GIS, Information Sharing, and Emergency Management: Alberta's Vision

Alberta
Municipal Affairs

URISA BC
GIS in Health and Public Safety
Burnaby, BC

EMA - Emergency
Management Alberta

Outline of Presentation

- Vision

- Concept/Philosophy

- Application

- Concluding Remarks

Vision

- support emergency management from the first responder to the municipal, provincial, and federal orders of government through mitigation, preparation, response and recovery

- an integrated, secure, web-based information communication technology for sharing information between agencies and jurisdictions in both private and public sectors

- enable decision makers at all levels to make better decisions faster

Outline of Presentation

- Vision
- Concept/Philosophy
- Application
- Concluding Remarks

DIMENSIONS OF EMERGENCY MANAGEMENT

- **Hazards**
  - Natural
  - Human Induced
- **Groupings/Organizations**
  - Types of Agencies
  - Groupings
- **Functions**
- **Activities**
- **Resources**

All Hazards

Alberta Municipal Affairs

I. Natural Hazards

Biological
- **Human**
- **Animal**
- **Plant**

Meteorological/ Elemental
- **Drought**
- **Flood/Storm Surge/Tsunami**
- **Ice/Snow**
- **Fire**
- **Wind-Tornado/Hurricane**

Geological
- **Earthquake**
- **Landslide**
- **Avalanche**

Resulting from:
Acts of God / Mother Nature

II. Human Induced Hazards

Non-intentional
- **Energy**
- **Finance**
- **Information/ Communication**
- **Agriculture**
- **Health**
- **Environment**
- **Transport**
- **Public safety/ security**
- **Government operations**

Resulting from:
- **Human Error**
- **System Failure**

Intentional
- **Energy**
- **Finance**
- **Information/ Communication**
- **Agriculture**
- **Health**
- **Environment**
- **Transport**
- **Public safety/ security**
- **Government operations**

Resulting from:
- **Civil unrest**
- **Terrorism**
- **International Tension**
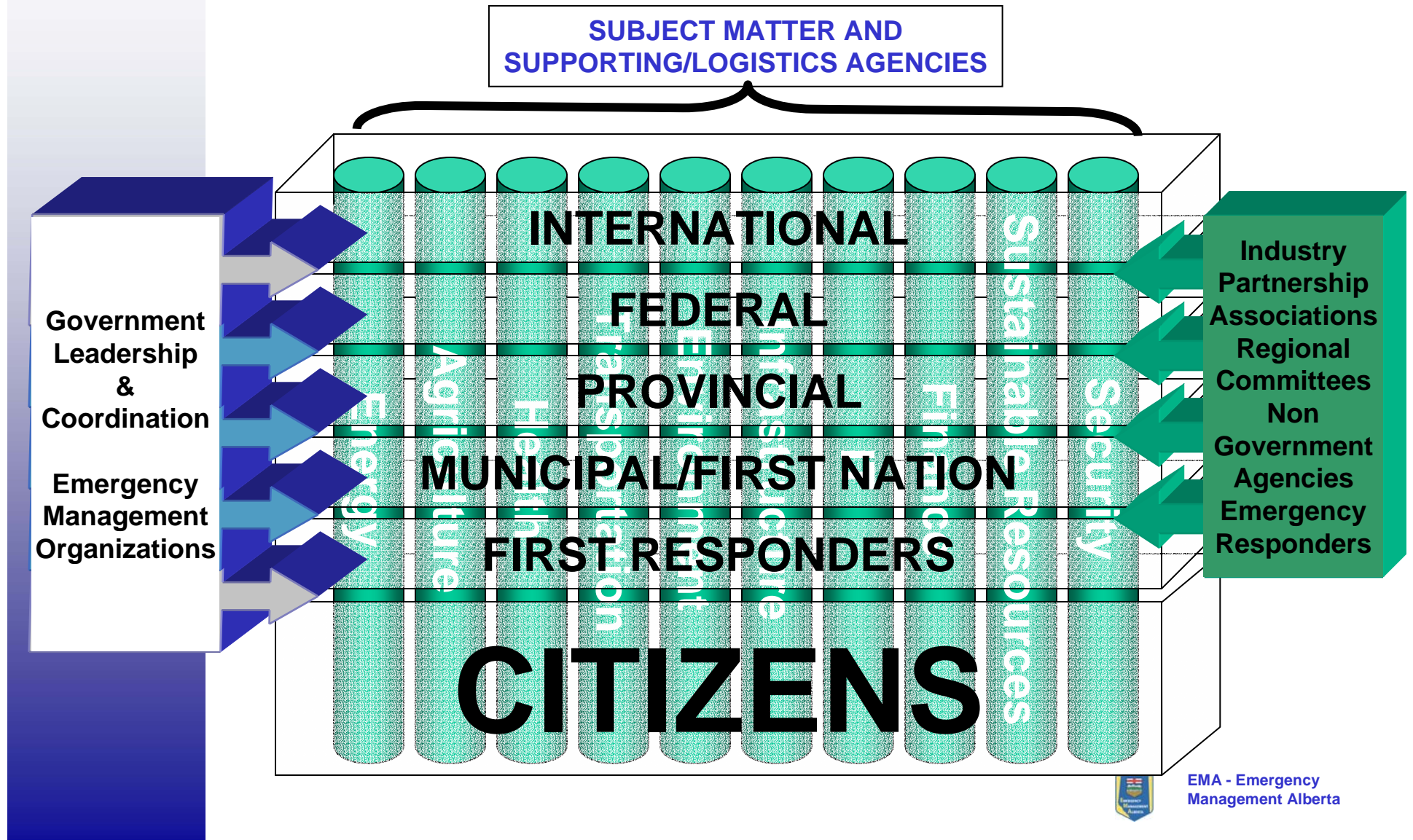- **Criminal Acts**
- **War**

SAFETY

SECURITY

Types of Agencies

Subject Matter Agency	The organization assigned by legislation, regulation, policy or a plan to lead in the emergency management of a specific hazard;
Coordinating Agency	The organization assigned by legislation, regulation, policy or a plan to coordinate the efforts of different orders of government, supporting/logistic agencies and other emergency management partners to coordinate requests from the lead agency to deal with the direct affects of the specific hazard, while dealing with the indirect results of the specific hazard;
Supporting/ Logistics Agency	Organization(s) assigned by legislation, regulation, policy or a plan to assist in the emergency management of a specific hazard;

Alberta Municipal Affairs

Groupings

Functions

Mitigation/ Prevention	Attempting to maintain a normal state of life by removing/minimizing the items at risk from the effects of hazard(s), or by reducing the effects of the hazard(s) on the items at risk, with an aim to prevent or reduce a disaster impact when it occurs; e.g. building fireguards, river dikes, security measures, legislating building codes.
Preparedness	Recognizing that perfect mitigation is impossible, building capability to effectively and rapidly respond when items at risk are about to be or are affected by hazards. It includes the planning, exercising and education necessary to achieve a state of readiness for incidents, disasters and major emergencies; e.g plans, simulation exercises, equipment stockpiles
Response	Executing the capability to minimize the losses to items at risk (with an emphasis to prevention of injury/loss of life) when they are effected by hazards.
Recovery	Returning the effected organization/group to a state of normal life, after it has been effected by a hazard. Commences ASAP during Response and runs concurrently.

Activities

- **Governance**
  - Program Management
  - Command
- **Operations**
  - Planning
  - Intelligence
  - Training

- **Logistics**
  - Finance
  - Administration
- **Communications**
  - Internal
  - External
  - ICT
- **Coordination**
  - Public/Private
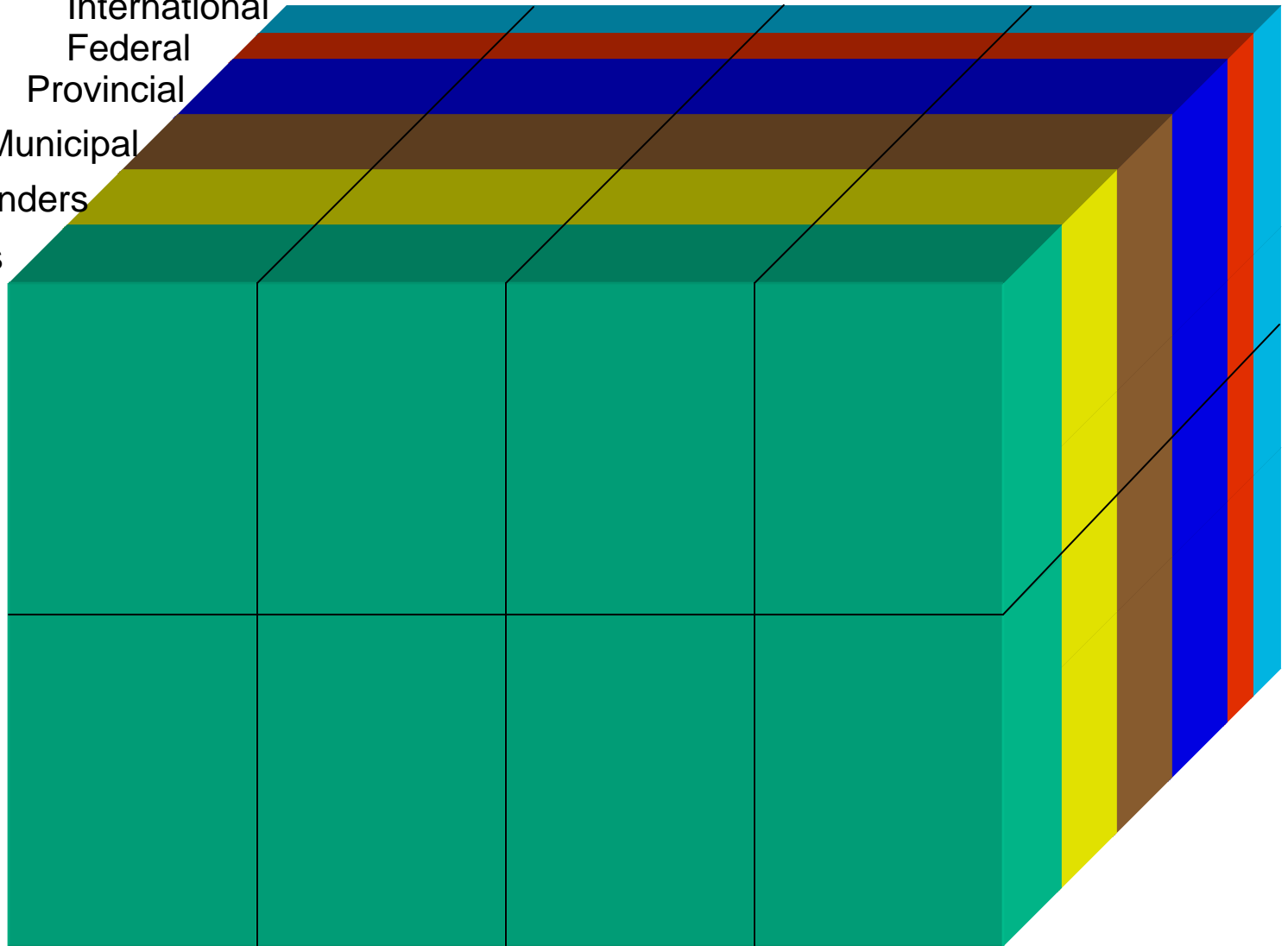
Integrating the Dimensions

Alberta Municipal Affairs

GROUPINGS ORGANIZATIONS
- International
- Federal
- Provincial
- Municipal
- First Responders
- Citizens

HAZARDS
- Human Induced
- Natural

FUNCTIONS
Mitigation Preparation Response Recovery

EMA - Emergency Management Alberta

Integrating the Dimensions

Alberta
Municipal Affairs
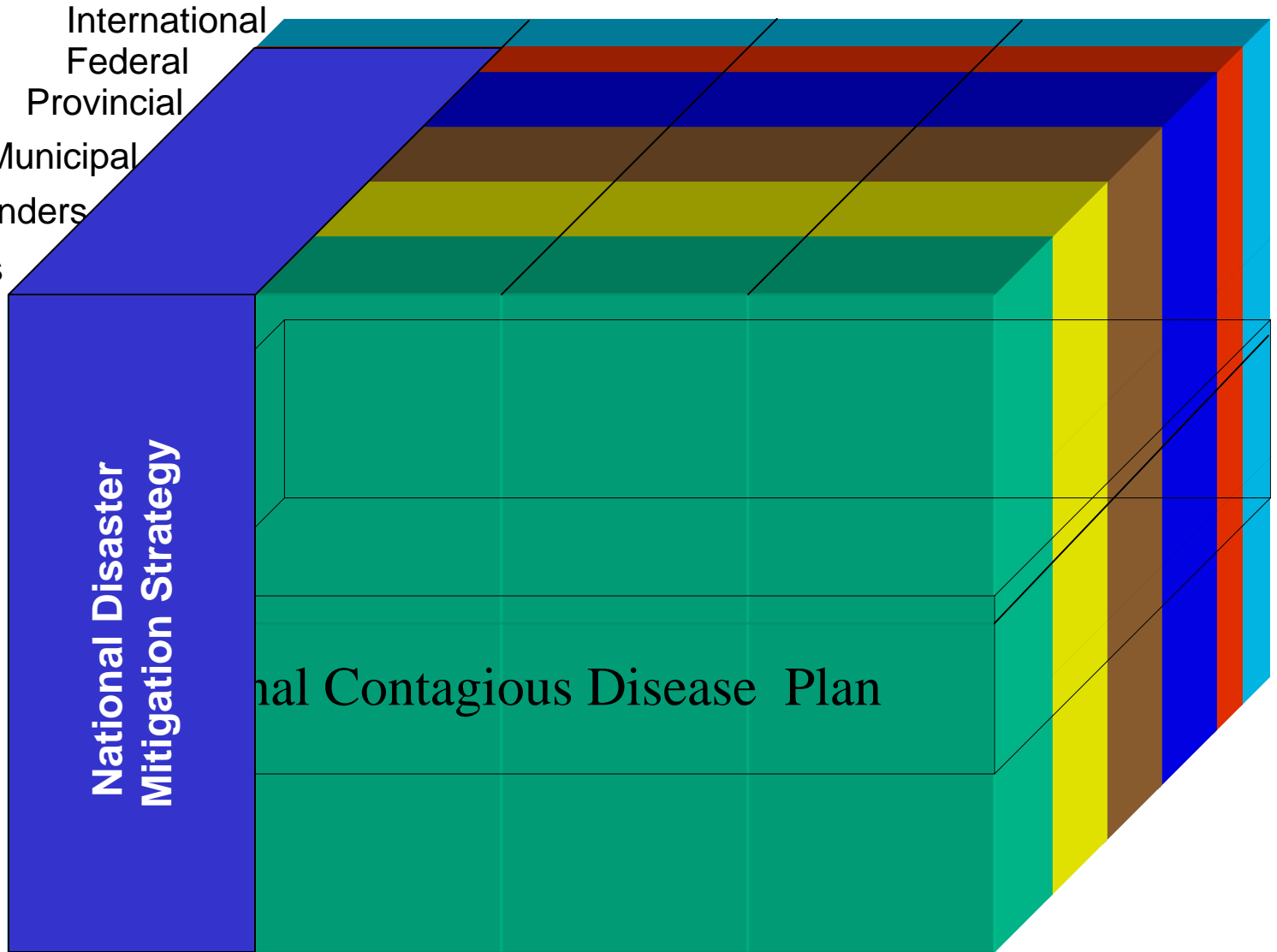
GROUPINGS
ORGANIZATIONS

- International
- Federal
- Provincial
- Municipal
- First Responders
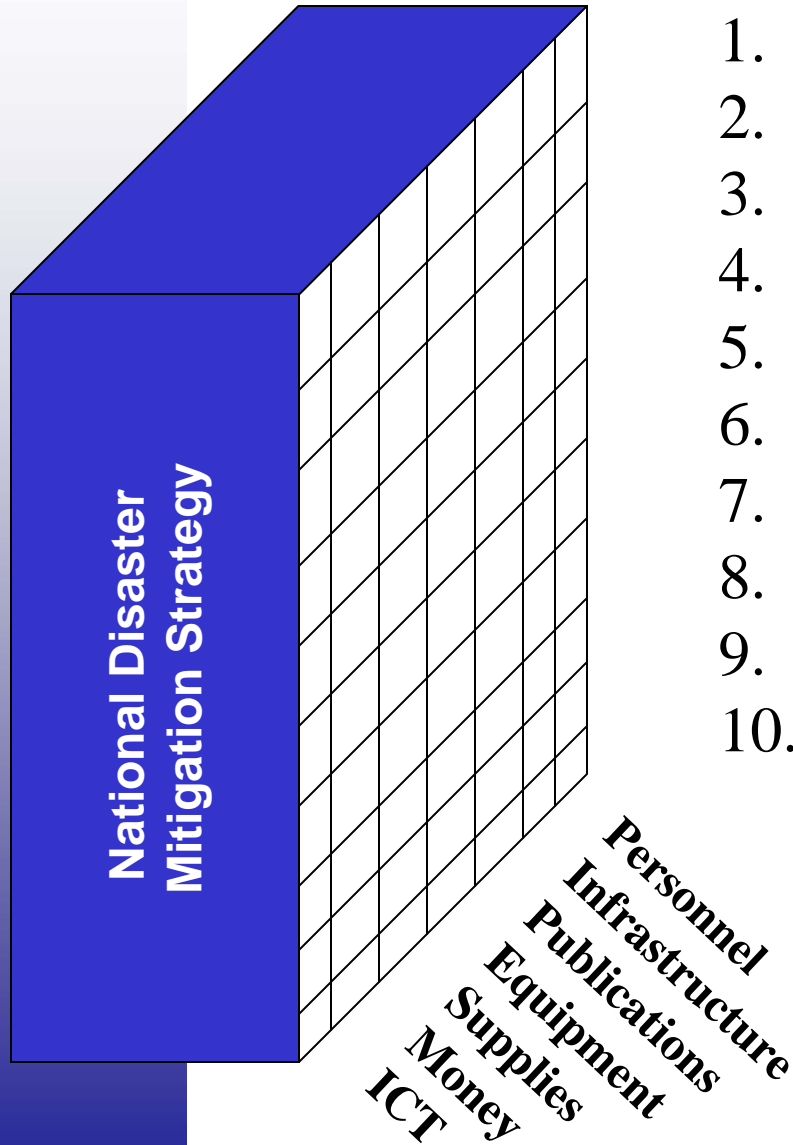- Citizens

HAZARDS

- Human Induced
- Natural

National Disaster Mitigation Strategy

nal Contagious Disease Plan

Mitigation   **Preparation**   **Response**   **Recovery**

FUNCTIONS

EMA - Emergency Management Alberta

Integrating the Dimensions

National Disaster Mitigation Strategy

Personnel
Infrastructure
Publications
Equipment
Supplies
Money
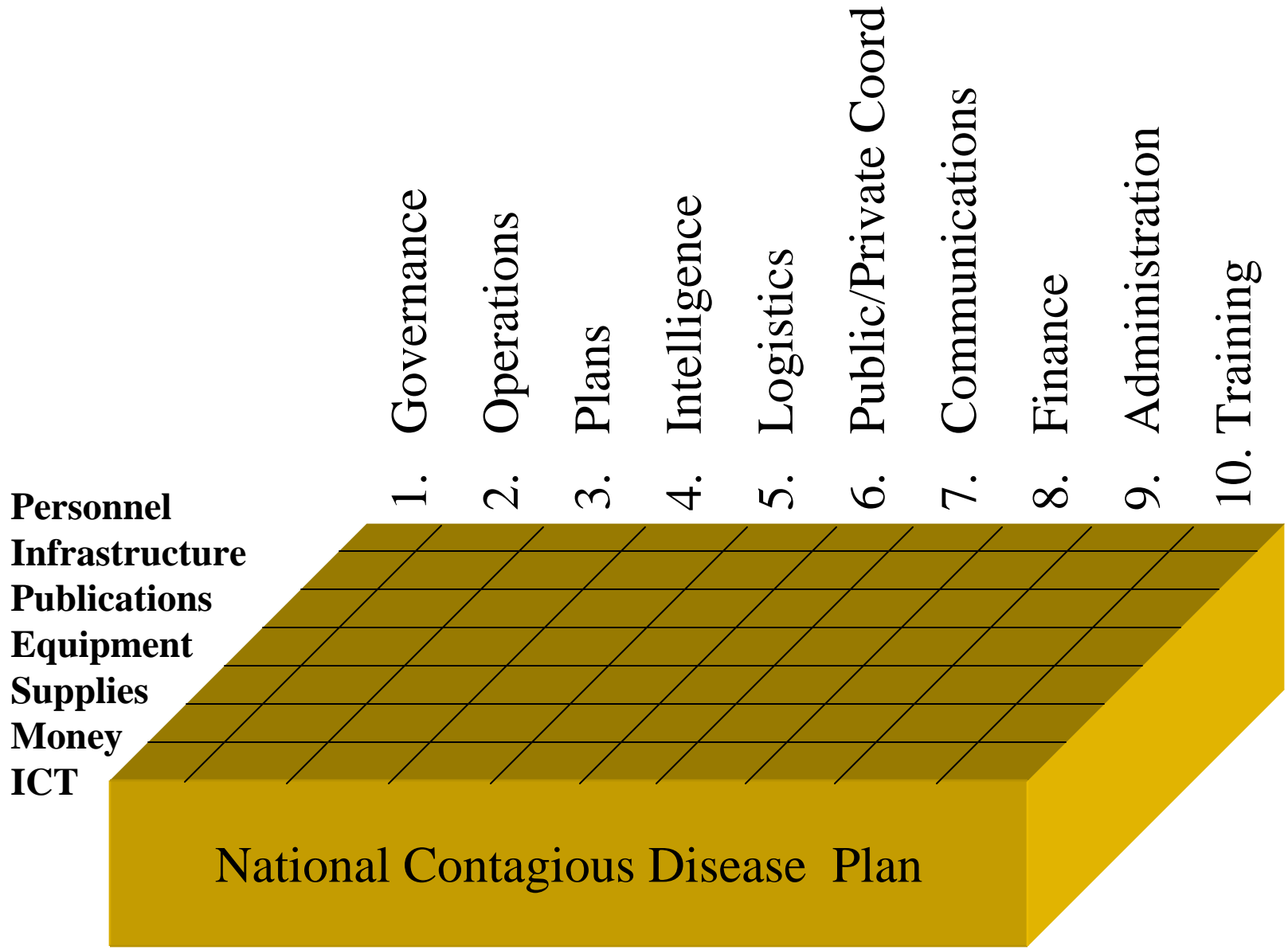ICT

1. Governance
2. Operations
3. Plans
4. Intelligence
5. Logistics
6. Public/Private Coord
7. Communications
8. Finance
9. Administration
10. Training

Alberta
Municipal Affairs

EMA - Emergency Management Alberta

Integrating the Dimensions

Personnel
Infrastructure
Publications
Equipment
Supplies
Money
ICT

1. Governance
2. Operations
3. Plans
4. Intelligence
5. Logistics
6. Public/Private Coord
7. Communications
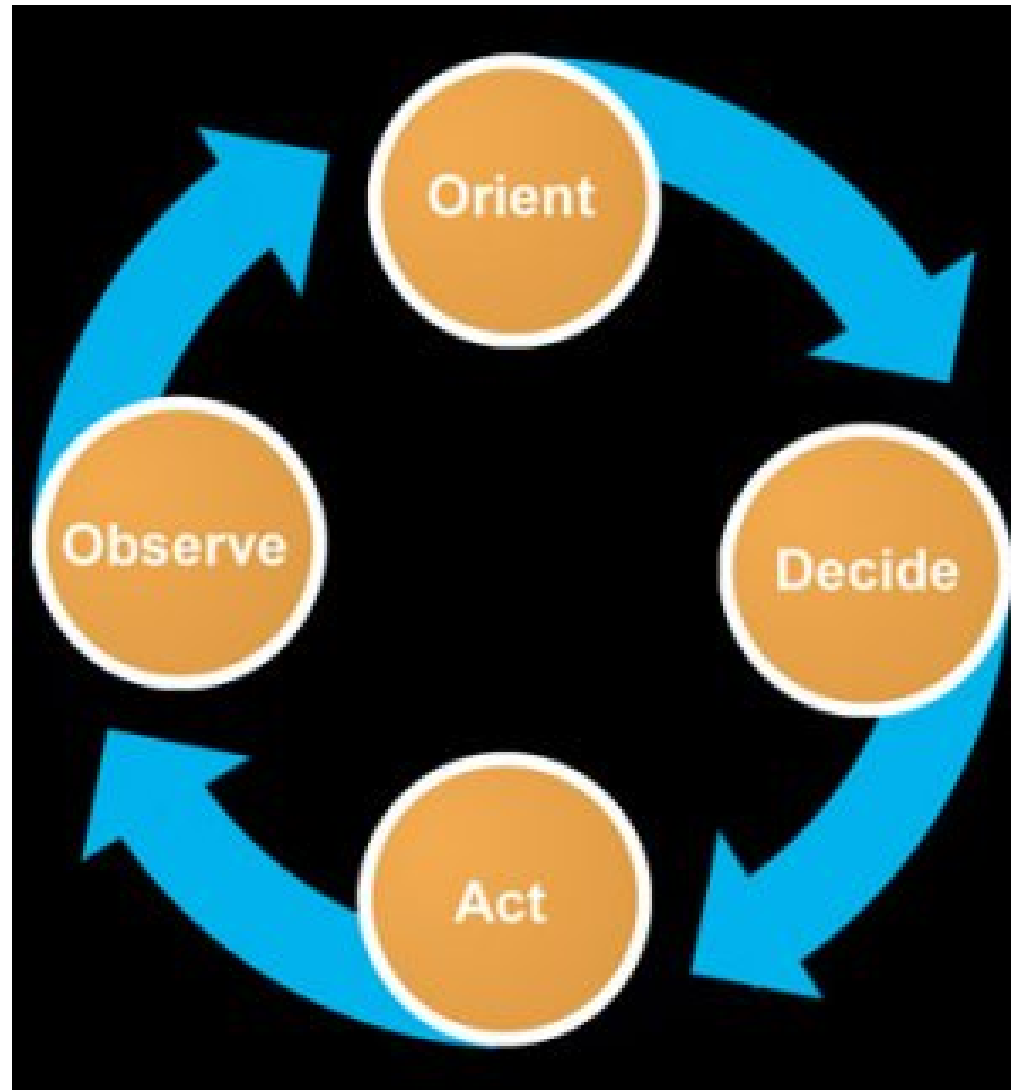8. Finance
9. Administration
10. Training

National Contagious Disease Plan

EMA - Emergency Management Alberta

Outline of Presentation

- Vision

- Concept/Philosophy

→ - Application

- Concluding Remarks

Boyd Cycle – the "OODA Loop"

Observe

- Implicit Guidance and Control
- Outside Information
- Unfolding Circumstances
- Unfolding Environmental Interaction

Gathering Information

Data by sector – static and dynamic
Single data entry shared often

Orient

- Analyze
  - Planning Process/Factor analysis
  - Traditions
  - Experience
  - New information

Analyzing the Situation

Decision Models
Planning and Response Algorithms
Single data entry shared often

Alberta
Municipal Affairs

Decide

- **Decision Making**
  - Isolation
  - Communication
  - Collaboration/Coordination
  - Integration/Synchronization

> **Decision Tracking**
>
> Tracking the decision and associated tasks
> Single data entry shared often

Act

- Projecting the decision
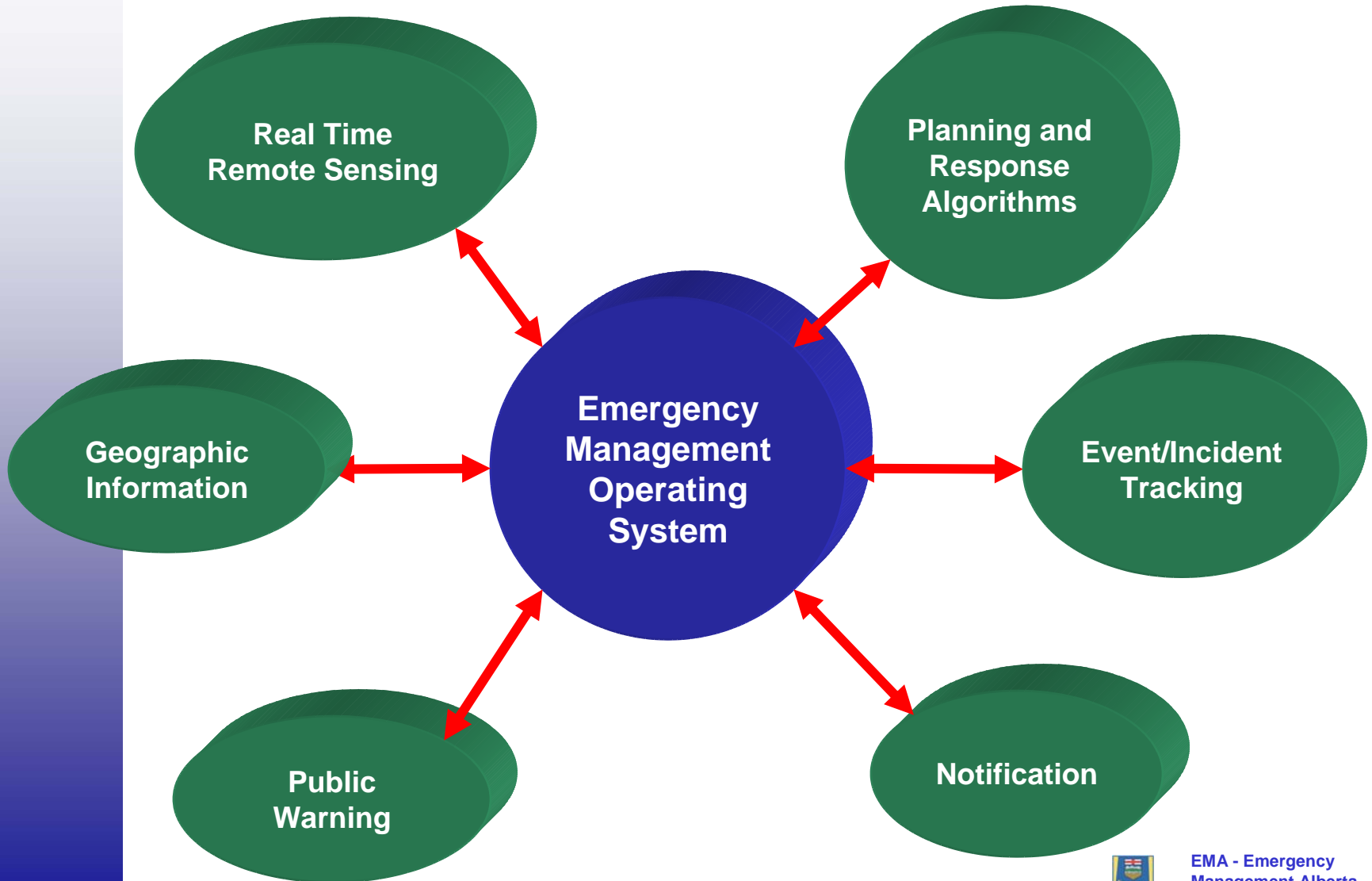- Unfolding Interaction with the environment

Action

Projecting action through available medium
Notification and Public Alerting
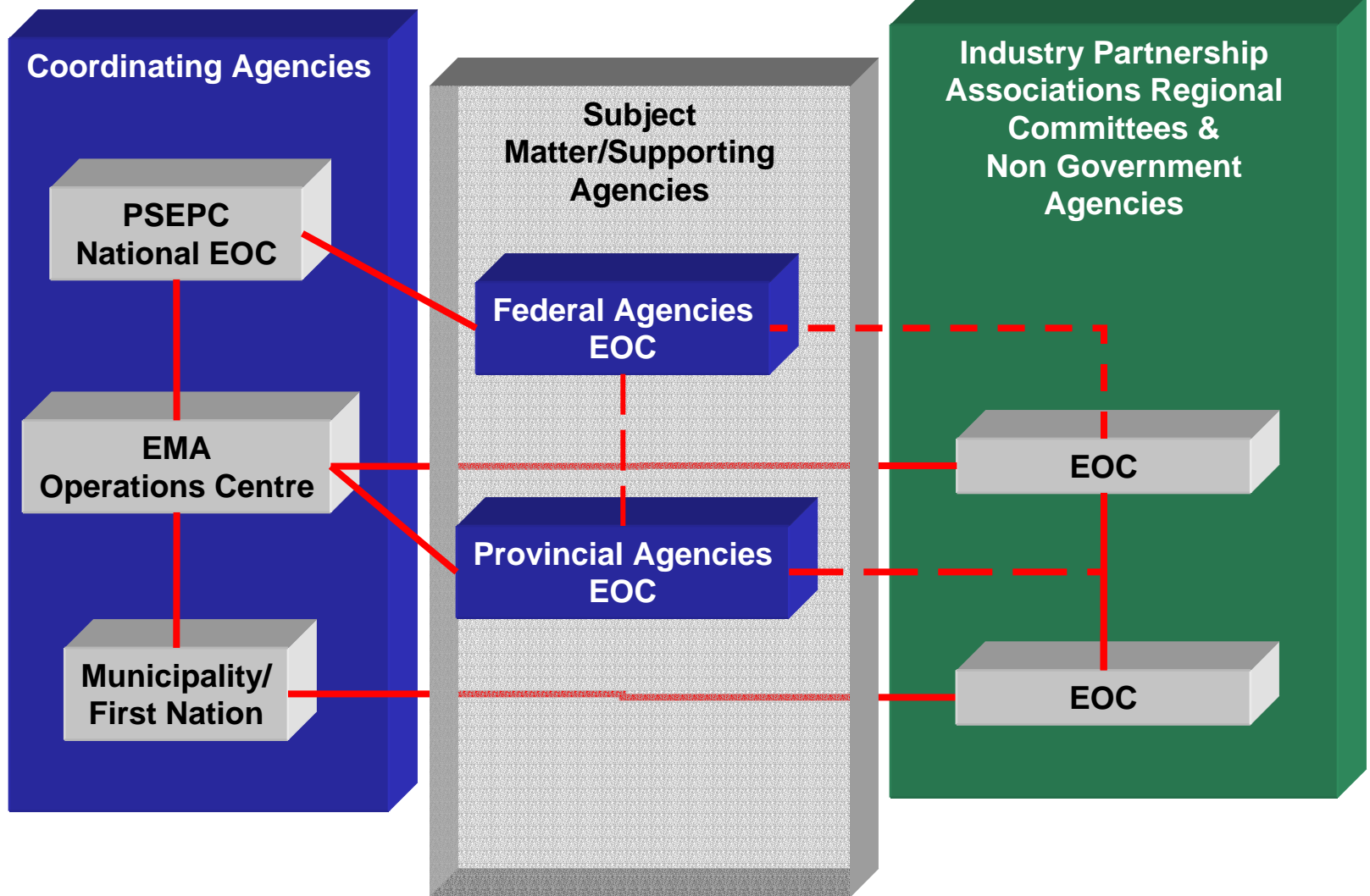Resource Tracking

Outline of Presentation

- Vision

- Concept/Philosophy

- Application

- Concluding Remarks

Vision

Alberta
Municipal Affairs

Real Time Remote Sensing

Planning and Response Algorithms

Geographic Information

Emergency Management Operating System

Event/Incident Tracking

Public Warning

Notification

EMA - Emergency Management Alberta

Concluding Remarks

- GIS provides tremendous potential to Decision Makers

- Vision linked to philosophy and process situates the need

- Cultural change from 'Need to *Know*' to 'Need to *Share*'

- Technology enables decision making and integration

EMA - Emergency Management Alberta

Emergency Management in Alberta

Philosophy and Framework
Transforming Government Conference
Edmonton, Alberta

Alberta Municipal Affairs

EMA - Emergency Management Alberta