Draft Ideas for Discussion

December 2, 2013

Cross-COR Information Flow

Please address comments to:

Mark D. Hoover, **PhD, CHP, CIH**
304-285-6374
mark.hoover@cdc.hhs.gov
National Institute for Occupational Safety and Health
Morgantown, West Virginia

COR Breakout Sessions Today

1:30

Database COR

Stafford I
Room 375

Co-Chairs: Nathan Baker & Hubert Rauscher

Speakers: Mark Hoover, Carsten Mohlmann, Alex Tropsha, & Egon Willighagen

Exposure COR

Stafford I
Room 380

Co-Chairs: Rick Canady & Martie van Tongeren

Speakers: Jean-Yves Bottero, Danielle DeVoney, Denise Mitrano, Martie van Tongeren

Modeling for Human Health COR

Stafford I
Room 365

Chair: Bengt Fadeel

Speakers: Francesco Falciani, Robert Rallo, Anna Shvedova, & Brian Thrall

Ecotox. Testing COR

Stafford II
Room 585

Co-Chairs: Richard Handy & Steve Klaine

Speaker: Richard Handy

Panelists: Teresa Fernandes, Richard Handy, Steve Klaine, Elijah Peterson, Henriette Selck, Claus Svendsen, & Jim Ranville

Risk Assessment COR

Stafford II
Room 575

Co-Chairs: Derk Brouwer & Mark Wiesner

Speakers: Christine Hendren, Janeck Scott-Fordsmand, Lang Tran, & Mark Wiesner

Risk Management & Control COR

Stafford II
Room 595

Co-Chairs: Keld Alstrup Jensen & Larry Gibbs

Speakers: Don Ewert, Ilise Feitshans, & Chuck Geraci

3:00 – 3:15
Coffee Break

4:00

Joint Database/Exposure COR
Stafford I Room 375

Co-Chairs: Nathan Baker, Rick Canady, Hubert Rauscher, & Martie van Tongeren

Interrelationships of criteria for responsible development of nanotechnology

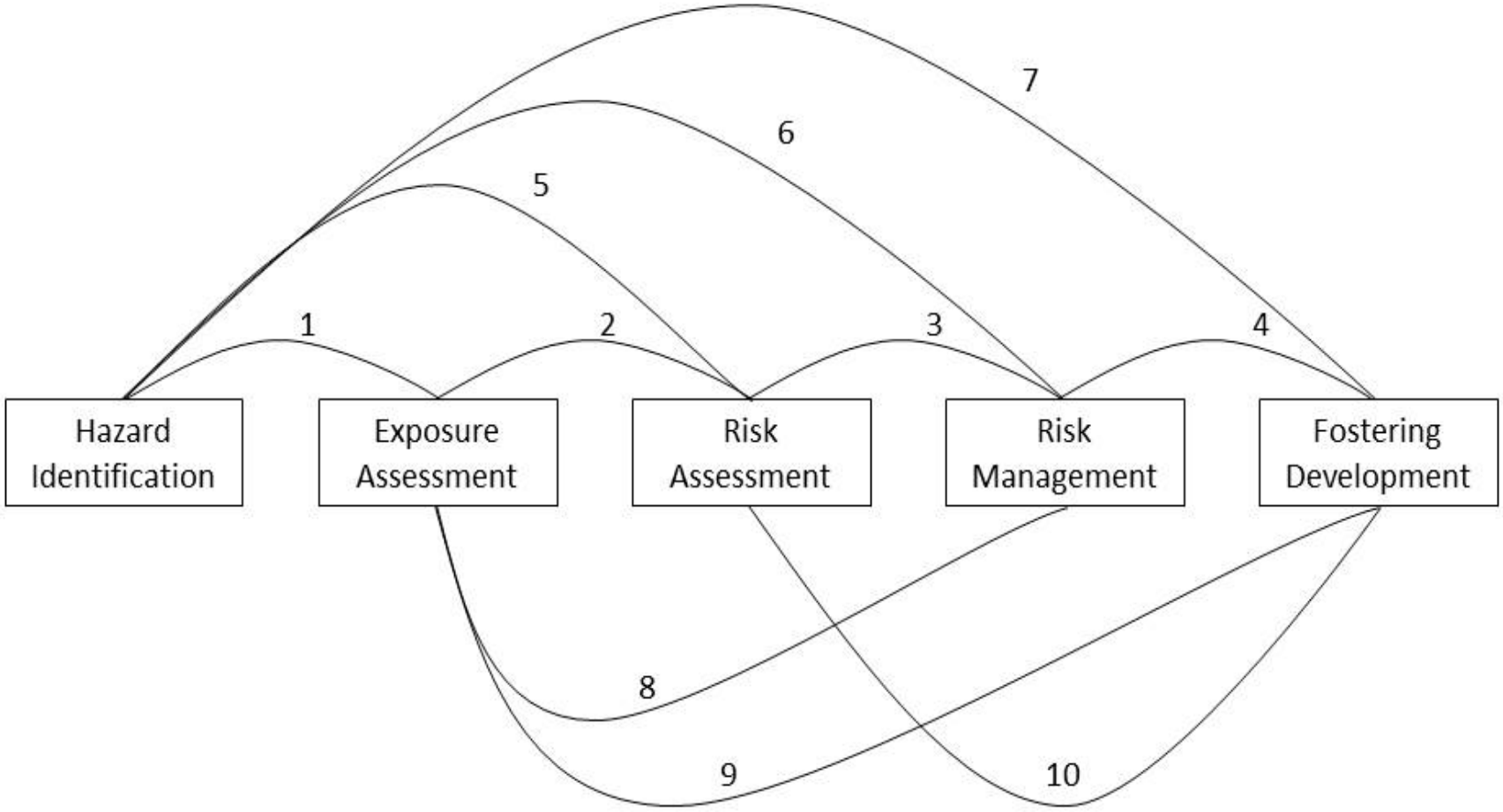


Figure 1. Interrelation of criteria for responsible development

Schulte et al. 2013, OSH Criteria for Responsible Development of Nanotechnology
In press for Journal of Nanoparticle Research

Proposed Graphical Representations of the US-EU Communities of Research:

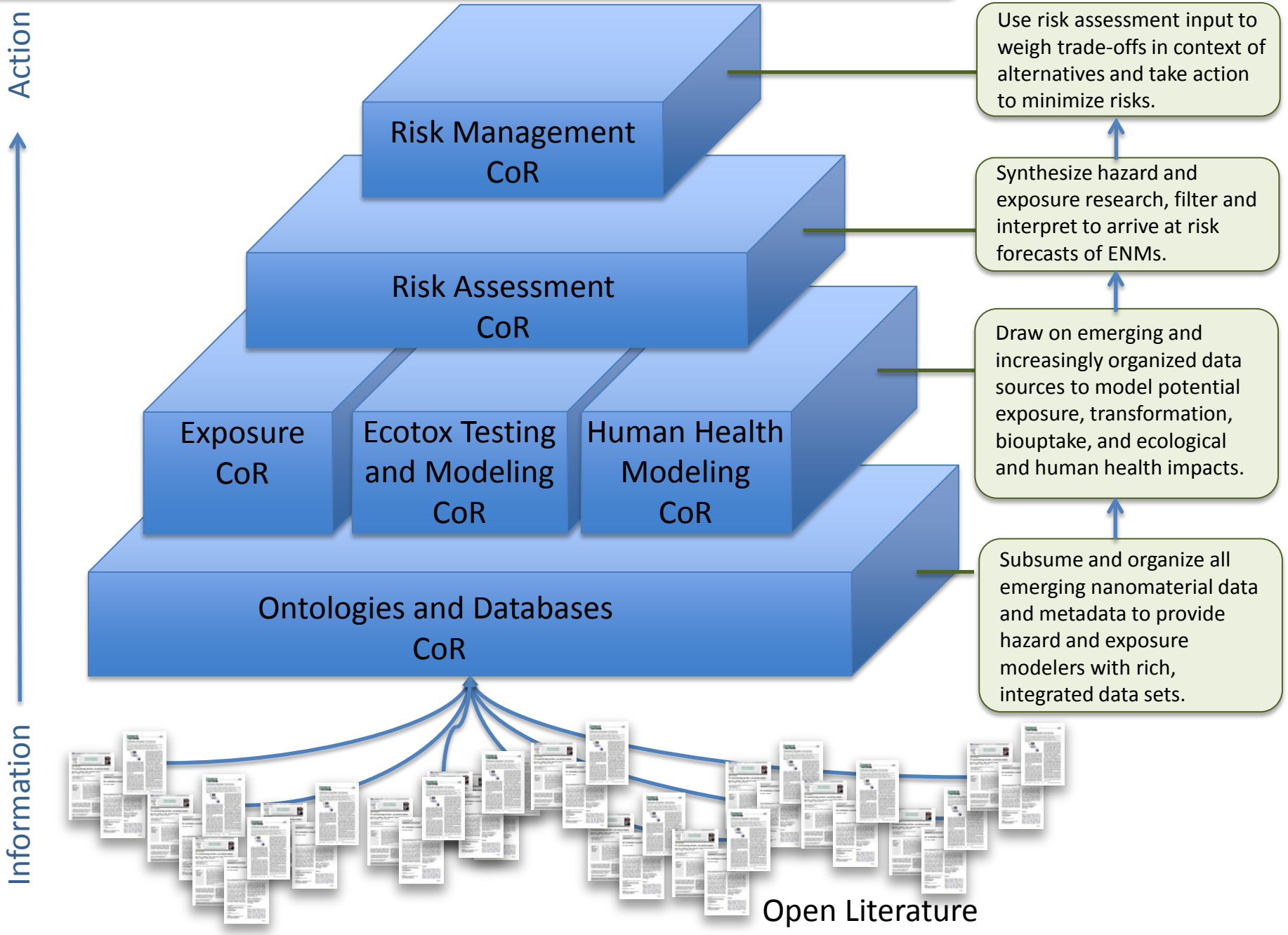
An Information-to-Action Continuum

The following graphics are intended to illustrate how the CoRs can ideally link and feed one another through an idealized information-to-action continuum.

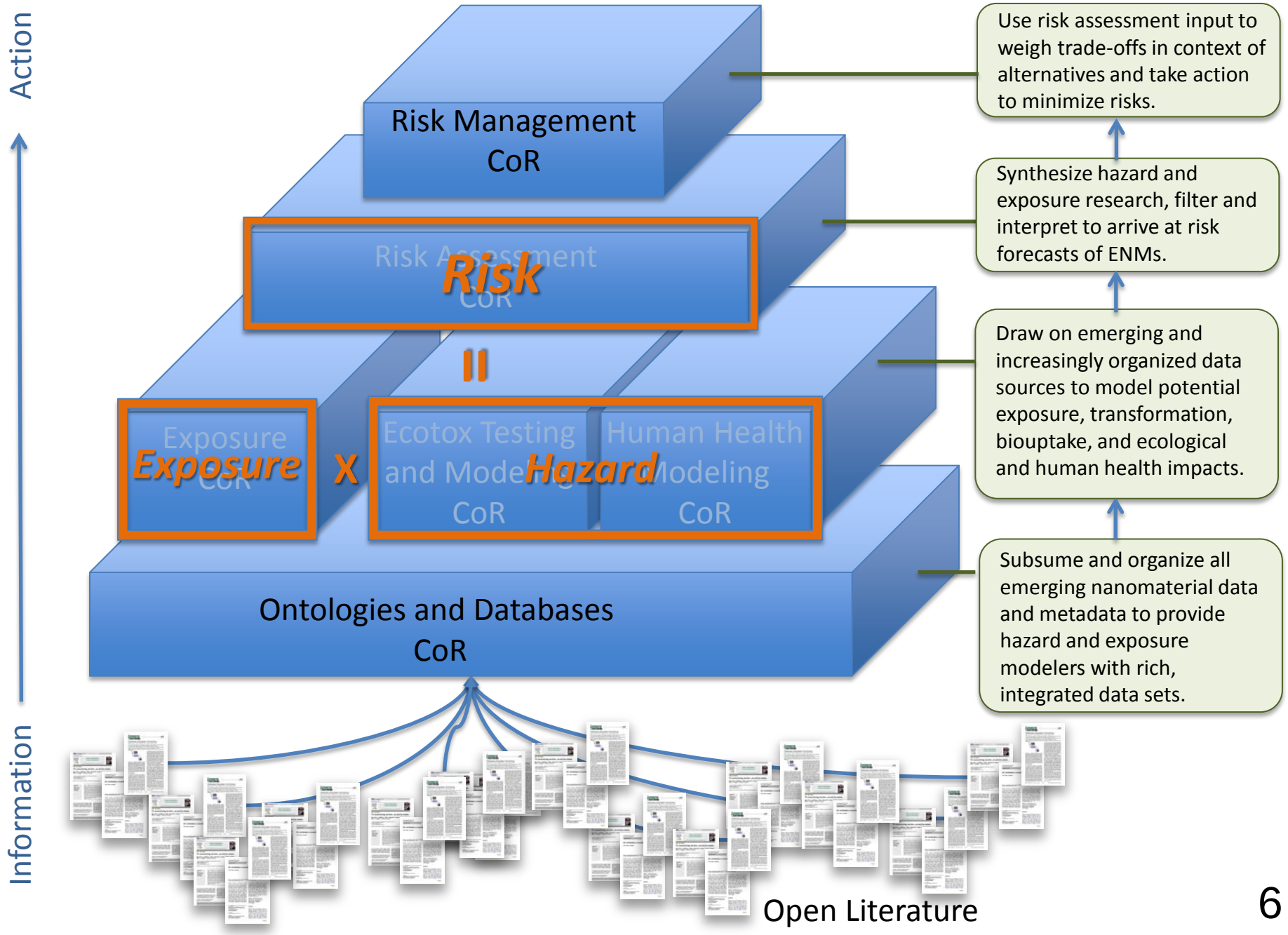
Although a number of simplifications are in play, notably the role of "ontologies and databases" as the supporting and unifying foundation of an "information pyramid", it is hoped that these images of the proposed continuum will help clarify and guide the cohesive development and implementation of comprehensive and effective CoR activities.

The proposed graphics were created, in particular, to help define the role of the Risk Assessment CoR. Using the concept that "exposure x hazard = risk", the Risk Assessment CoR is working to determine the best ways to organize and analyze exposure and hazard data to create meaningful risk forecasts that will support sound decision-making.

Idealized Information-to-Action Continuum



Idealized Information-to-Action Continuum: exposure x hazard = risk



Idealized Information-to-Action Continuum: property x incorporation = performance

Action

Information

Products and Applications

Performance

=

Property x Incorporation

Ontologies and Databases

Use performance input to weigh trade-offs in context of alternatives and take action to minimize risks.

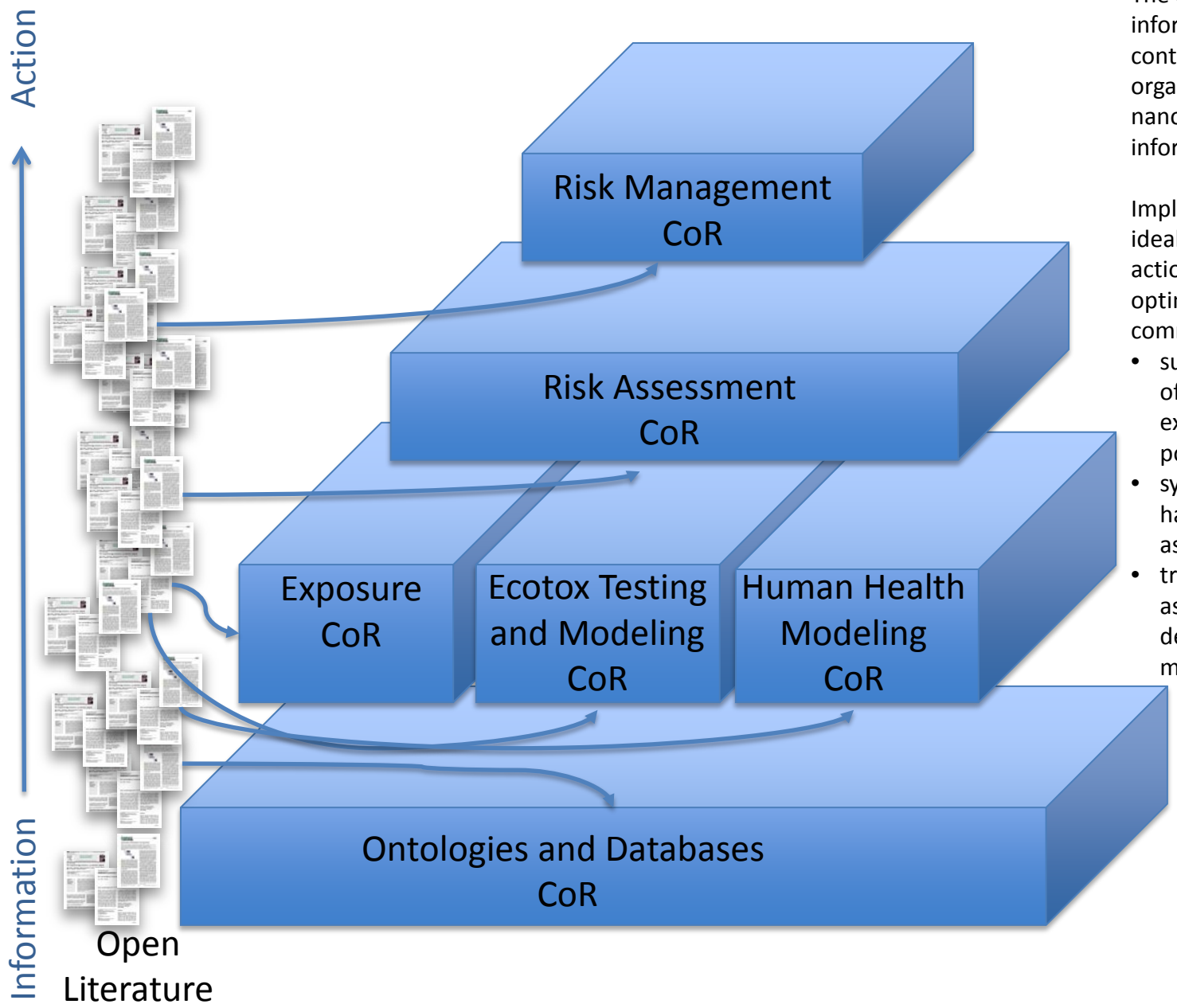
Synthesize property and incorporation research to interpret to arrive at performance of ENMs.

Draw on emerging and increasingly organized data sources to model potential properties and how to incorporate them to provide desired perfomance

Subsume and organize all emerging nanomaterial data and metadata to provide hazard and exposure modelers with rich, integrated data sets.

Open Literature

Current Information-to-Action Continuum



The current horizontal information-to-action continuum fails to efficiently organize and deliver emerging nanotechnology data and information among the CoRs.

Implementation of the idealized information-to-action continuum will optimize CoR roles and communication pathways to :

- support the development of relevant models of exposure and hazard potential ,
- synthesize exposure and hazard potentials into assessments of risk, and
- translate the results of assessments into effective decision-making for risk management .

Nanoinformatics
(a working definition)

- The ***science and practice*** of determining ***which information is relevant*** to the nanoscale science and engineering community,
- and then developing and implementing effective mechanisms
- for *collecting, validating, storing, sharing, analyzing, modeling, and applying* that information.

From The Nanoinformatics 2020 Roadmap
http://www.internano.org/nanoinformatics/

OVERALL OBJECTIVE

Build and sustain
a total culture
of
safety, health, well-being,
and productivity

A Key Concept

- The ***method*** is not the message;

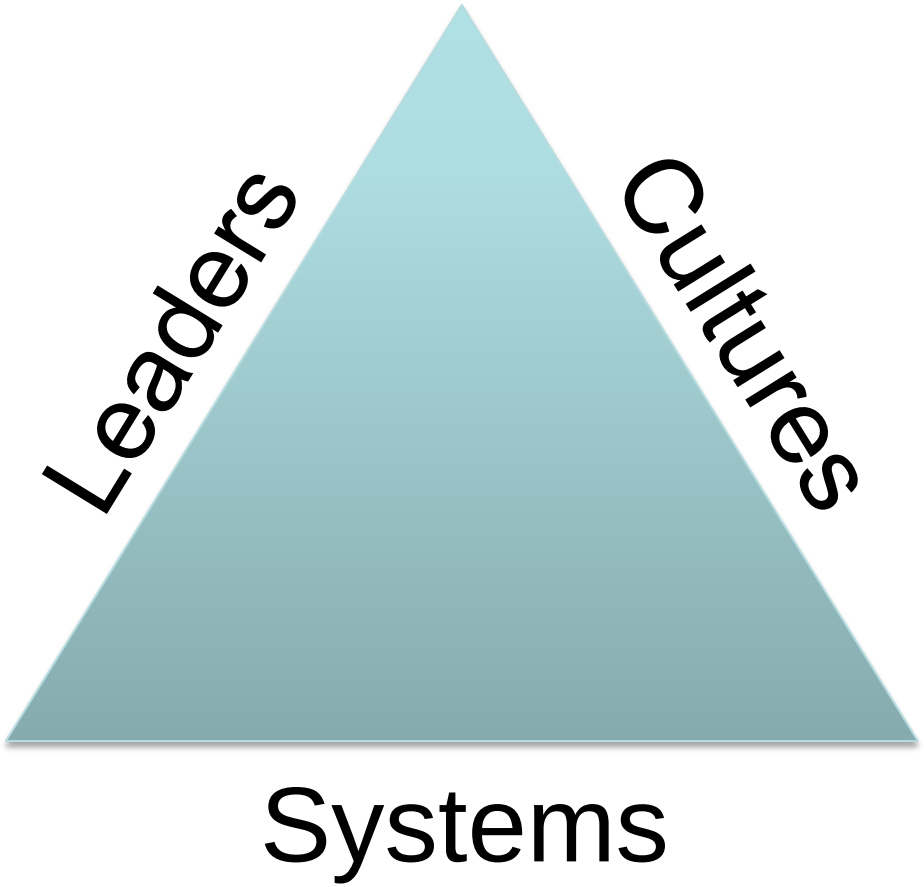
  [the message] is in the

  managerial frame of mind

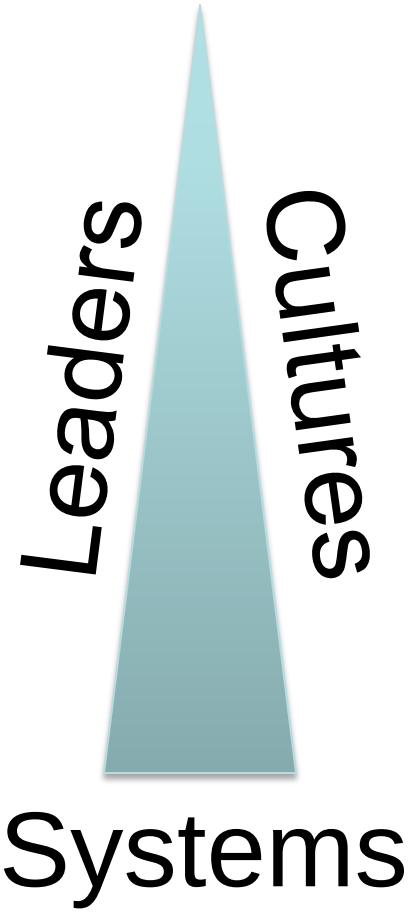
  determined to make ***robust decisions***.

Zebroski, E.L. (1991) Lessons Learned from Man-Made Catastrophes. In Risk Management: Expanding Horizons in Nuclear Power and Other Industries. R.A. Knief, V.B. Briant, R.B. Lee, R.L. Long, and J.A. Mahn, eds., Hemisphere Publishing, New York.

Essential factors to build and sustain safety, health, well-being, and productivity

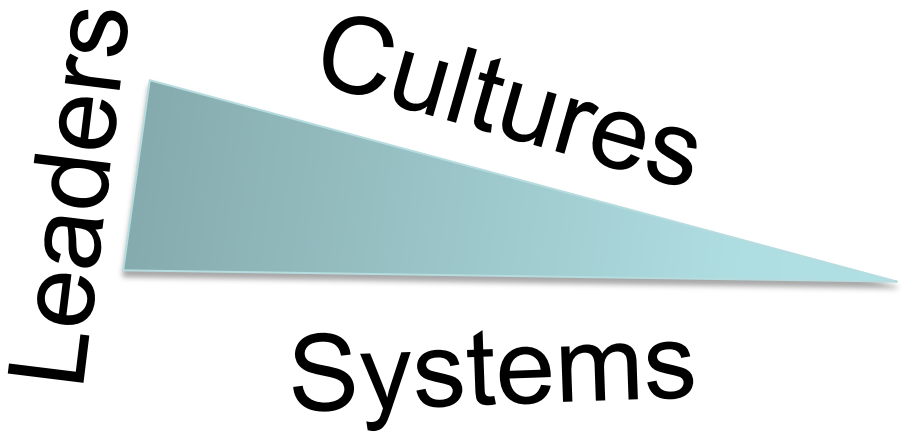


Systems are essential to building and sustaining safety, health, well-being, and productivity



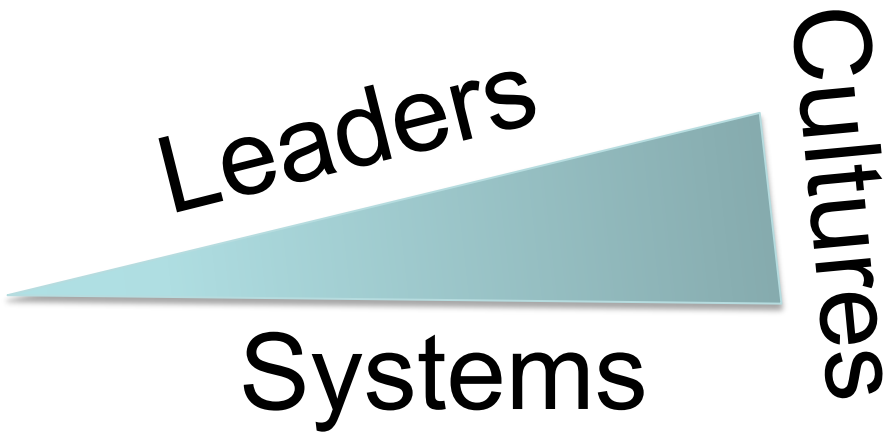
Our mission will collapse and fail without them.

Leaders are essential to building and sustaining safety, health, well-being, and productivity



Our mission will collapse and fail without them.

Cultures are essential to building and sustaining safety, health, well-being, and productivity



Our mission will collapse and fail without them.

Four Steps for Community Action
to build and sustain a total culture of safety, health, well-being, and productivity

- Engage the community
- Inform the interested
- Reward the responsive
- Understand and incentivize the reluctant

Adapted from our Nanoinformatics 2020 Roadmap

Four Steps for Community Action
to build and sustain a total culture of safety, health, well-being, and productivity

Leaders Systems Cultures

Adapted from our Nanoinformatics 2020 Roadmap

Questions and Discussion

Leaders Systems Cultures

Adapted from our Nanoinformatics 2020 Roadmap