



Community of Research for Exposure through the Life Cycle

*(Now known as
Exposure through Product Life)*

CoChairs

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Plan to initiate the CoR

(proposed at 2012 EU-US CoR workshop)

- 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

Premise for the Research Need

We need to know what exposure measurement methods to use to support decisions about exposure and risk

And, generally, no one knows what methods to use and where to begin to look for them

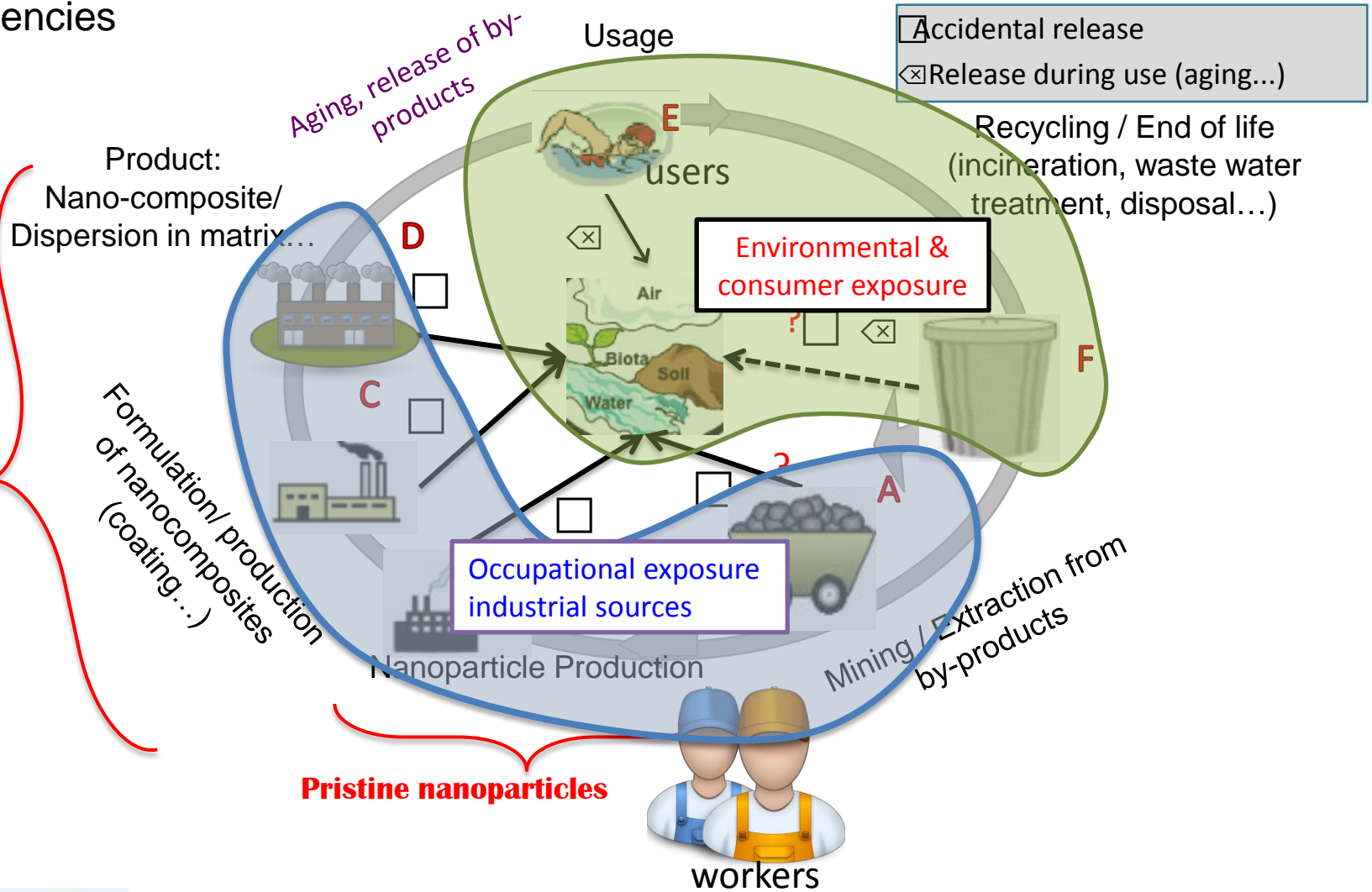
Why is it hard to select methods?

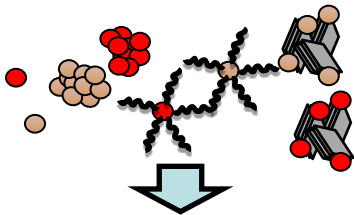
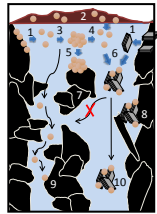
- Detection, characterization, and risk evaluation of nanomaterials can be highly ***context dependent***
 - *Form in composites, release mechanism, media, concentration, etc.*
- Choice of methods depends on the goal of the measurement
- There are few standard methods (??)
 - So everyone chooses their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

Exposures Through the Life Cycle

Context dependencies

I
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Expected concentration



Fate models:
"speciation" of nanoparticles



Expected "speciation"



RISK

Industrial production
volumes unknown

- Heterogeneity
 - Few reliable parameters
 - Model approaches vary
-
- Analytical challenges
 - No knowledge on bio-availability of NP "species"

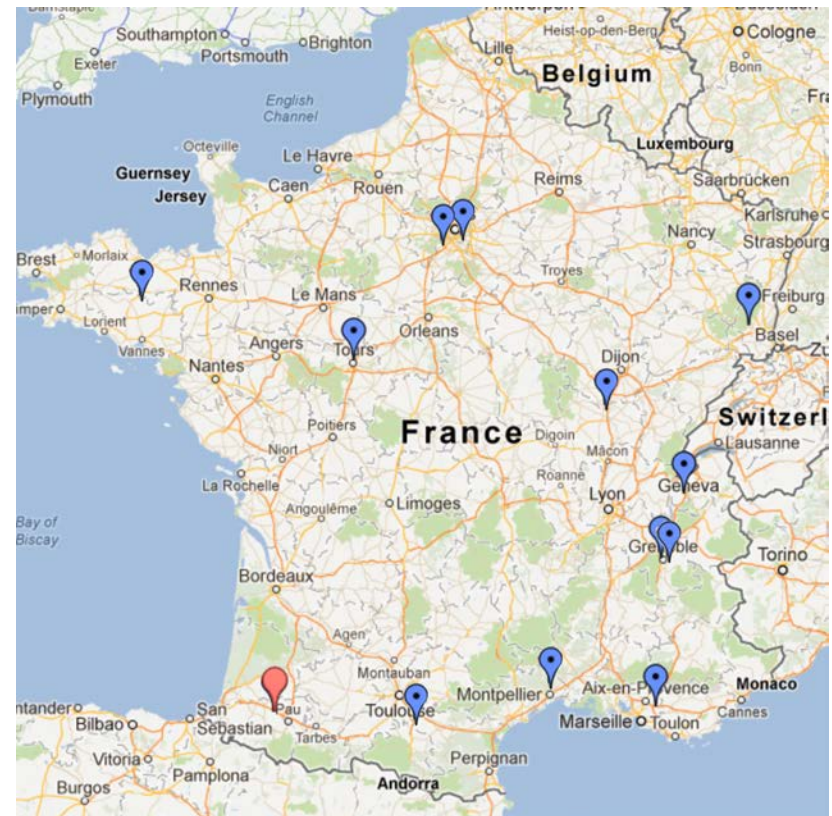
Hazard known only for
pristine, high-concentration
exposures

Example:

Location of Potential Industrial Sources in France

Manufacturing ENM in France:
Voluntary declaration by French
companies (ANSES 2004/2005)

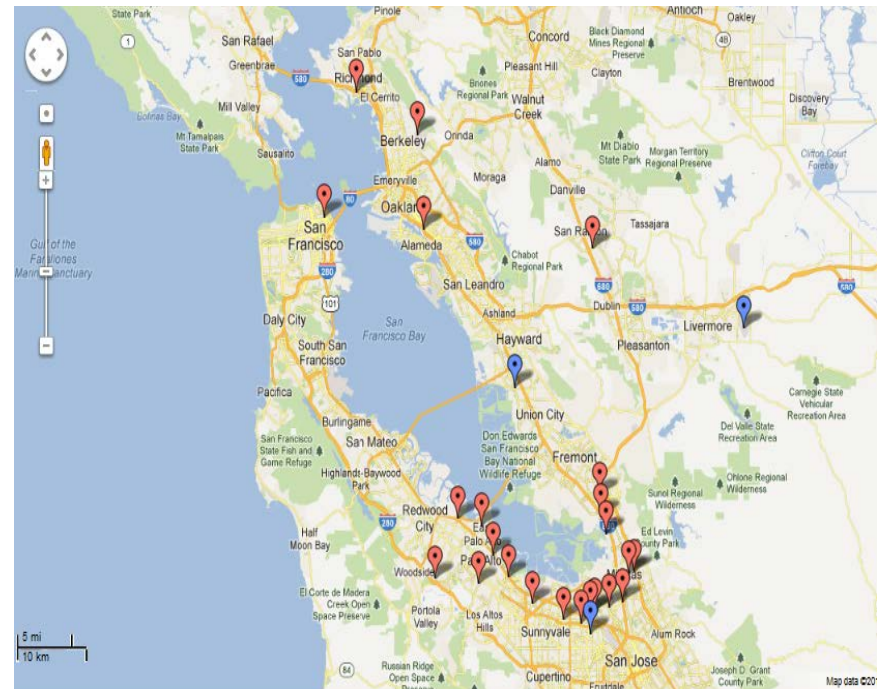
www.nanomateriaux.org/VisiteurFrancais



Example: Location of Potential Industrial Sources in California

**Example from California:
no RtK, no TRI,
but CA Assembly Bill 289 (2006)**

- Department of Toxic Substances Control, 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”

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

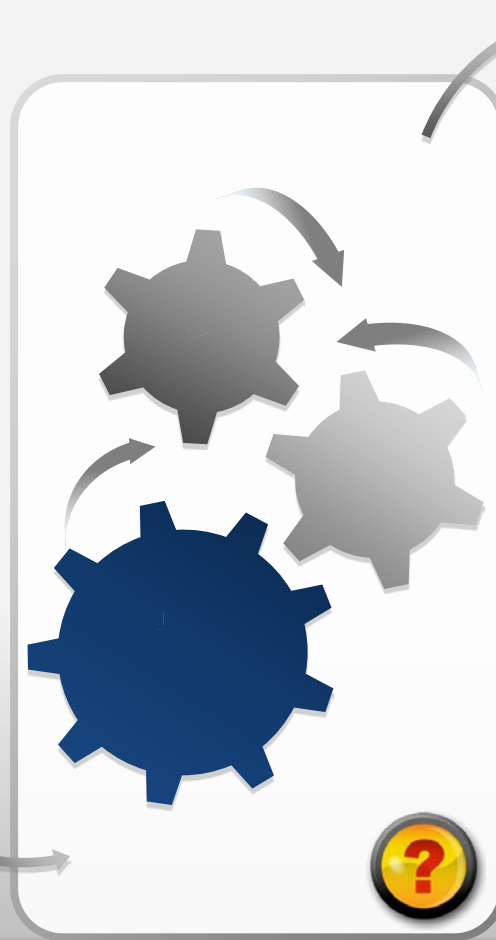
EU-US Community of Research and database as bridging mechanisms

- 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

CHAOTIC DATA TO REAL WORLD APPLICATIONS



Heterogenous & Inaccessable



APPLICATIONS

- ✓ Risk Assessment of Nanomaterials

CURRENT REALITY



CURRENT NEED

Specific proposal:

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 risks of ENP.*

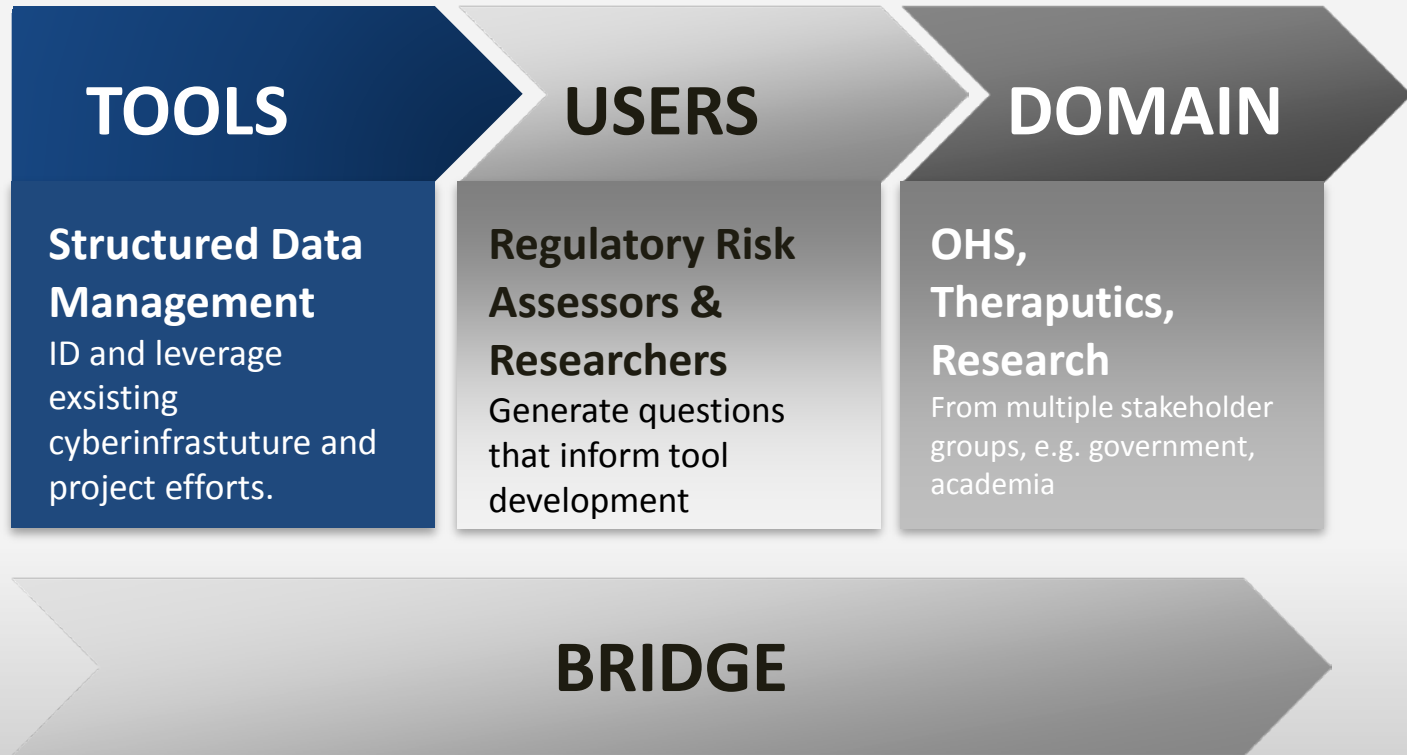
Needs as of Helsinki:

- 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

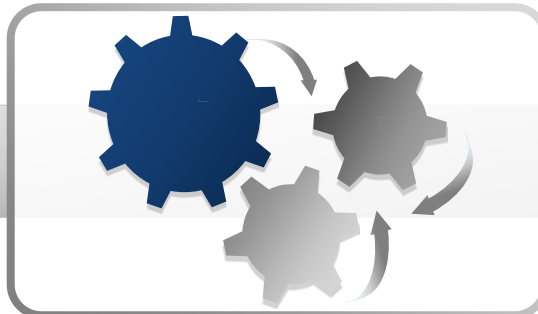
Progress

- Identify 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 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

BUILDING THE BRIDGE FOR ENVIRONMENTAL NANOTECHNOLOGY

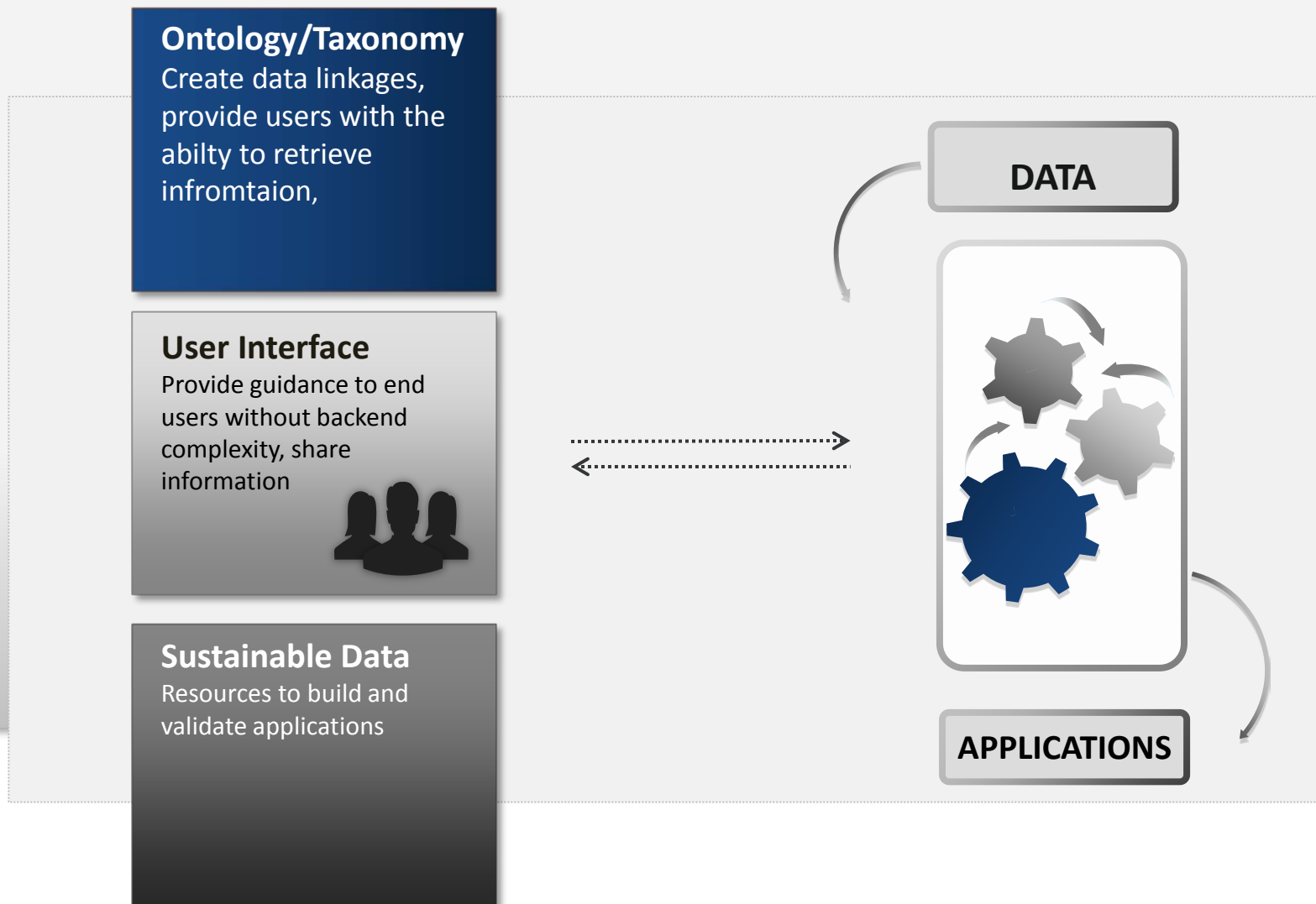


CHAOTIC
DATA



APPLICATIONS

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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