ANSES 2004/2005)
www.nanomateriaux.org/VisiteurFrancais

- US State of California requested information from manufacturers: 7 research institutions responded
- Silicon Valley Toxics Coalition (NGO): 2008 survey of 129 Bay Area companies
- City of Berkeley: community “right-to-know” law for manufacturers/users of ENM (2006)



The risk assessor needs to know where to get methods

The methods researcher needs to know what the risk assessment needs are

The product developer needs to know what materials are “assessable”

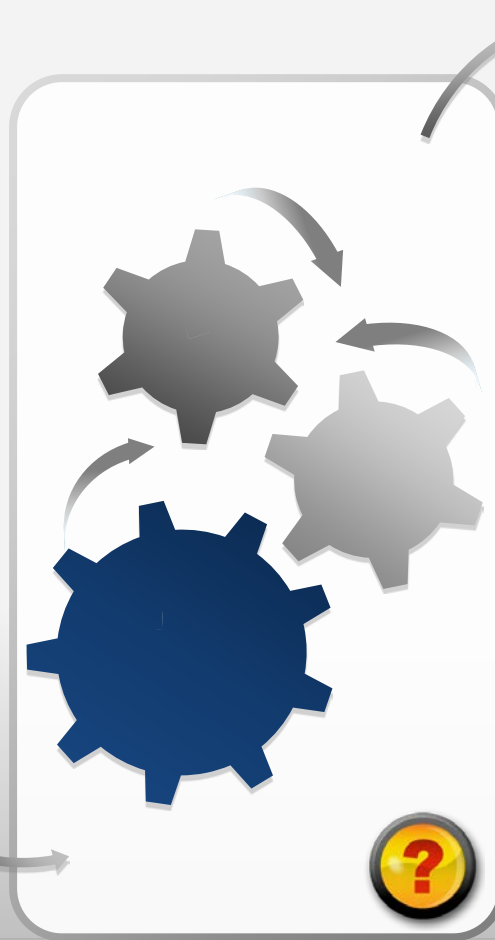
Why is it hard to select methods?

- Detection, characterization, and risk evaluation of nanomaterials can be highly ***context dependent***
 - *Form in composites, release mechanism, media, concentration, etc.*
- Choice of methods depends on the goal of the measurement
- There are few standard methods (??)
 - So everyone chooses their own path, leading to chaotic data from a risk assessor's perspective

CHAOTIC DATA TO REAL WORLD APPLICATIONS



Heterogenous & Inaccessable



Structured & Applied

APPLICATIONS

- ✓ Risk Assessment of Nanomaterials

CURRENT REALITY

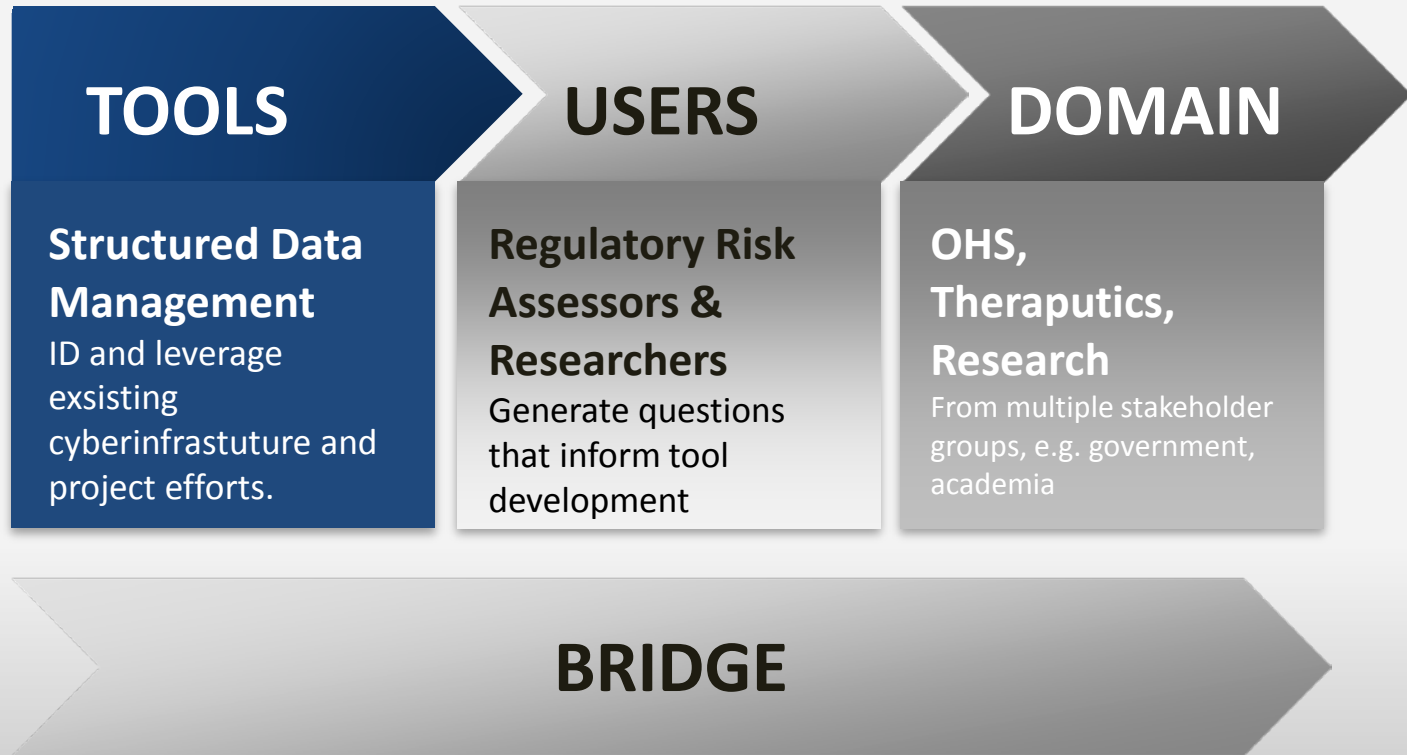
BRIDGE

CURRENT NEED

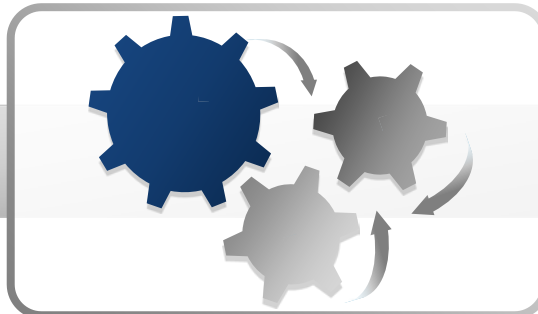
How do we proceed?

- We need to specify decision contexts to know what to measure
 - Subject matter experts for material properties need to talk to risk assessors and risk managers
- We need to convey context to the methods developers
 - Note: This is applied EHS research, which is poorly funded
- We need to do this as the new materials are emerging into use
 - Because they are... and we have assessment gaps

BUILDING THE BRIDGE FOR ENVIRONMENTAL NANOTECHNOLOGY



CHAOTIC DATA



APPLICATIONS

Specific proposal at Helsinki:

Develop a resource to share information and convene experts about methods to measure at specific life cycle stages.

*Addressing this need is **critical** to understanding real risk of ENP.*

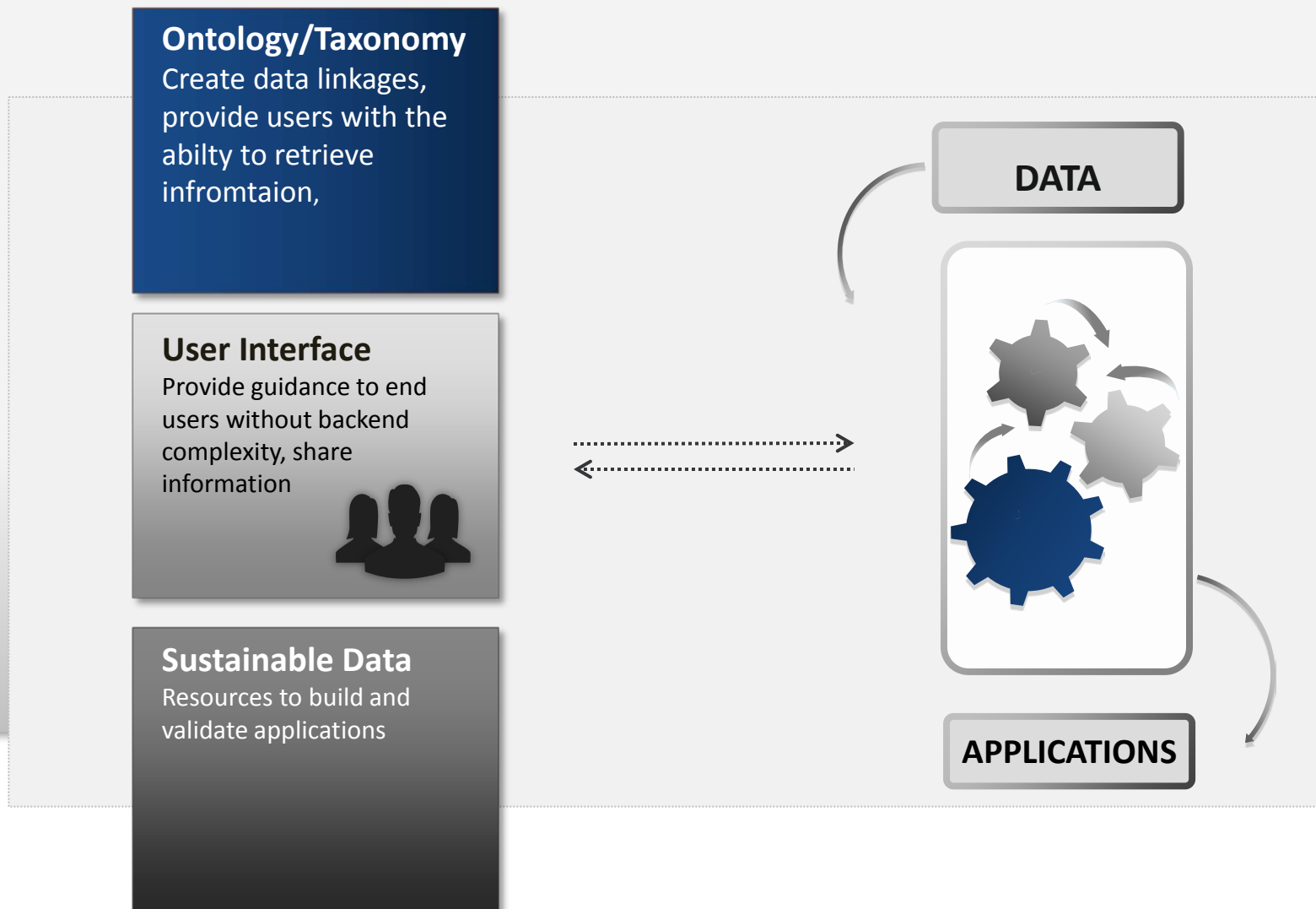
Needs as of Helsinki:

- Data generation and database maintenance
 - Who hosts, pays, maintains?
 - How to coordinate with other CoRs?
 - How do we promote efficient gathering and availability? (Wiki, Cloud, International Organization, etc)
- Data sets and experts
 - What kinds of data and experts are needed, where are they, how do we get access?
 - Structural components of the data sets – what elements are needed

Progress

- Identifying initial candidate data bases
 - A place to share methods and “life-cycle release relevant” data that use the methods
 - Nanomaterial Registry (mainly US)
 - NanoHub (mainly EU)
- Survey of what to add to the databases
 - Sent to CoR members, initial snapshot of needs
- Drafting proposal for funding to augment and connect the data bases
 - SME/risk assessor process to substantiate the needs description
 - Collect and provide **measurement methods and data**
 - User interface to critical users and to generate real time methods development needs

LINKING AND SHARING INFORMATION



Next steps

- Ground-truth the draft proposal
- Assess reality of creating a collaborative consortium (public-private-partnership?)
 - The US-EU CoR's are volunteer and not funded beyond stick-figure infrastructure
 - We need to formalize the CoR toward a specific program that can be funded
 - To do that we need partners and funding targets
- If the proposal and consortium are feasible, then do the paperwork, get funding and start

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Charge for today (what we need from you)

- **Goal:** Help us fill in the proposal by
 - Making it realistic so that it is useful soon
 - Finding partners and data sets to make it happen
- **Process:** Answer the charge questions
 - What does the risk assessor need to assess a spill?
 - What does a methods developer have to offer the risk assessor now?
 - What data structures, tools and approaches are available to take advantage of
 - What is the best path forward to helping the risk assessor?

Risk Assessment Section

Danielle Devoney, a risk assessor with the US Environmental Protection Agency

The breakout question is:

What are your decision needs when (in the next 6 months) you are told of a nano material release in the environment near a population, and what data or methods do you need to address them?

Exposure measurement methods section

Martie Van Tongeren – IOM (tiered human exposure assessment)

Jean Yves Bottero - Cerege (safety by design)

Denise Mitrano - EMPA (environmental release)

The breakout question is:

How would you answer a request from a risk manager at a company to demonstrate that a release from their facility is not a risk to human health?

Joint Database & Exposure section

The breakout questions are:

Can the risk assessor and the researcher find useful information for their needs above in an existing database (other than a general literature search)?

What is a logical path to developing such a database (or user interface)?