Assessing the Full Spectrum of Communication Needs for Potentially Hazardous NEO's

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Overview

Communications -- What is it? What's Needed?

Information Drawn from Multiple Sources
- Natural Hazards / Disaster Management Literature & Experiences
- Risk Analysis, Risk Perception, Risk Communication Literature
- Simulations and Emerging 'New' Threats

Map NEOs onto Generic Hazard, Risk, Vulnerability, Awareness patterns

NEO Communication Needs: Planning, Preparedness, Response, E/PO
Acknowledge & Address Complexity
Officials and Infrastructure vs. Public

Communication Areas Needing Special Attention
Especially: Evacuations

For NEO Communication Strategic Plans-- Include Broad Perspective

Communications?
Depends on Perspective & Needs

EXPERTS
Hazard
Risk
Vulnerability

Detection

Deflection

Decision Making

Mitigation, Infrastructure, Preparedness

Warnings/Imminent Threats

Audience =
Professional Communities

PUBLIC
Mass media
Individuals

Education (E/PO)

News/Incidents   (Who What When Where Why)

Instructions/Info for "Individual" Use

Hazard, Risk & Vulnerability/------ **Disaster Impact** -------- /Hazard Risk & Vulnerability

Quiescent/ Incubation

Preparation

Infrastructure

Warning & Alarm

Impact

Social evolution & new understanding over time.

Frequency needs to be often enough to reinforce

Emergency/ Crisis Period

Size
Frequency
Familiarity
Predictive Capabilities

General Threats v.
Specific Threats v.
Imminent Threats

Responses

Restoration & Recovery

Replacement/Reconstruction

NEO Hazard & Disaster Pattern

Hazard, Risk & Vulnerability/------ **Disaster Impact** -------- /Hazard Risk & Vulnerability

Quiescent/ Incubation

Preparation

X

↑

You Are Here

Infrastructure

Warning & Alarm

Impact

Emergency/ Crisis Period

GENERAL THREAT

Responses

SPECIFIC THREAT ?

Restoration & Recovery

IMMINENT THREAT

Replacement/Reconstruction

Communication Areas Associated with General Threat Info

Hazard, Risk & Vulnerability/**------ Disaster Impact -------** /Hazard Risk & Vulnerability

GENERAL THREATS
Detection- Surveys
   Understand NEO Risks- Lots of Uncertainty
   2° Effects
   Criteria for Size to Deflect etc.
Deflection – Study Concepts
   Educate Officials
   Mitigation Planning
   Link w/ Emerg. Response
   Warning System
   Build Infrastructure
Decision Making (UN?)
   Response System
   Launches (Test & Actual)
  Chain of Command
  Communication/Media
  Preparedness/ Precautions
  Crisis- Evacuations?
  Different Stakeholders?

Hazver, Risk & Vulnerability/**------ Disaster Impact -------** /Hazard Risk & Vulnerability

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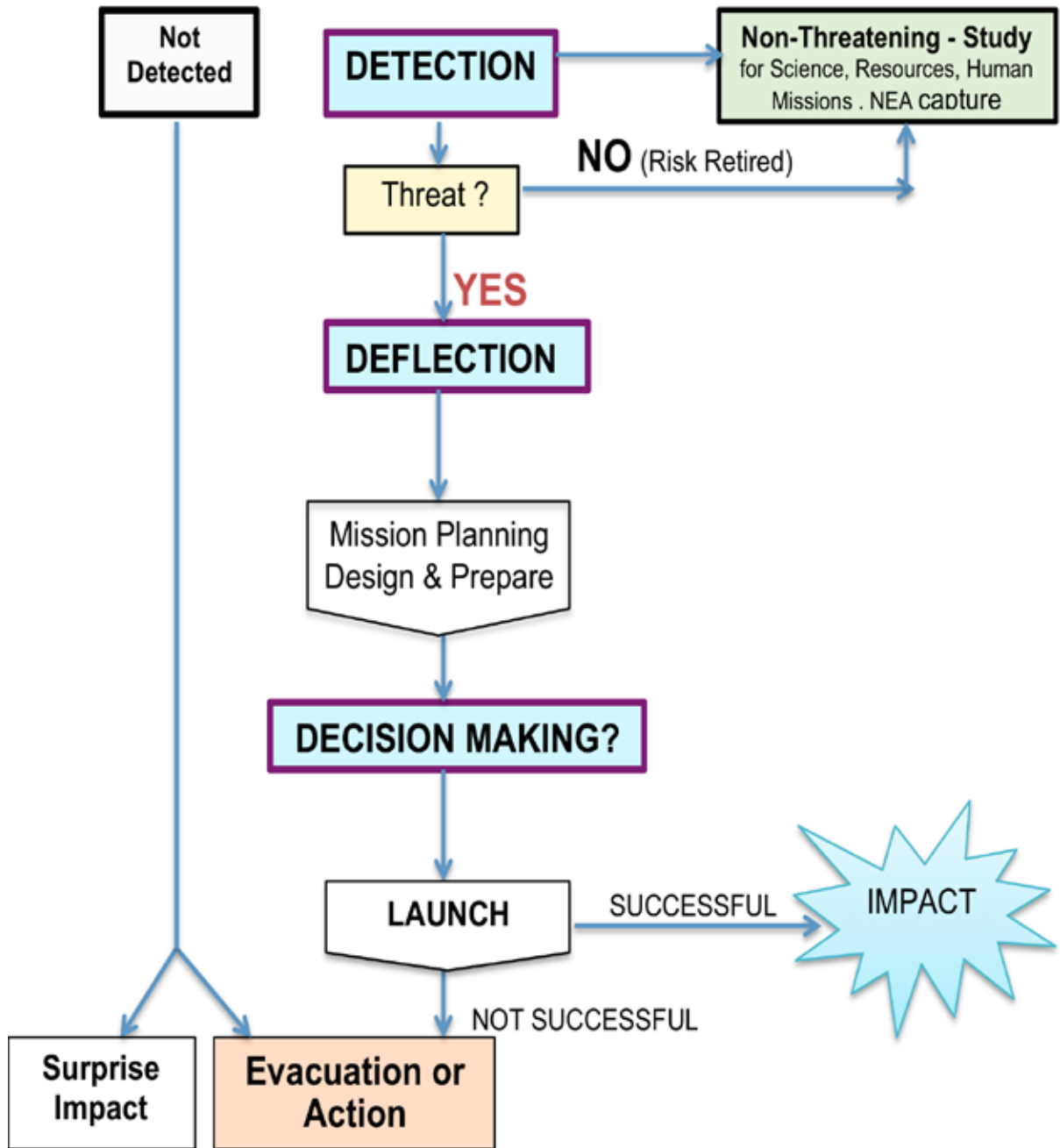 Preparedness/
Precautions
  Crisis- Evacuations?
  Different Stakeholders?

SIMILAR FOR
SPECIFIC THREATS

IMMINENT THREATS

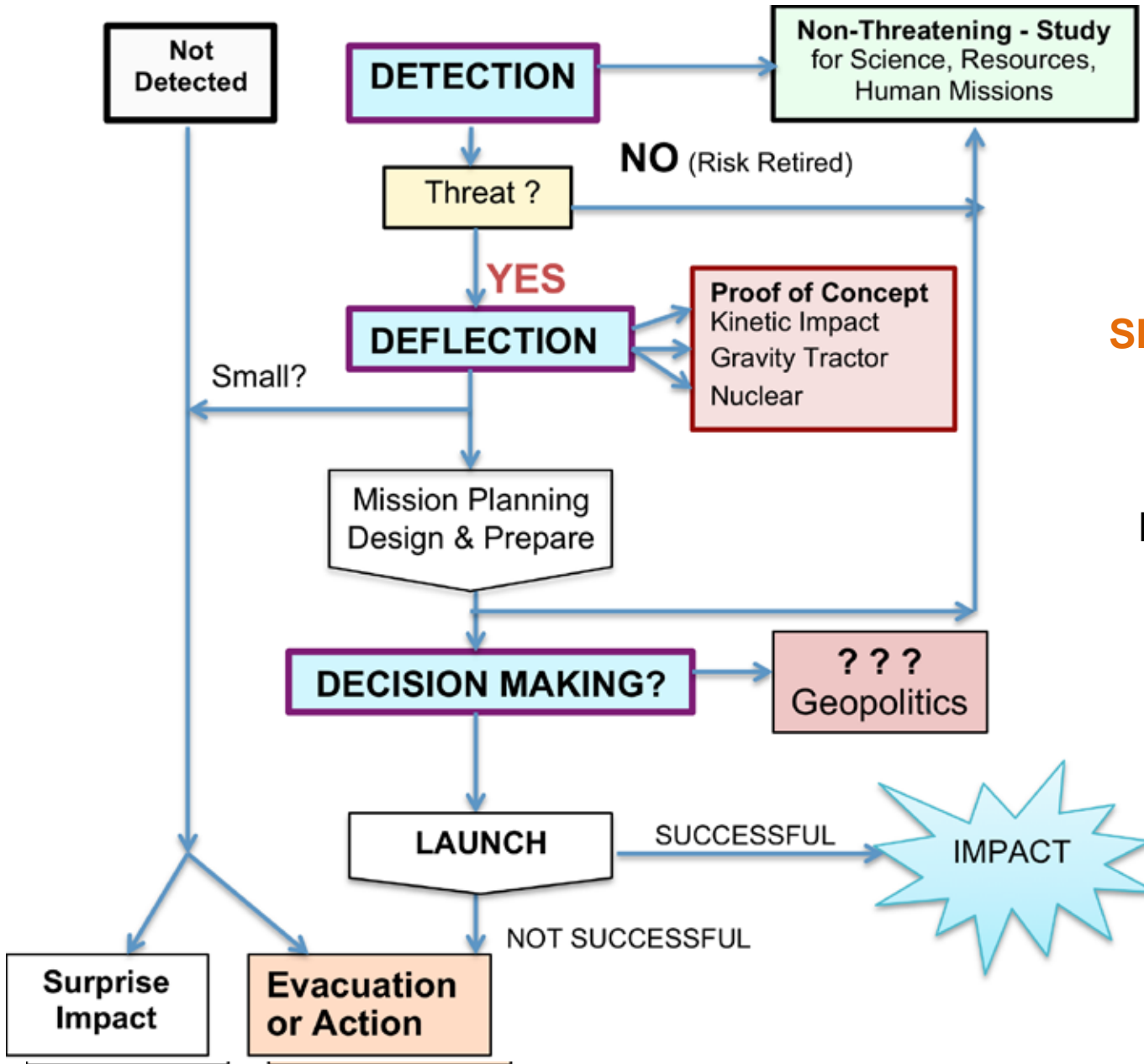Diffeent Communication Needed
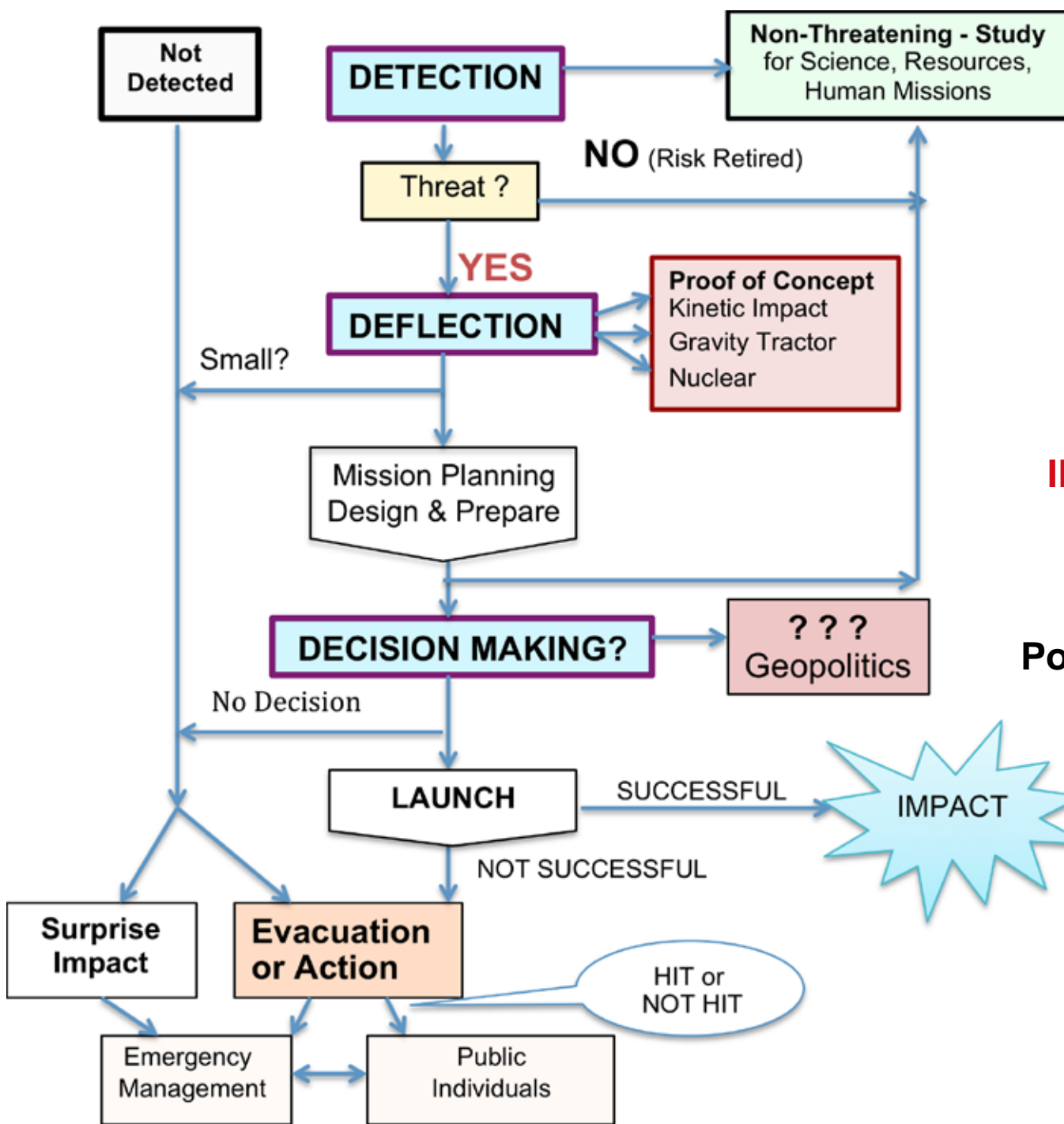For EXPERTS
PUBLIC

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THINK IN PHASES

NOW:
GENERAL THREAT
Familiarize
Building Capacity
E/PO

Not Detected

DETECTION → **Non-Threatening - Study** for Science, Resources, Human Missions

NO (Risk Retired)

Threat ?

YES

DEFLECTION → **Proof of Concept** Kinetic Impact, Gravity Tractor, Nuclear

Small?

Mission Planning Design & Prepare

DECISION MAKING? → **? ? ?** Geopolitics

LAUNCH — SUCCESSFUL → **IMPACT**

NOT SUCCESSFUL

Surprise Impact

Evacuation or Action

SPECIFIC THREAT
  E/PO
  Explain Capacity

Potential PROBLEMS
  Tests (espec. NED)
  Legal/ NEPA (tests)
  LONG Delays
  Retire Risks
  Non-Detected NEAs
  Secondary Effects
  Size Decisions

DETECTION

Not Detected

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Threat ?

NO (Risk Retired)

YES

DEFLECTION

Proof of Concept
Kinetic Impact
Gravity Tractor
Nuclear

Small?

Mission Planning Design & Prepare

IMMINENT THREAT
News & Warning
Implementation

DECISION MAKING?

? ? ?
Geopolitics

No Decision

Potential PROBLEMS
Decision Making (UN)
Controversy NEDs?
Legal/ OST/ NEPA
LONG Delays (Psych)
Evacuation problems
Public Security
Liability ($ Responsibility)

LAUNCH

SUCCESSFUL

IMPACT

NOT SUCCESSFUL

Surprise Impact

Evacuation or Action

HIT or NOT HIT

Emergency Management

Public Individuals

Objective of Communication:

Prepare, Save Lives; Reduce injuries;

Maintain sense of public security

If all goes well…. Non-disaster

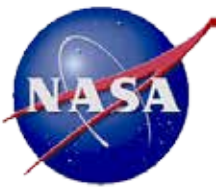## BUT -- Unique to NEO Communications:

- Repeated False Alarms? Retire risks? Undetected?

- Long time period to prepare-- Time Lag; Public Worry? or Forget? Ignore?

- Expect Controversial Communications (not just one way)

- **Test of different technologies** (potential probs– space advocates, step toward asteroid mining; militatry, nuclear in space etc)

- **Who Makes Decisions** about launches (Method? KI, GT, NED)

- **NEPA reqmts** (US) & **OST Questions** (Nukes; Military)

   Legal Challenges? Temporary Restraining Orders?

- **Geopolitics:** Technological Nations Impose Will on Others

- **Different Scale & Type of Evacuations**? Path? (Educated vs. non-educated publics)

- **No Individual Preparedness info** (except Evacuation)

- **Evacuations & False Alarms** (Liability? $$ and Responsibility)

- **No full scale drills possible**

Communication Control Issues

Like Topoff -- See **Conflicts** Global, National, Regional, Local

Armageddon, Science Fiction, Apocalypse Believers

Public Perspectives (ex. 50% Russians believe not meteorite)

Social Networks and Internet

Return, Recovery, Resilience ??? (think Fukushima; Chernobyl etc.

Secondary Effects? (tsunami, weather , shock waves, super floods, infrastructure failures… What can Individual do?

Conclusions

- Agree Need Communication Strategy and Plan

- Approach Communications in Phases (General, Specific, Imminent)

- Anticipate/ Address Controversies as part of Communications

- Expect Issues with Communication Control & Coordination

- Likely Significant Issues with Evacuations

- Need New 'Rules' / Info Even for Disaster & Emergency Management Communities

- Problems with Lack of Individual Preparedness ?