HDIAC

Homeland Defense & Security Information Analysis Center

HDIAC *Focus Area* Webinar
Nanotechnology and Society: Philosophical, Religious, and Cultural Aspects
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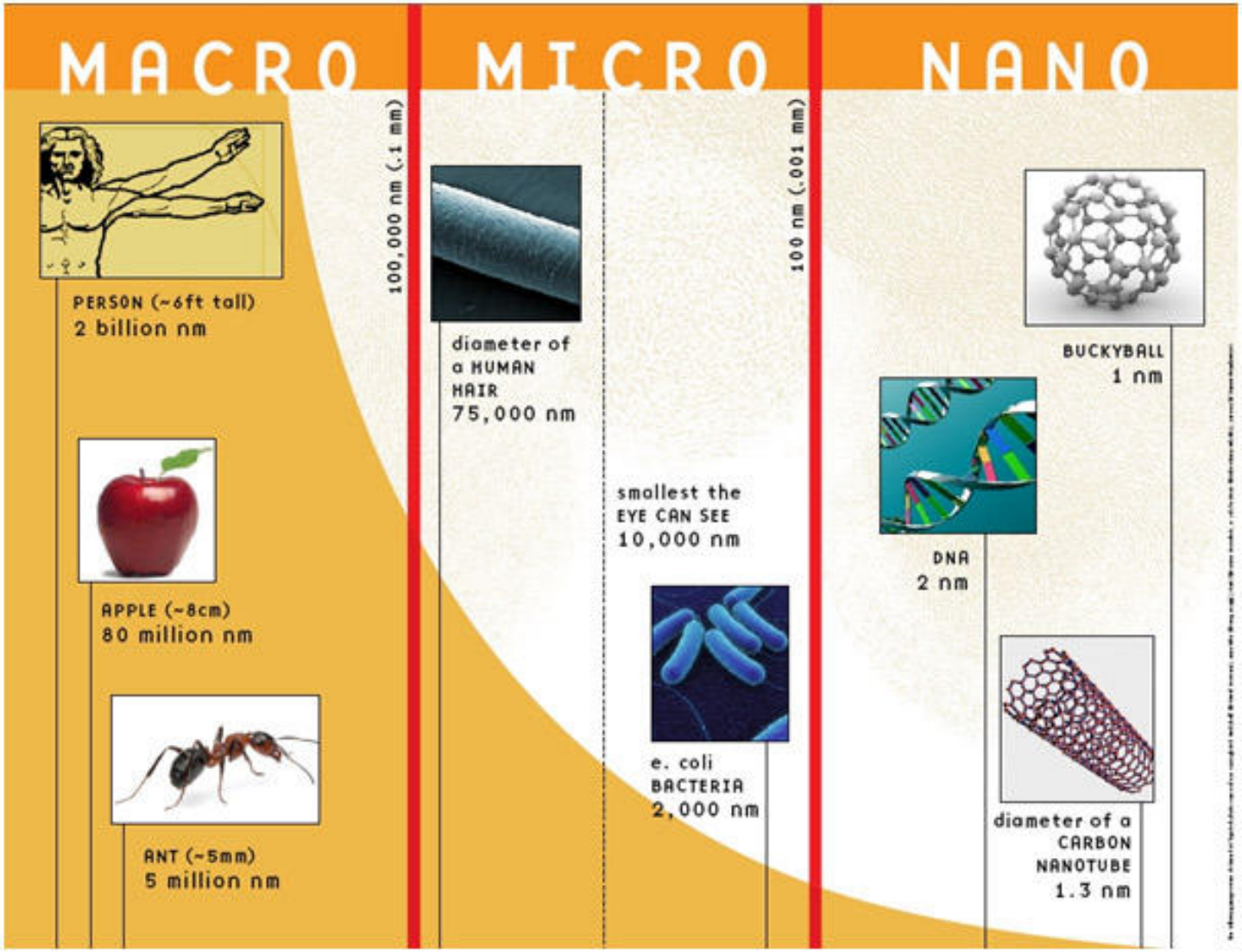
DoDIACs

Department of Defense Information Analysis Centers

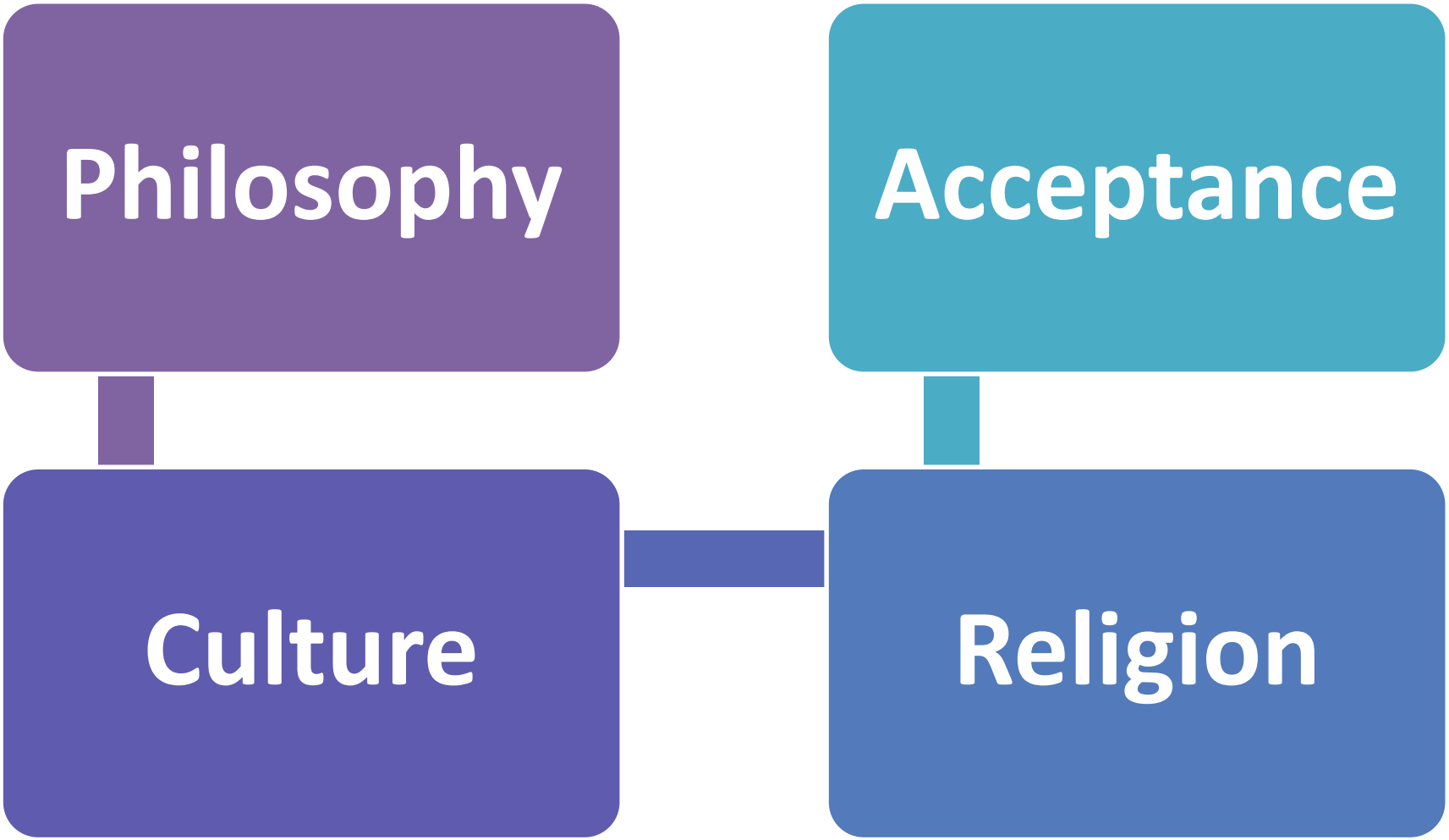
What is Nanotechnology?



Nanotechnology is the manipulation of matter on a scale of 1 to 100 nanometers

Uses of Nanotechnology

Outline



PHILOSOPHY

Extreme Implications

- Transhumanism
- Technological Singularity
- Human Performance Modification
- Radical Life Extension

Artificial Intelligence

Memorandum for Chairman, Defense Science Board (November 17, 2014) –

- To identify the science, engineering, and policy problems that must be solved to permit greater operational use of autonomy across all warfighting domains
- Assess opportunities for DoD to enhance mission efficiency, shrink life-cycle costs, and reduce loss of life through the use of autonomy
- Emphasis given to exploration of the bounds - both technological and social - that limit the use of autonomy across a wide range of military operations

DOD Directive 3000.09 (November 2012) - Expressly prohibits the creation or use of unmanned systems to "select and engage individual targets or specific target groups that have not been previously selected by an authorized human operator."

Superhumans/Supersoldiers

Reliable Neural-Interface Technology (RE-NET) Program –
Addresses the need for high performance neural interfaces to control dexterous functions made possible with advanced prosthetic limbs

Defense Advanced Research Projects Agency (DARPA)

http://www.darpa.mil/NewsEvents/Releases/2013/08/22.aspx

Warrior Web Program –
Seeks to create a soft, lightweight under-suit that would help reduce injuries and fatigue and improve soldiers' ability to efficiently perform their missions.

CULTURE

Culture and Ethnicity

Culture -

shared language, beliefs, values, norms, behaviors and material objects that are passed from one generation to the next

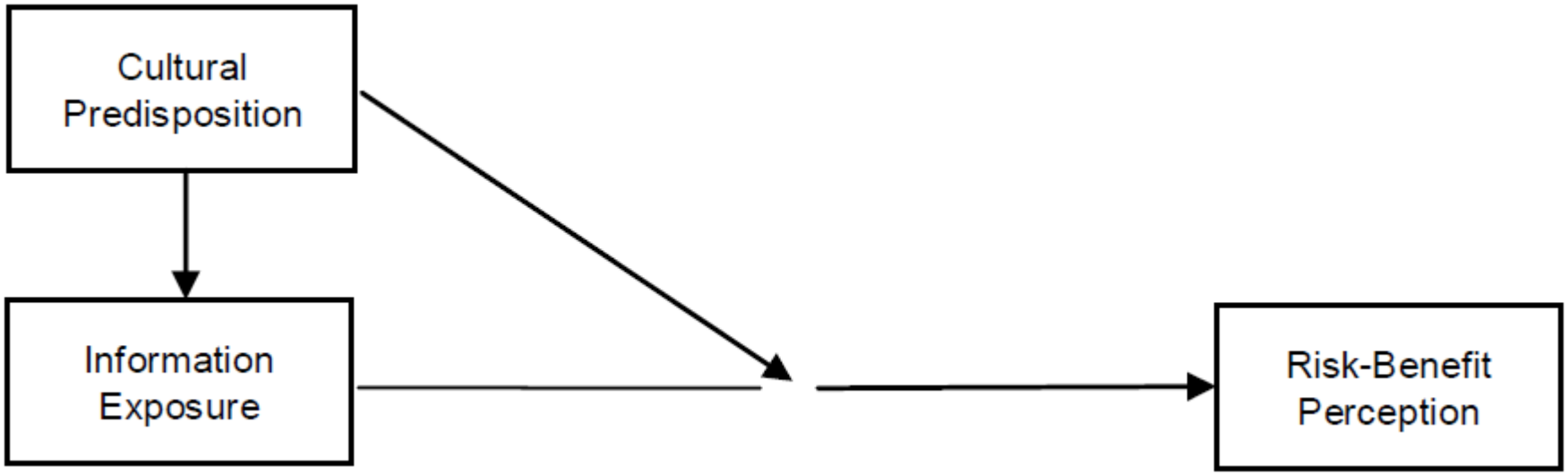
Race –

group of people with inherited physical characteristics distinguishing them from another group

Ethnicity –

people who identify with one another on the basis of common ancestry and cultural heritage

Predisposition and Perception



Cultural worldviews influence perceptions of the risks and benefits of nanotechnology both by influencing how likely subjects were to be exposed to information about nanotechnology and by determining what effect—positive or negative—they gave to that information

Kahan, *Nature Nanotechnology*, 2009

Symbolism

Chrysanthemum

Nanoflower

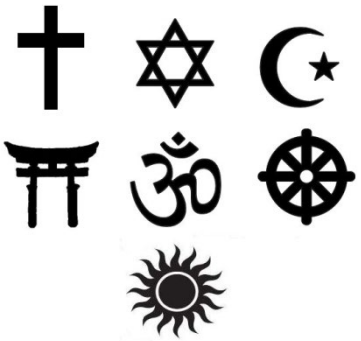
RELIGION

Religious Diversity

Religious Group	Number of Members	Percentage of U.S. Adults
Christian	176,000,000	78.4%
Jewish	3,800,000	1.7%
Buddhist	1,600,000	0.7%
Muslim	1,400,000	0.6%
Hindu	900,000	0.4%
Other faiths	2,700,000	1.2%
Unaffiliated	36,000,000	16.1%

Pew Research Religion and Public Life Project, Religious Landscape Survey

A unified system of beliefs and practices relative to sacred things…which unite into one single moral community…all those who adhere to them - Durkheim



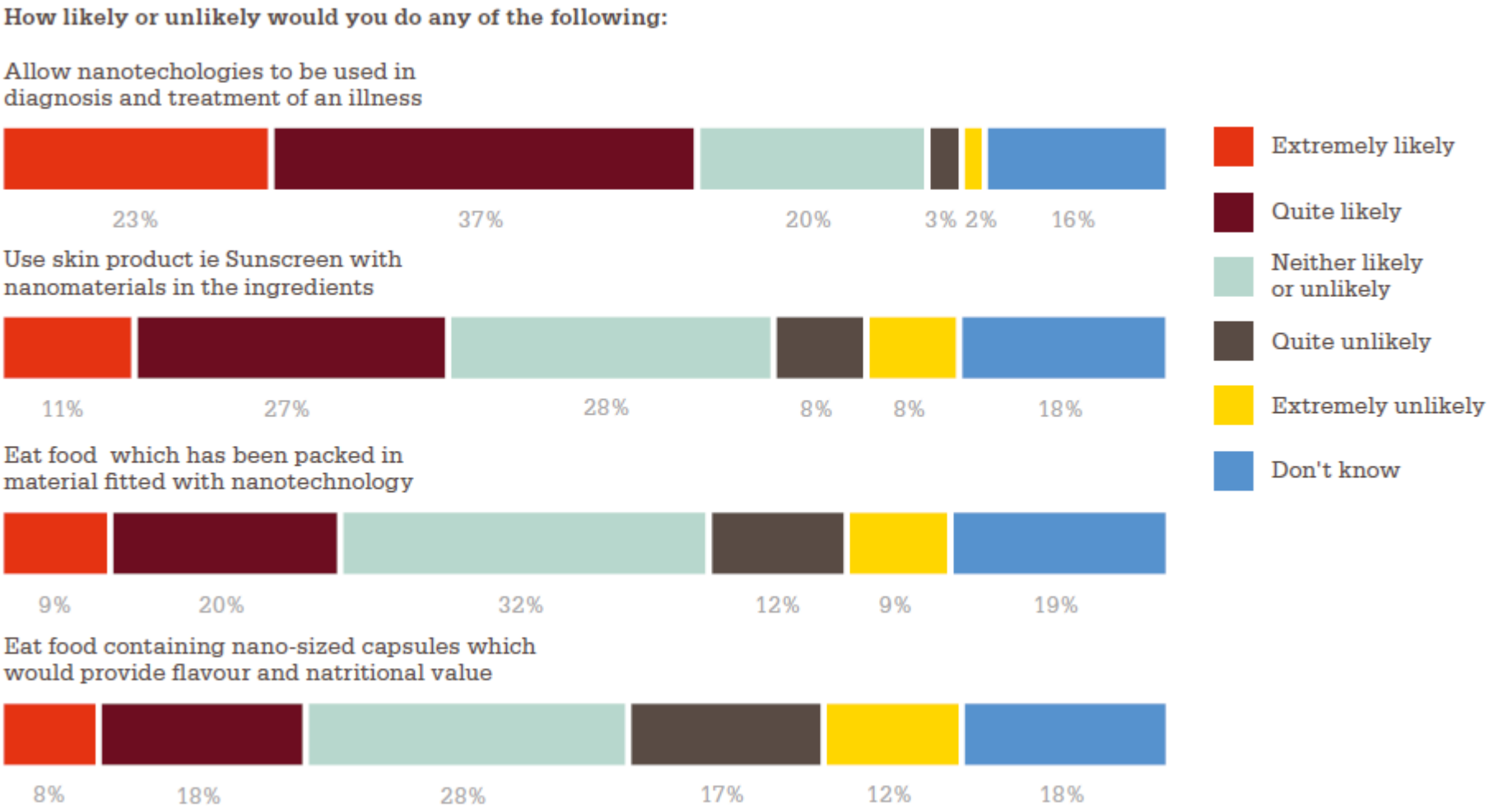
Religious Views and Nano

Faith	Concern
Christianity	Transhumanism, embodiment
Lutheran	General ethical concerns
Catholicism	Preservation of the sanctity of life
Protestantism	Human dignity, privacy
Islam	Legal questions
Judaism	Golem, nature of existence

"Religion gives us a platform from which to evaluate our technologies, a voice to call for a change in direction, if needed, and a call for contrition when we fail." – Noreen Herzfeld, *Technology and Religion*

ACCEPTANCE

Societal Impact



Institution of Mechanical Engineers, 2015

Cultural Competence

Cross et al.

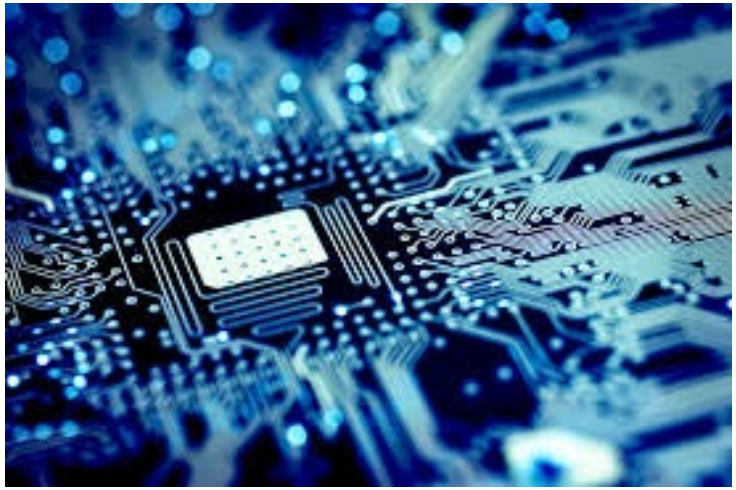
1. Value diversity
2. The capacity for cultural self-assessment
3. Being conscious of the dynamics inherent when cultures interact
4. Institutionalized cultural knowledge
5. Developed adaptations to diversity

Avoiding ethnocentrism -

The act of judging another culture solely by the values and standards of one's own culture

Parting Thoughts

"People and technology together shape both technological and social features of a new technology. People must direct it and despite some complicated issues, they still can have input into the process." – Jameson Wetmore



Thank You

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NANO STUDIES