

Disaster Management and Mitigation of Risk

“anything that can go wrong, will go wrong” Murphy’s Principle

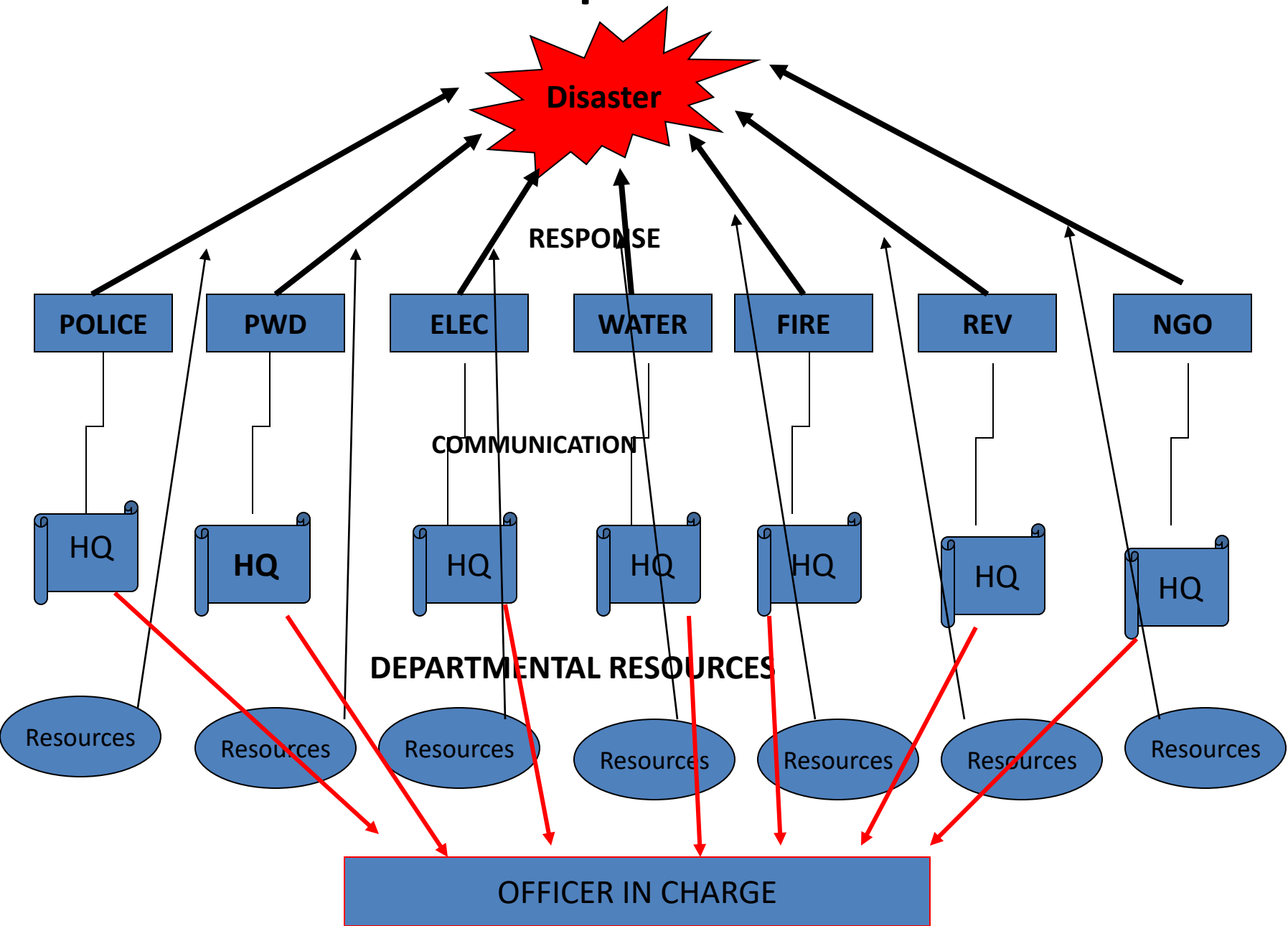


Dr W G Prasanna Kumar

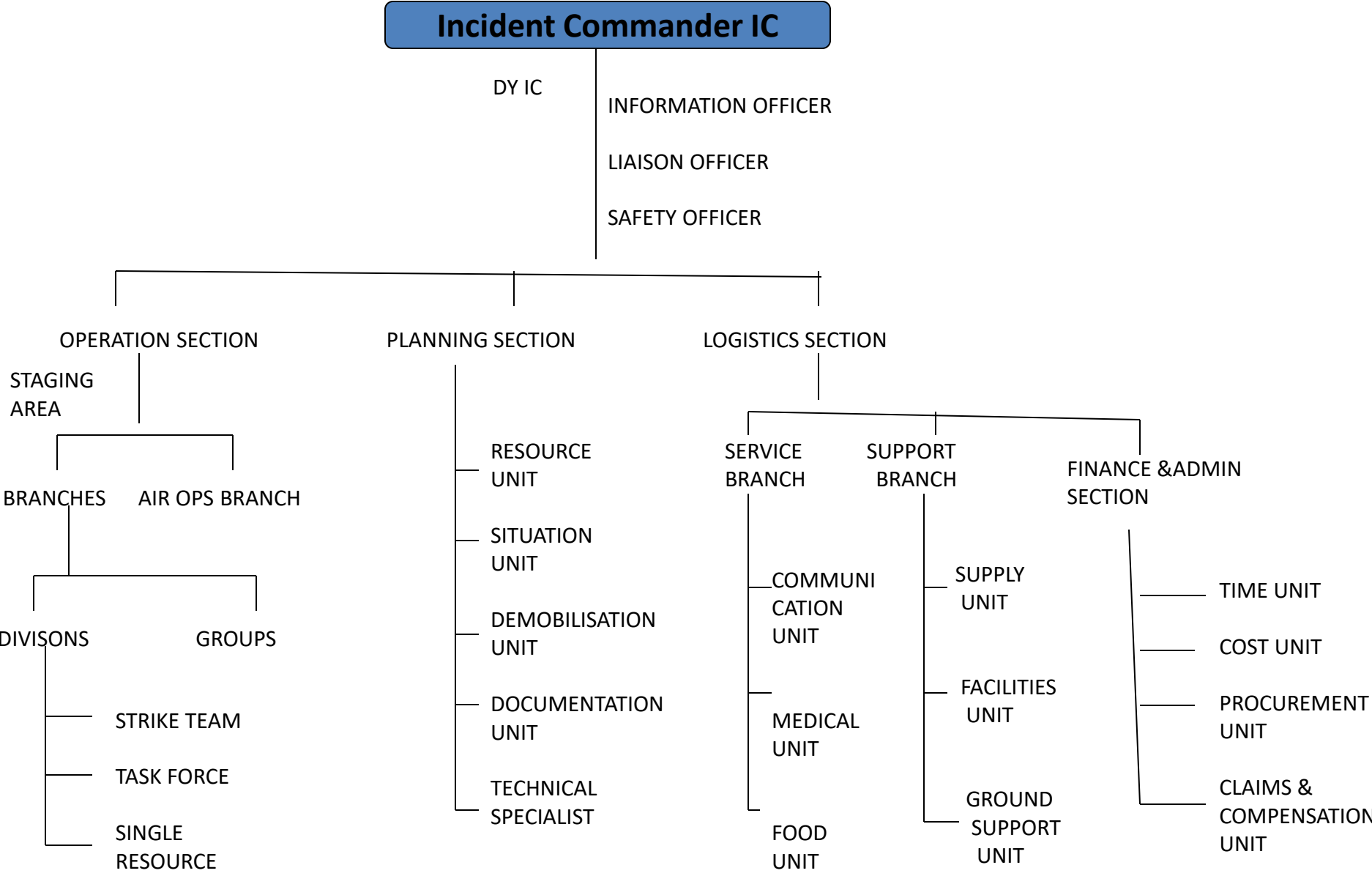
Chairman

Mahatma Gandhi National Council of Rural Education

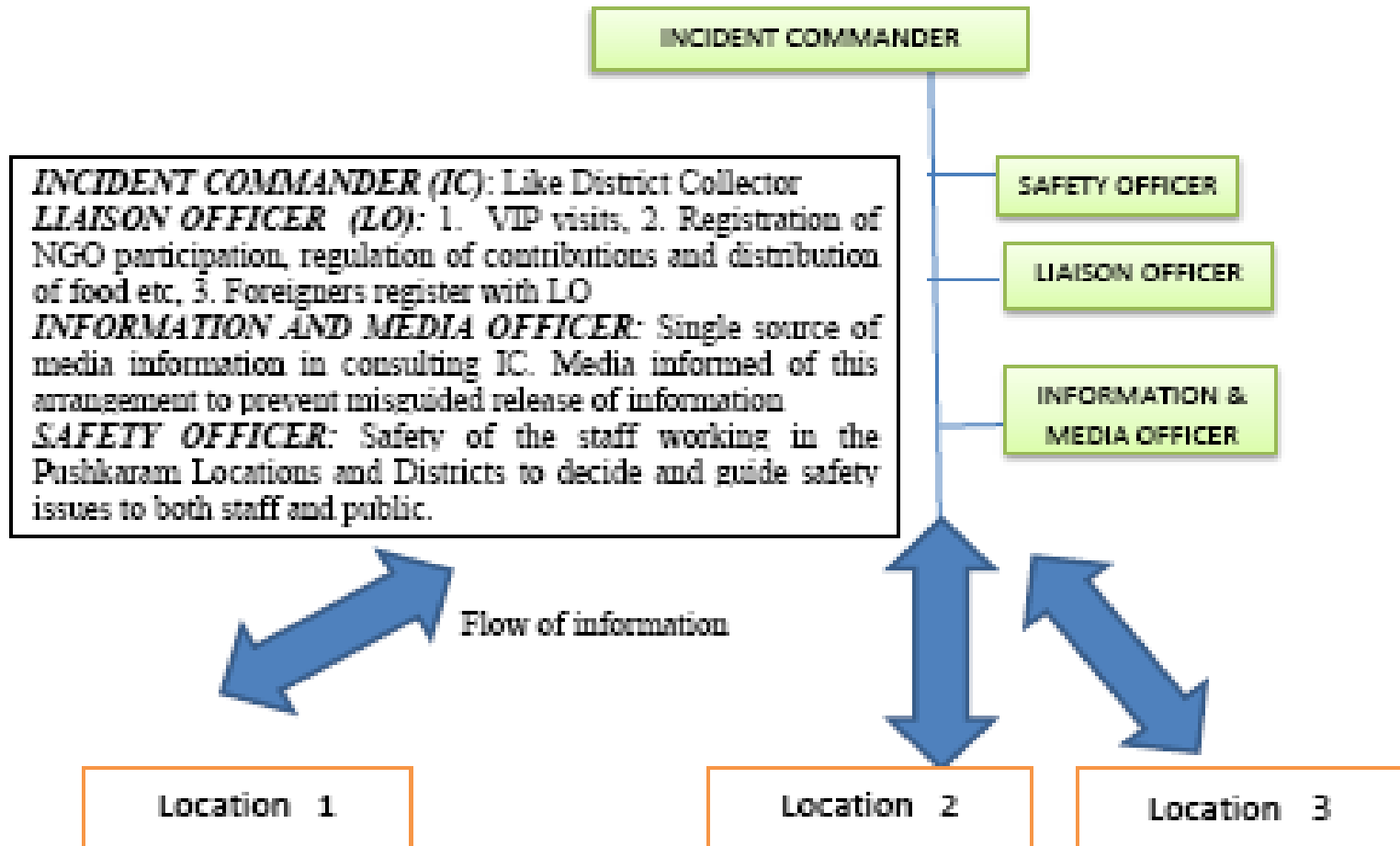
Present Response to Disasters



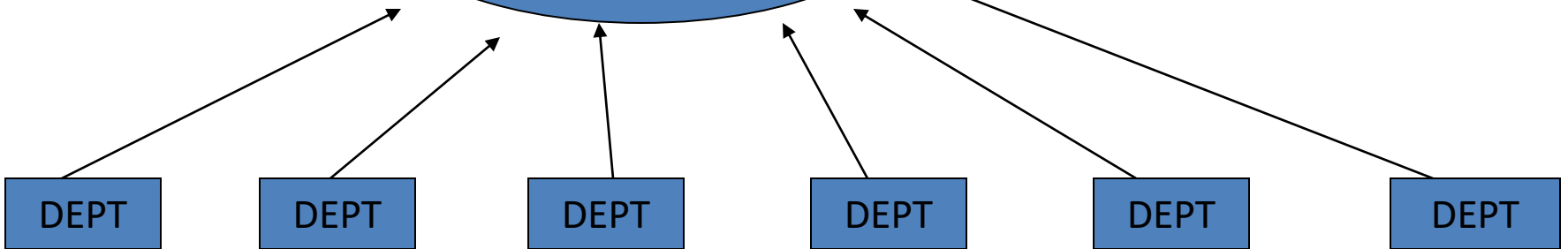
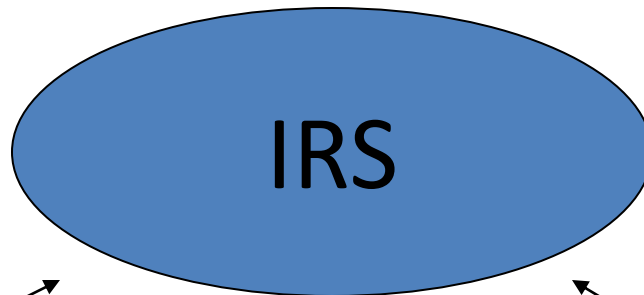
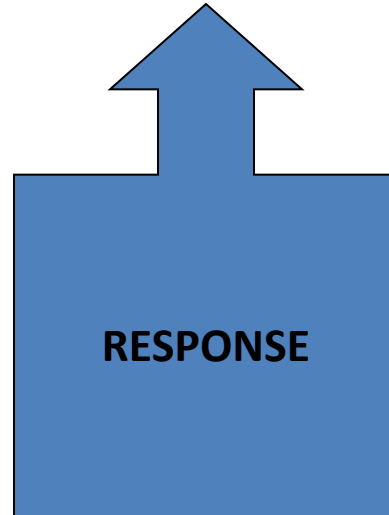
IRS-Incident Response System Standard Organization Structure



Incident Response System At the District Level



RESPONSE THROUGH IRS



IRS Staffing

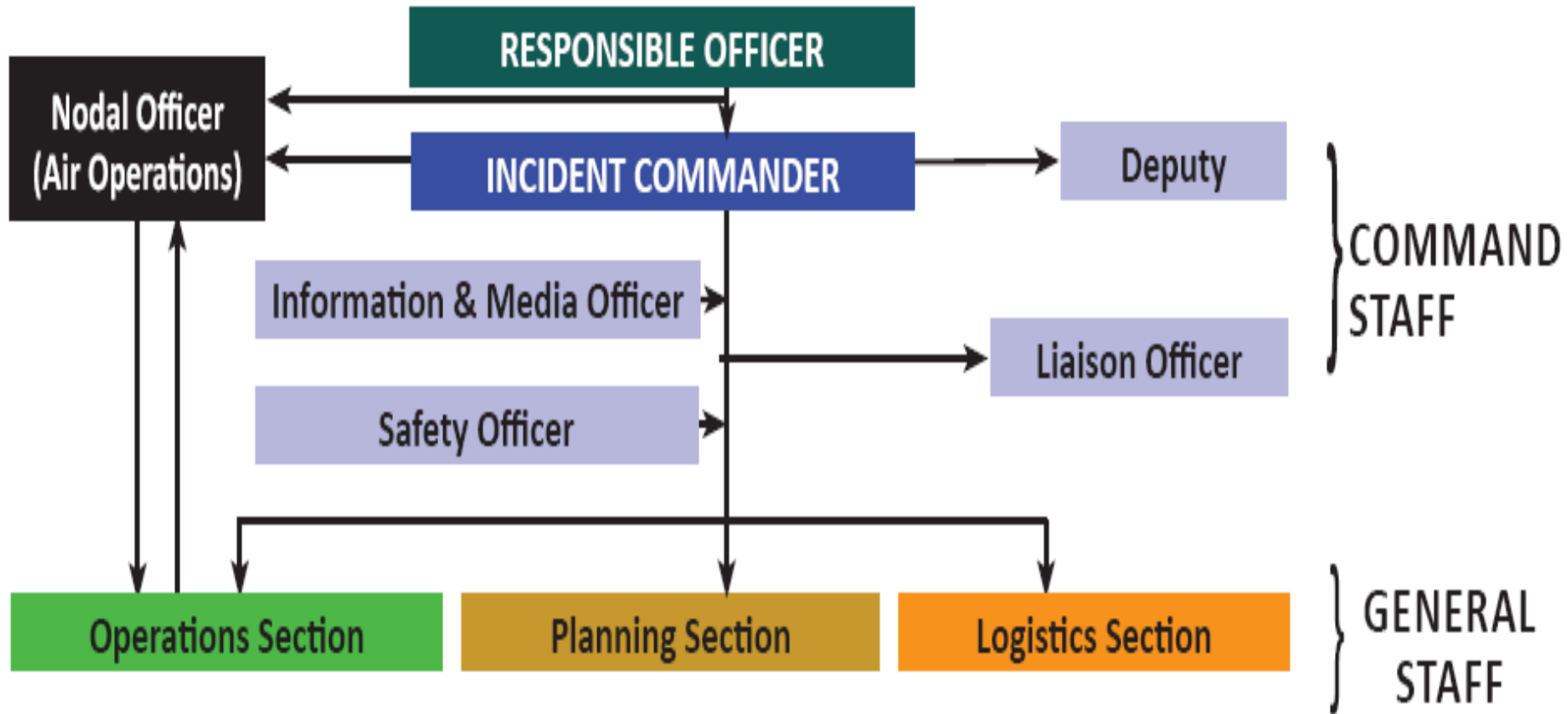


Fig. 1. IRS Organization

IRS: Standard Organization Structure

Incident Commander

BY INCIDENT COMMANCER

INFORMATION OFFICER

LIAISON OFFICER

SAFETY OFFICER

OPERATION SECTION

PLANNING SECTION

LOGISTICS SECTION

STAGING
AREA

BRANCHES

AIR OPS BR

DIVISIONS

GROUPS

STRIKE TEAM

TASK FORCE

SINGLE
RESOURCE

RESOURCE
UNIT

SITUATION
UNIT

DEMOBILISATION
UNIT

DOCUMENTATION
UNIT

TECHNICAL
SPECIALIST

SERVICE
BRANCH

COMN
UNIT

MEDICAL
UNIT

FOOD
UNIT

SUPPORT
BRANCH

SUPPLY
UNIT

FACILITIES
UNIT

GROUND
SUPPORT
UNIT

FINANCE & ADMIN
SECTION

TIME UNIT

COST UNIT

PROCUREMENT
UNIT

CLAIMS &
COMPENSATION
UNIT

Crowd Movements



Dangerous Crowding

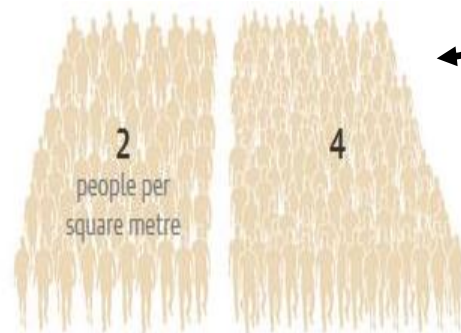


Infiltration, pass through, social group

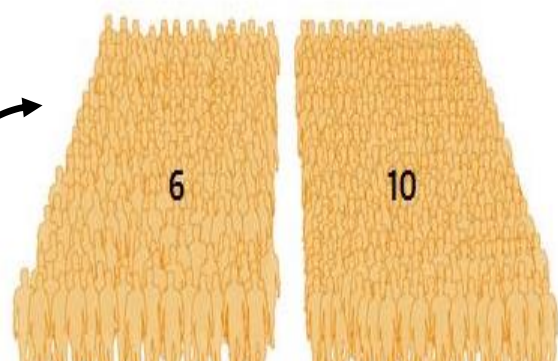


Attractions

Risk of accident in moving crowds



Low Risk:
Enough space to make decisions and move accordingly.



High Risk:
Tightly pack, no longer choose where y go and start behaving as a fluid.

People are squeezed to such an extent that y no longer inflate their lungs, and die of compressive asphyxiation.

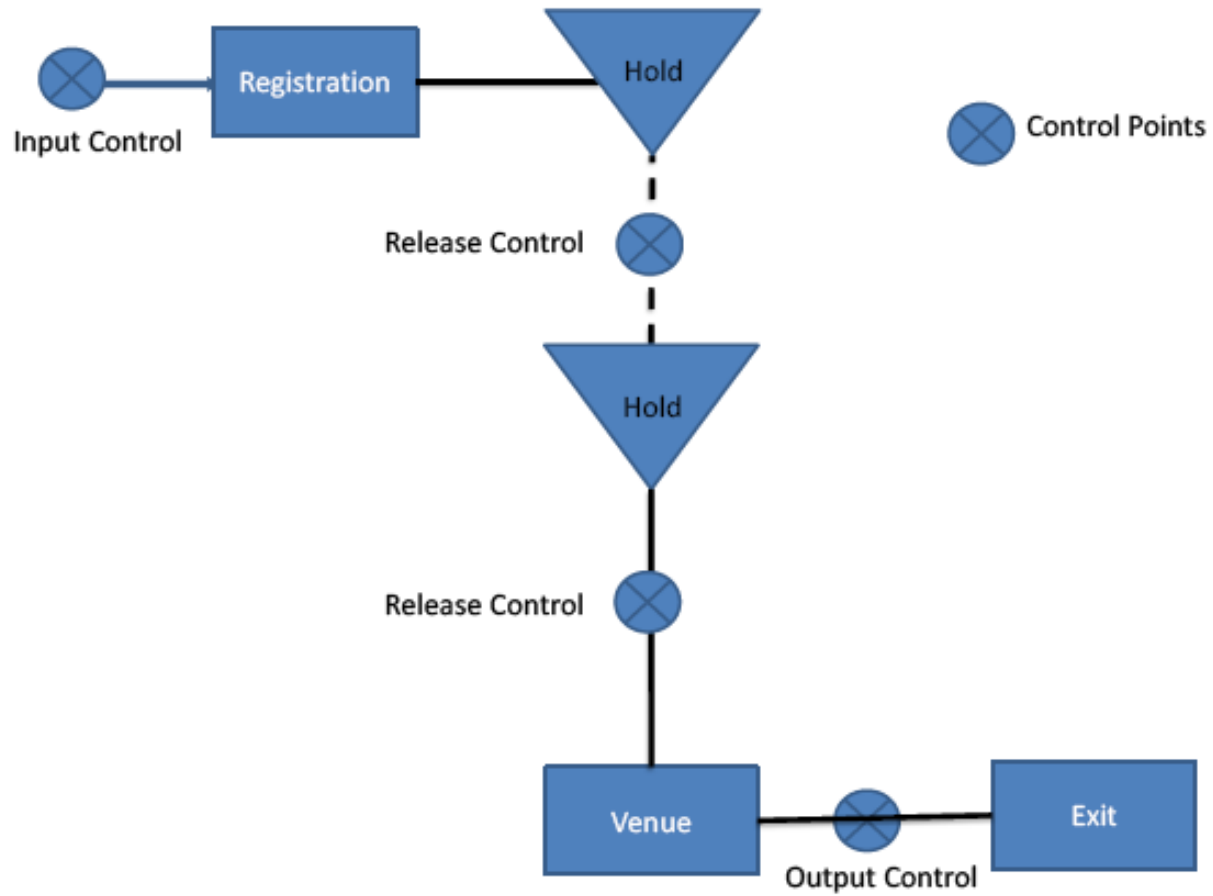
Source: Keith Still; Fire Safety Engineering Group, University of Greenwich

Open air Events and Venue consideration

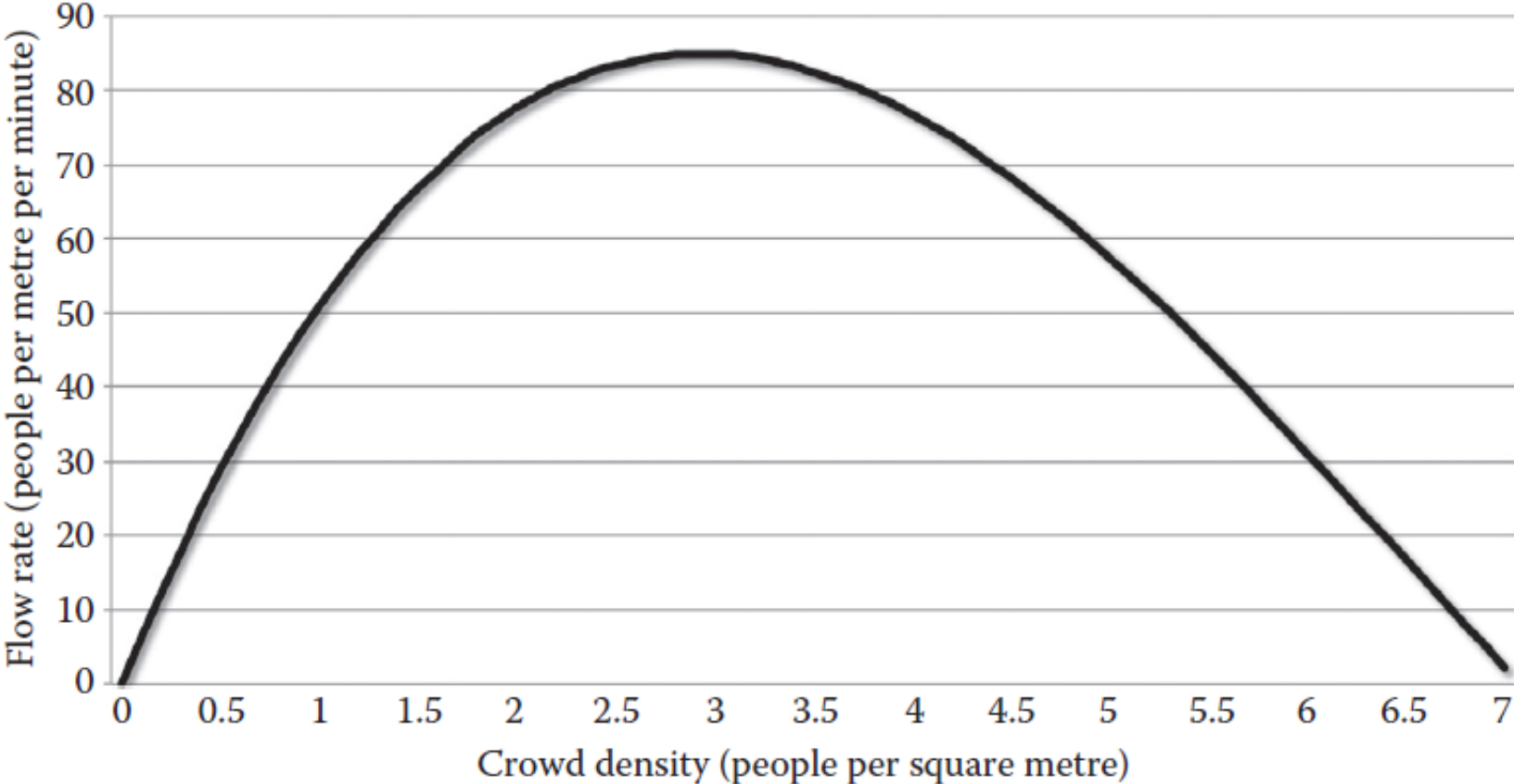
Occupied Area Type	Density (m²/P)
Standing Spectator	0.3
Assembly area/ Dance floor	0.5
Dining area/restaurant	1
Sports Area	2
Display gallery	5
Camping	6
Sales	2

State of queuing	Average space taken	Density (P/m²)
Free Flow	>0.65	1.54
Constant	<0.65 >0.28	>1.54 <3.27
Congestion	<0.28 >0.19	>3.27 <5.26
Stampede	<=0.19	>=5.26

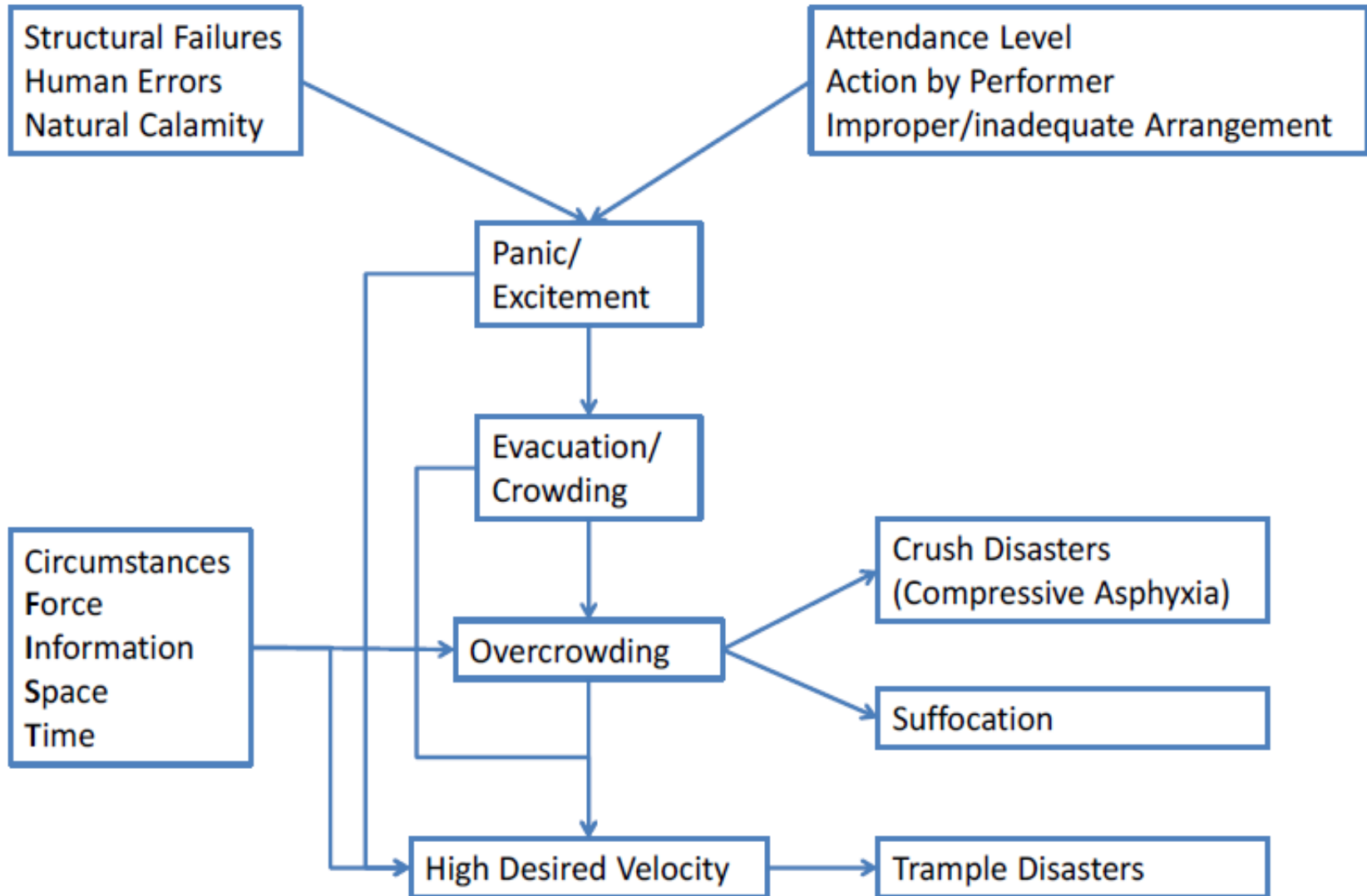
Crowd Control



Crowd density versus flow rates

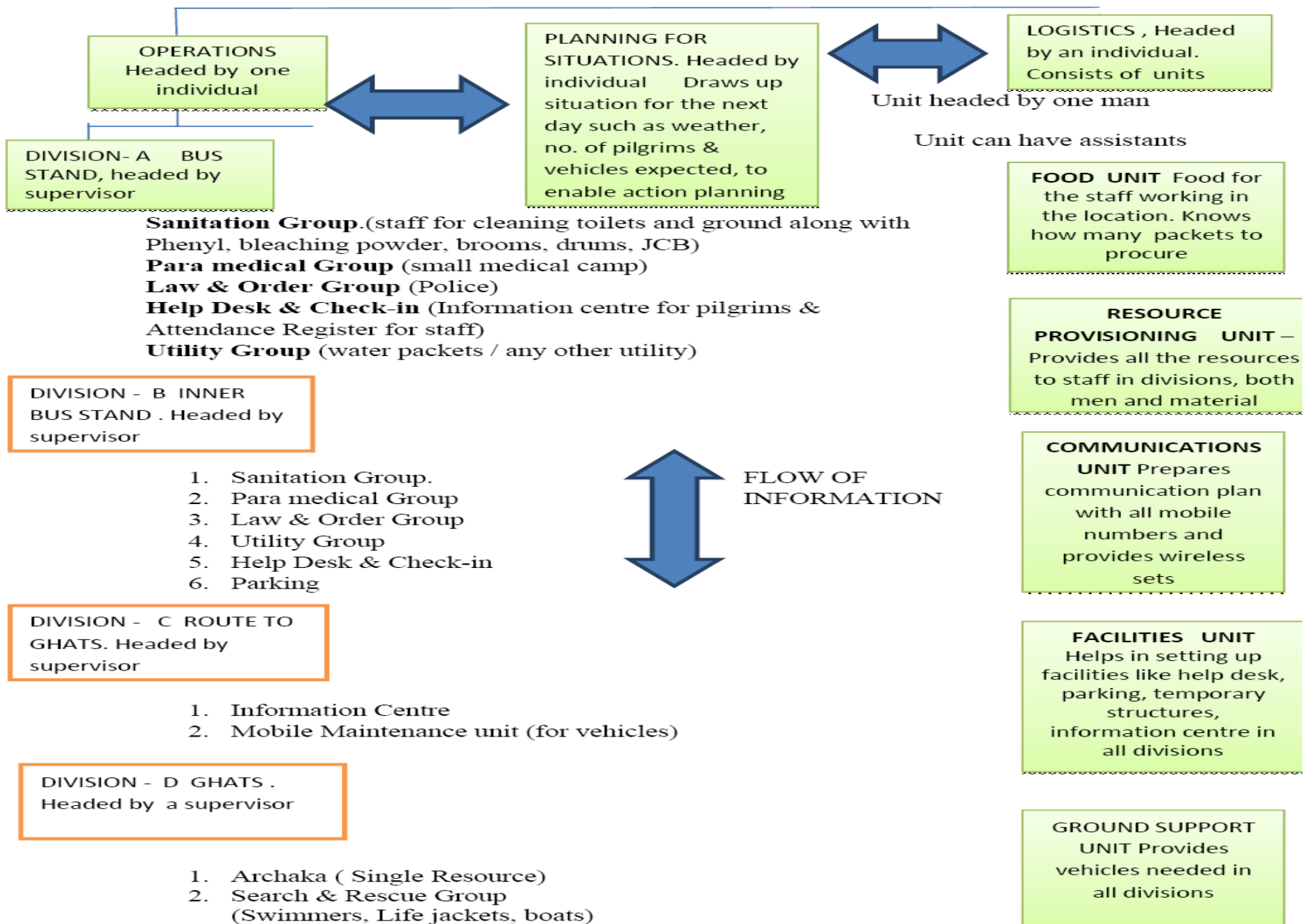


Crowd Disaster Process



INCIDENT RESPONSE SYSTEM FOR GODAVARI PUSHKARAM

Godavari Pushkaram: The Team at Each Location



Organisation of Pushkaram IRS

- Incident Commander (Collector/JC)
- Intelligence Officer (SP/ADDL SP/Police)
- Liaison Officer (DRO)
- Information and Media Officer(PRO)
- Safety Officer (Fire)
- Deputy Incident Commander (JC/RDO)
- Operation Section (SP)
- Planning Section (DIG/ Addl SP)
- Logistics Section (PD DRDA/Mpl Commr)
- Admin Section (DRO)



Problem Areas

- Inward Bus Stands
- Outward Bus Stands
- In Bus Stands
- Railway Stations
- Base Camps
- Enroute
- Event Venues
- Ghats
- Ritual Locations
- Temples
- Tourist Places



Before Stampede



Source and Destination



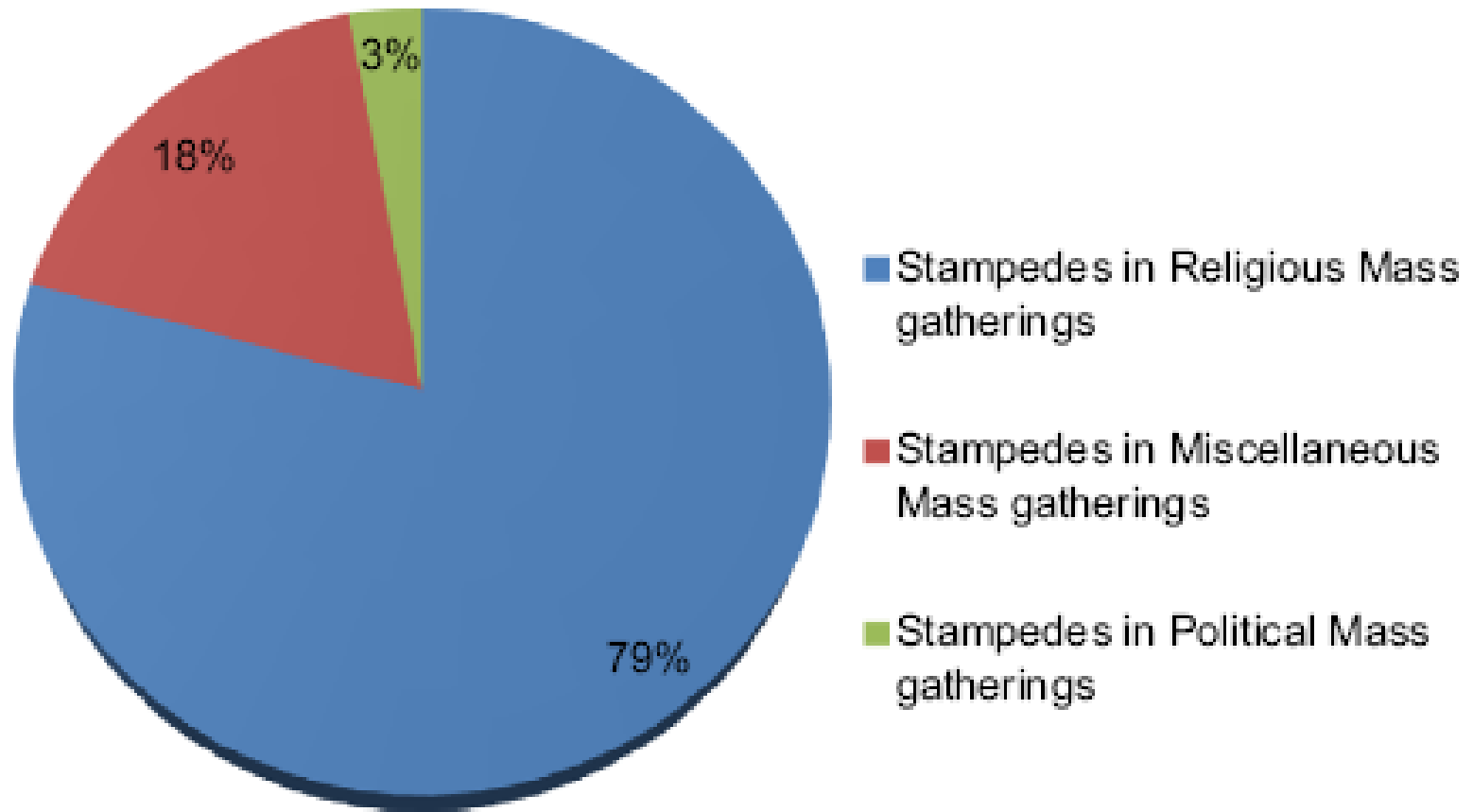
During Stampede Inside Outside



After Stampede



Stampedes and Deaths in India



Crowd Management

Short Comings in Crowd Management	Crowd Management Capacity Building
Inefficient deployment of staff and resources	Systematic and complete planning process
Unclear chain of command and supervision	Clear cut chain of command
Missing inter-agency coordination	Accountable incident response team members
Adhoc planning, no accountability and no training	Well thought out pre-designated roles for each member of the response team
Improper communication plan	Effective staff and resource management
Lack of orderly risk assessment, infringing into autonomy of systematic planning process, proper communication plan and inefficient use of available resources	System for effectively integrating independent agencies into the planning and command structure retaining concerned agency independence with coordinated communications
No integration of community resources, NGOs and professionals in response effort	Integration of local community resources and people in the response effort

Human Stampede Risk Reduction Framework for Mass Gathering Occurrences

Decision to hold the Event

Event Approval

Risk Assessment

Integrated Planning

Risk Reduction Measures

Event -religious, entertainment, political

Capacity of organizers

Crowd mood and age group

Available resources-estimation

Control room

Event Duration

Expected Crowd size

Spectators and their characteristics

Crowd density monitoring

Live Surveillance

Indoor/outdoor

Site visit

Weather and natural hazards

surge of people management

Venue Layout and sign boards

Location

Safety measures

Analysis of previous accidents

Competition control

Public addressing system

Historical incidents/Facilities

Licensing and permit

Accidents & Intentional acts

Bottle necks release

Emergency Services

Evacuation Plans

Safeguards & barriers

Medical Care Team

Exercise and review

Mass Gatherings

Organized at Same Location

Organized at Different Locations

Religious

Entertainment

Political

Miscellaneous

Annual festival

Special prayer days

Sport events

Celebrity shows

Rally/Procession

At Public Service points

All other



కమాండ్ కంట్రోల్ రూంలో ఏర్పాటు చేసిన స్క్రీన్ల ద్వారా జాతరకు వచ్చిన భక్తుల సంఖ్యను అంచనా వేస్తున్న పోలీసులు

DM Institutions and Structures

- DM ACT 2005
- NDMA: NDMP: National
- SDMA: SDMP: State
- DDMA: DDMP: District
- CITY: CDMP:
Municipality/Corporation
- VILLAGE: VDMP
- NDRF: FORCE: FUND
- SDRF: FORCE: FUND
- DDRF: FORCE: FUND



Risk Reduction: Emergency Preparedness

- Same Pictures..though different times..so prepare an emergency plan basing on the pictures
- Who does what in emergencies
- Post that which moves you in emergencies
- Majority people do not prepare for emergencies not more than 34%
- Gift an emergency preparedness kit first aid kit, response kit



Risk Reduction: Emergency Preparedness

- Read books on disasters and share them with others so that they get prepared
- Rotate the items in emergency kits as per seasons every change of seasons
- Honor the first responders
- Practice with lights off...battery off...stove off...food off...water off...plan alternates
- Share videos



Risk Reduction: Emergency Preparedness

- Swap roles
- Use preparedness items and change items and sell them off
- Demonstrate use of emergency items
- Take help of those whom we ignore generally..highly trained professionals..
- Update your emergency contacts list



Risk Reduction: Emergency Preparedness

- Inform that you are OK quickly
- Emergency foods practice
- Prepare school emergency kit for children
- Save the most valuable including your identity
- Be prepared with ...6 liters of water ...per person per dayfor three days emergency



Risk Reduction: Emergency Preparedness

- Practice your 30 seconds elevator speech on any issue ...on emergency preparedness..
- Get rid of unused medicine periodically
- Be a volunteer for the neighbourhood
- Get into a car free day ..full walk day..bicycle day
- Have emergency preparedness for your pets and domestic animals



Risk Reduction: Emergency Preparedness

- Learn how to shut off the lights, power, gas, water main valve...
- Living with that poop and pee around
- Family emergency preparation plan



Risk Reduction: Emergency Preparedness

- Map your neighbourhood skills...manpower, equipment, facilities
- Go one day without....no coffee day..no meat day...no meal day...
- Make think prepared part of your everyday life



THANK YOU

