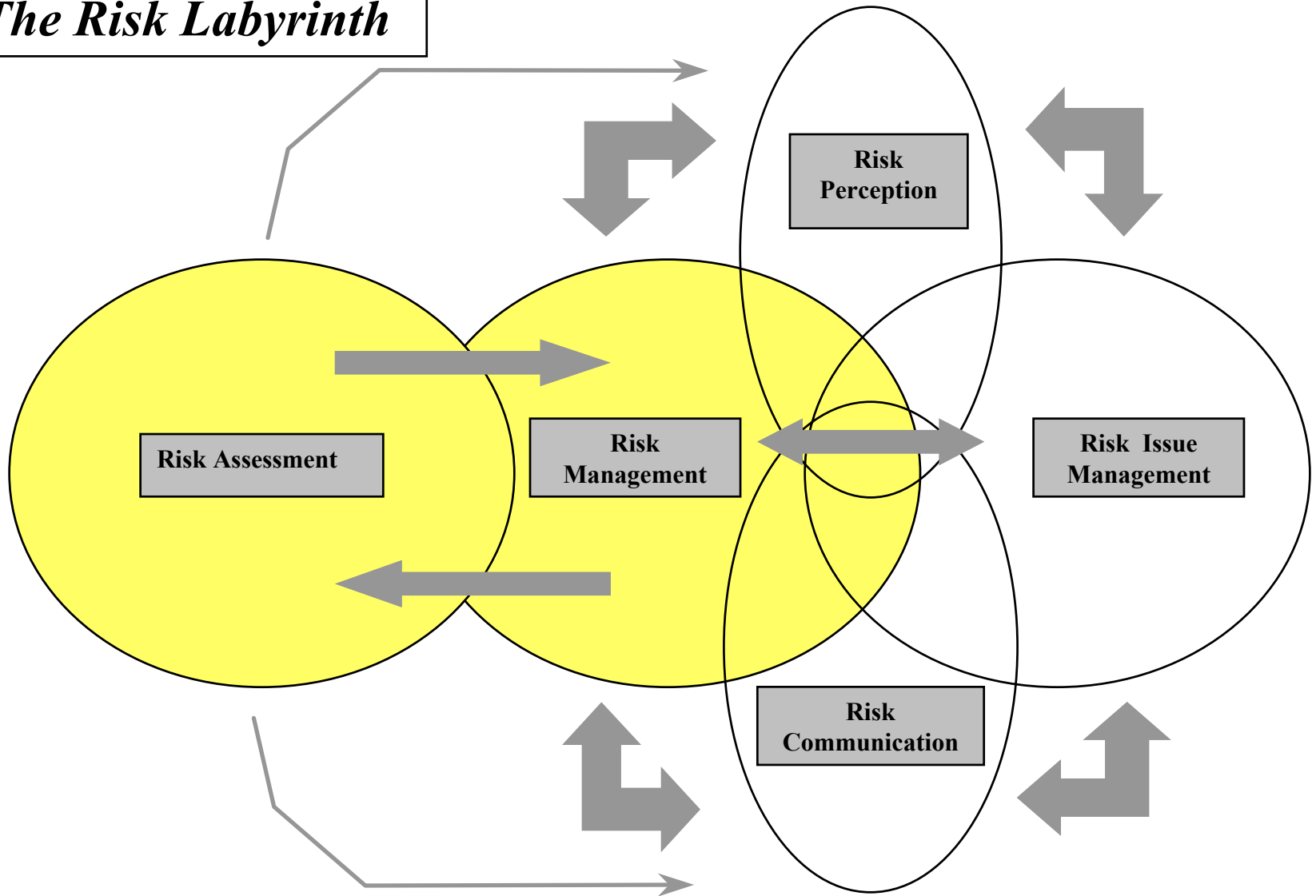


Michael Rogers
European Commission

The Risk Labyrinth



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***UNCERTAINTY OF
EFFECT***

Probability of
Harm(i) Occurring
 $P(Ha_i)$, e.g. 10^{-6}

Hazard
Exposure
 $I(Hz)$

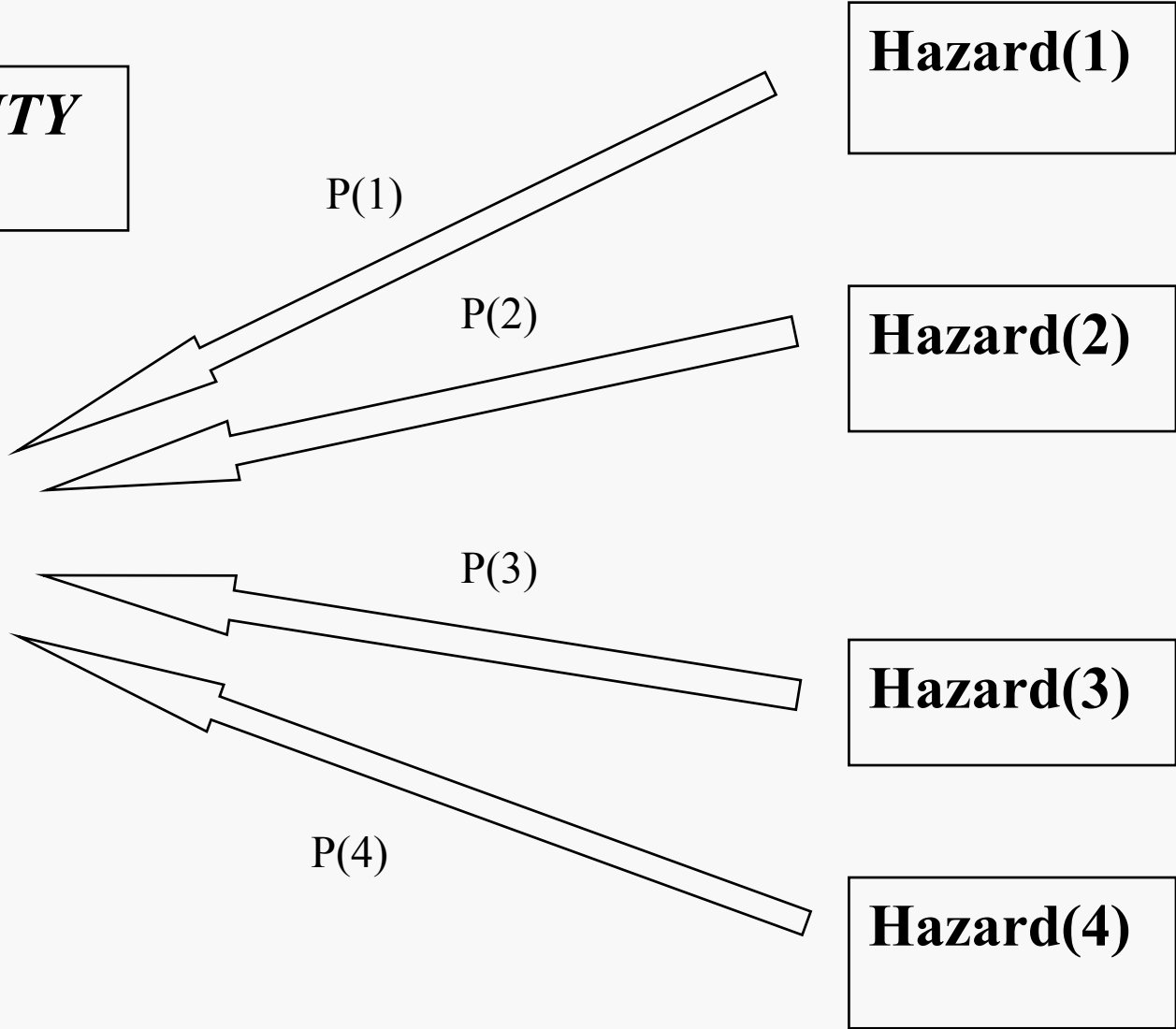
Probability of Harm(i)
not Occurring,
 $1-P(Ha_i)$, e.g. 0.999999



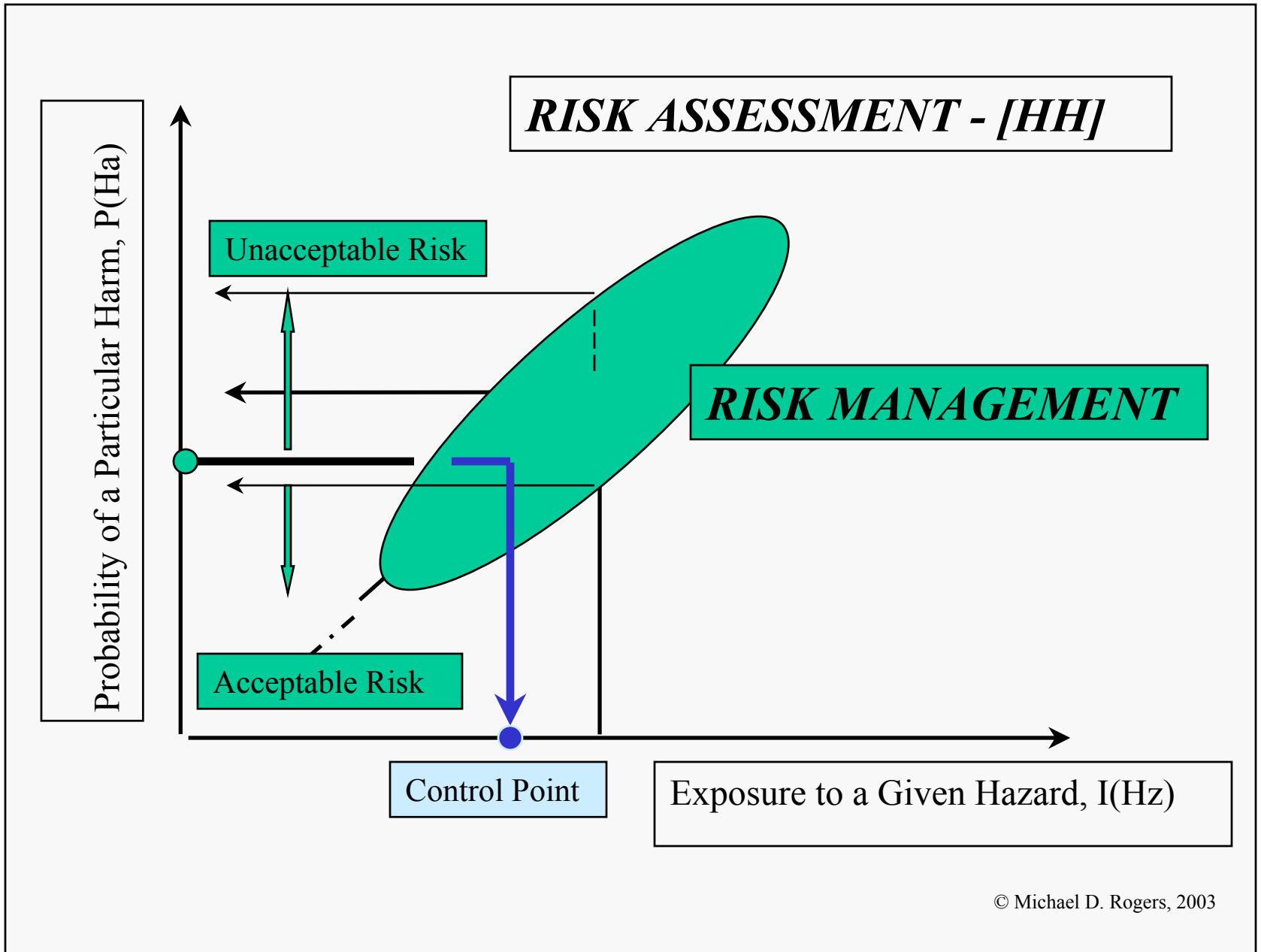
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***UNCERTAINTY
OF CAUSE***

**Harm(i)
Realisation**



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UNCERTAINTY OF [HH] RELATIONSHIP

HARMS



UNCERTAIN RELATIONSHIPS

**“KNOWN”
RELATIONSHIPS FOR
GIVEN EXPOSURE
CONDITIONS**

95%

50%

IGNORANCE

HAZARDS

The Precautionary Principle

The Unknown

As we know,

There are known knowns.

X

There are things we know we know.

We also know

There are known unknowns.

Y

That is to say

We know there are some things

We do not know.

But there are also unknown unknowns,

Z

The ones we don't know

We don't know.

Secretary of Defense Donald Rumsfeld

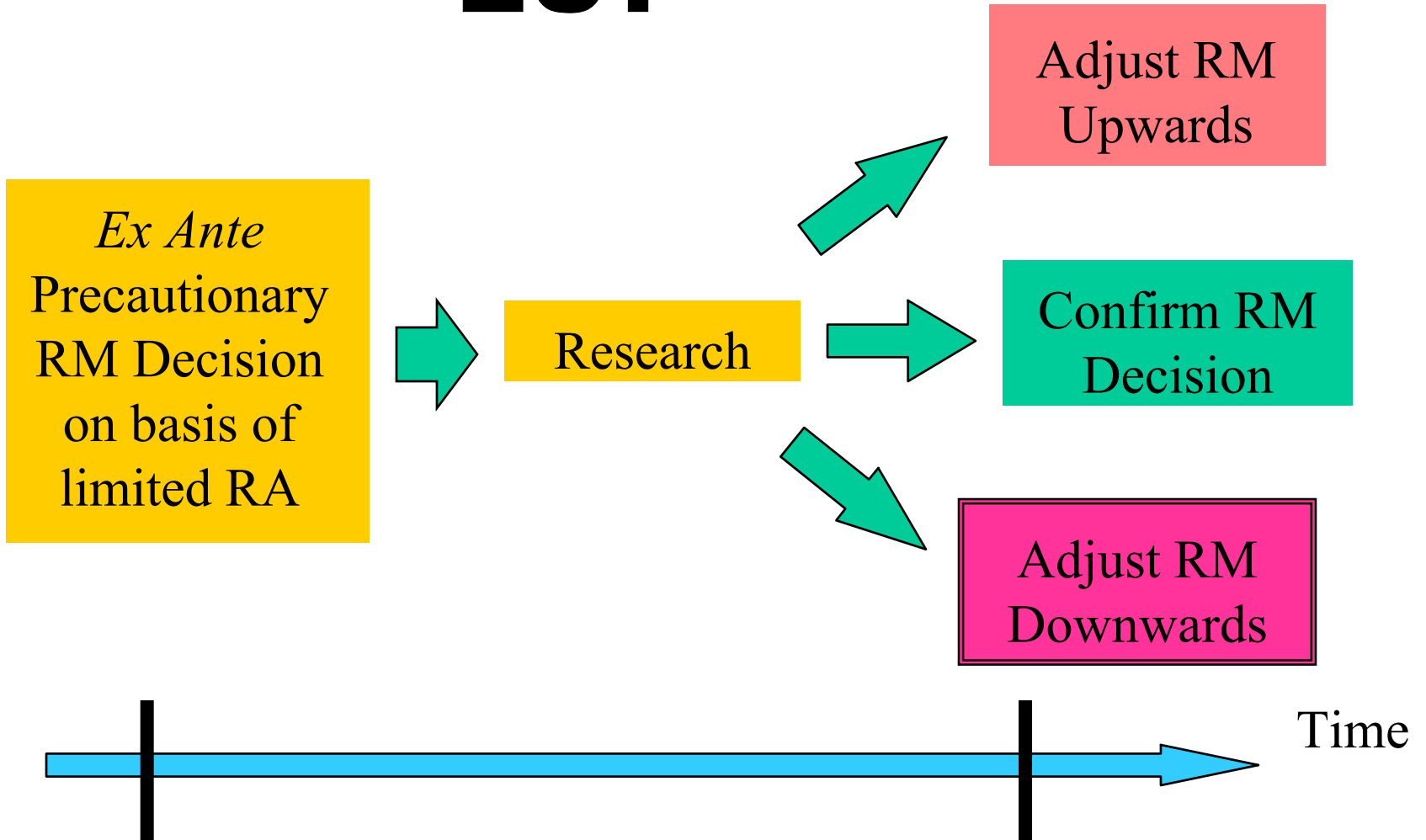
Feb. 12, 2002, Department of Defense news briefing

The Commission and Precautionary Action

1. The PA should be PROPORTIONAL
2. The PA should be NON-DISCRIMINATORY
3. The PA should be CONSISTENT
4. The PA should be based on an examination of the COSTS and BENEFITS of action.

5. The PA should be subject to REVIEW in the light of new scientific data.

EU?

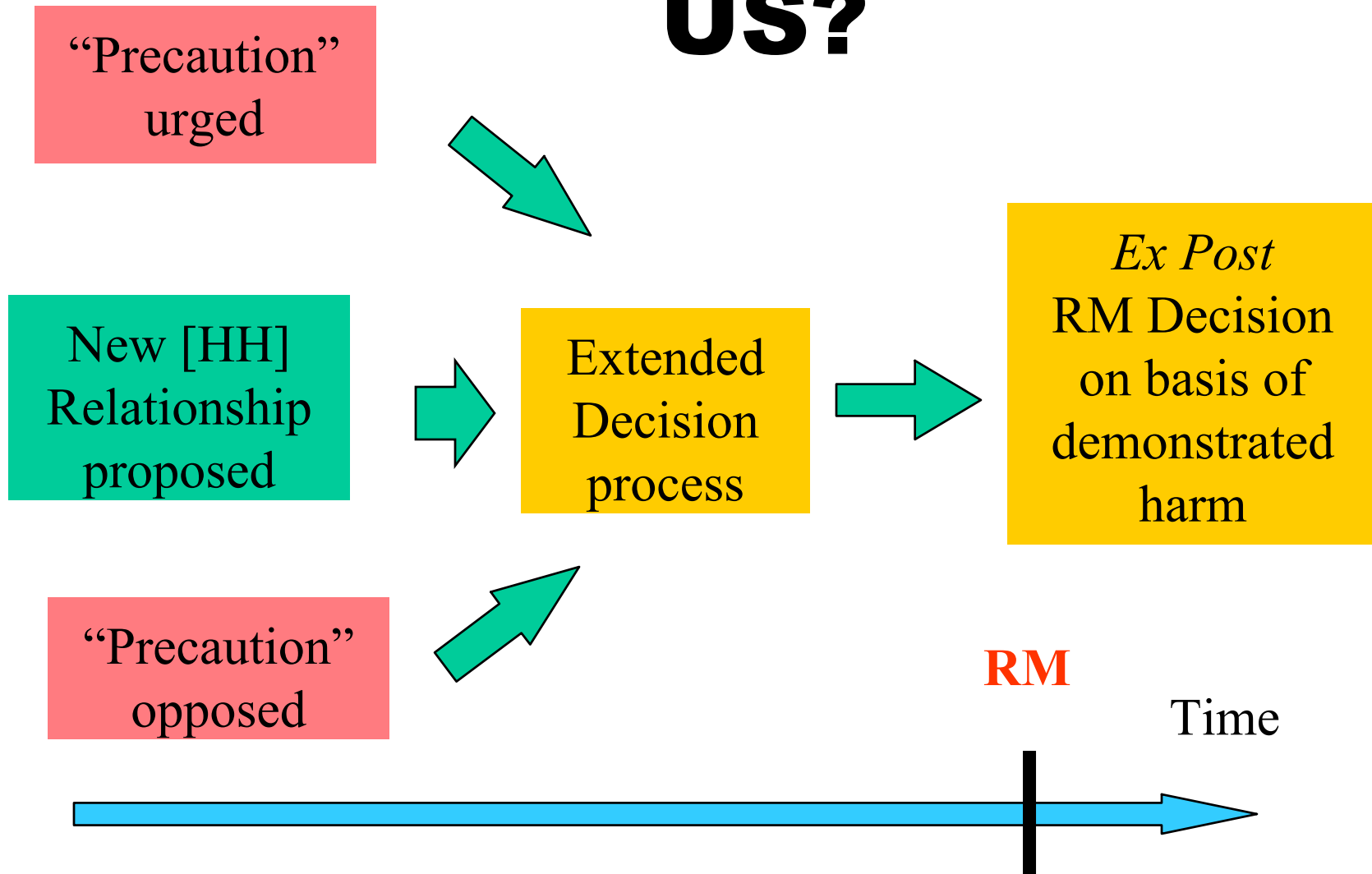


P-RM

RM

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US?



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