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IOWave25

1.c. Background Tsunami Warning Chains and SOPs Roles and Responsibilities

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Roles & Responsibilities in The Tsunami warning chain

Pre-IOWave25 Workshops on Standard Operating Procedures for NTCs and DMOs
Hybrid – August 2025

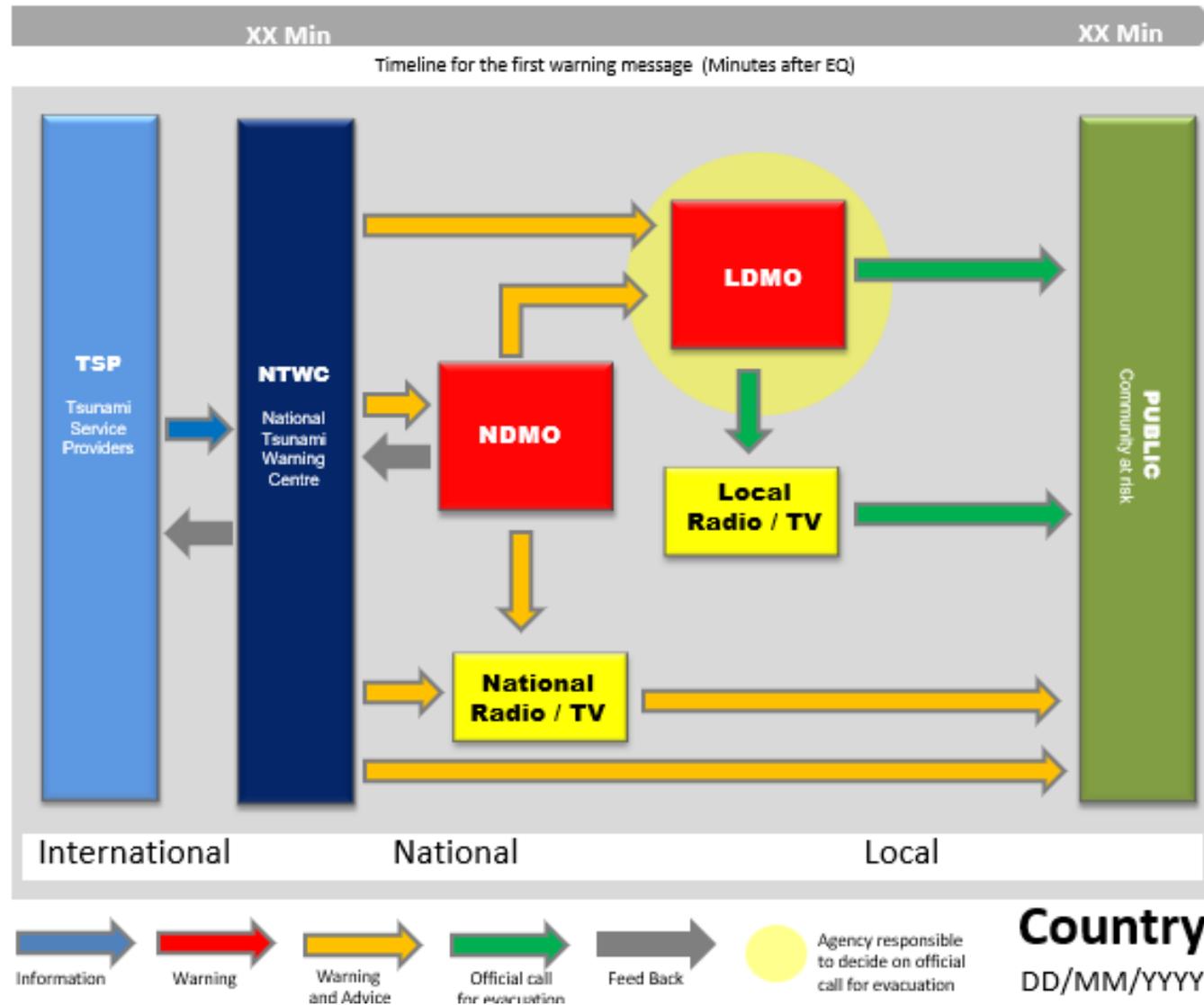


Main actors, overall flow of information and time frame



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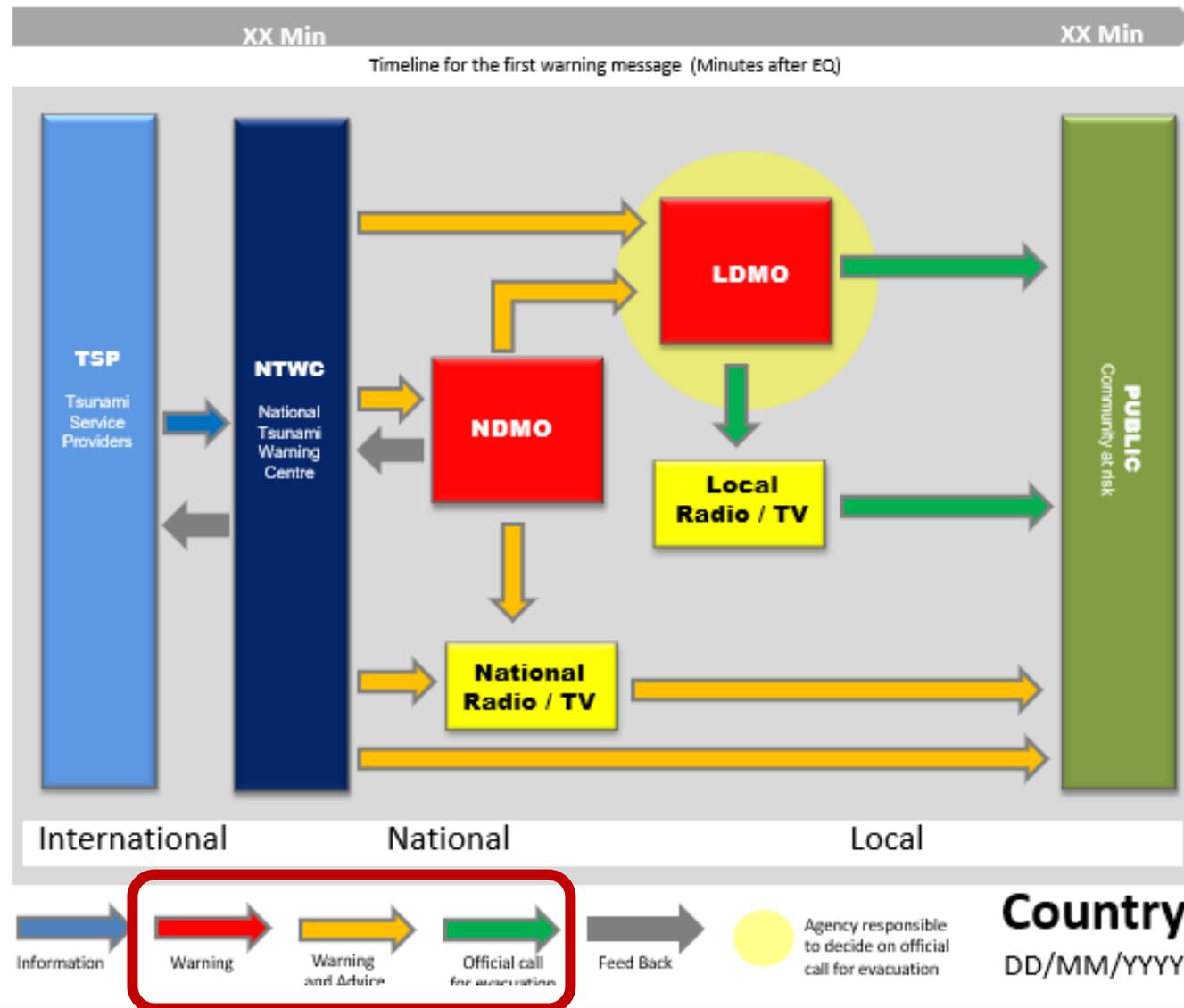


Types of Information: Warning, Advice & Call for Evacuation



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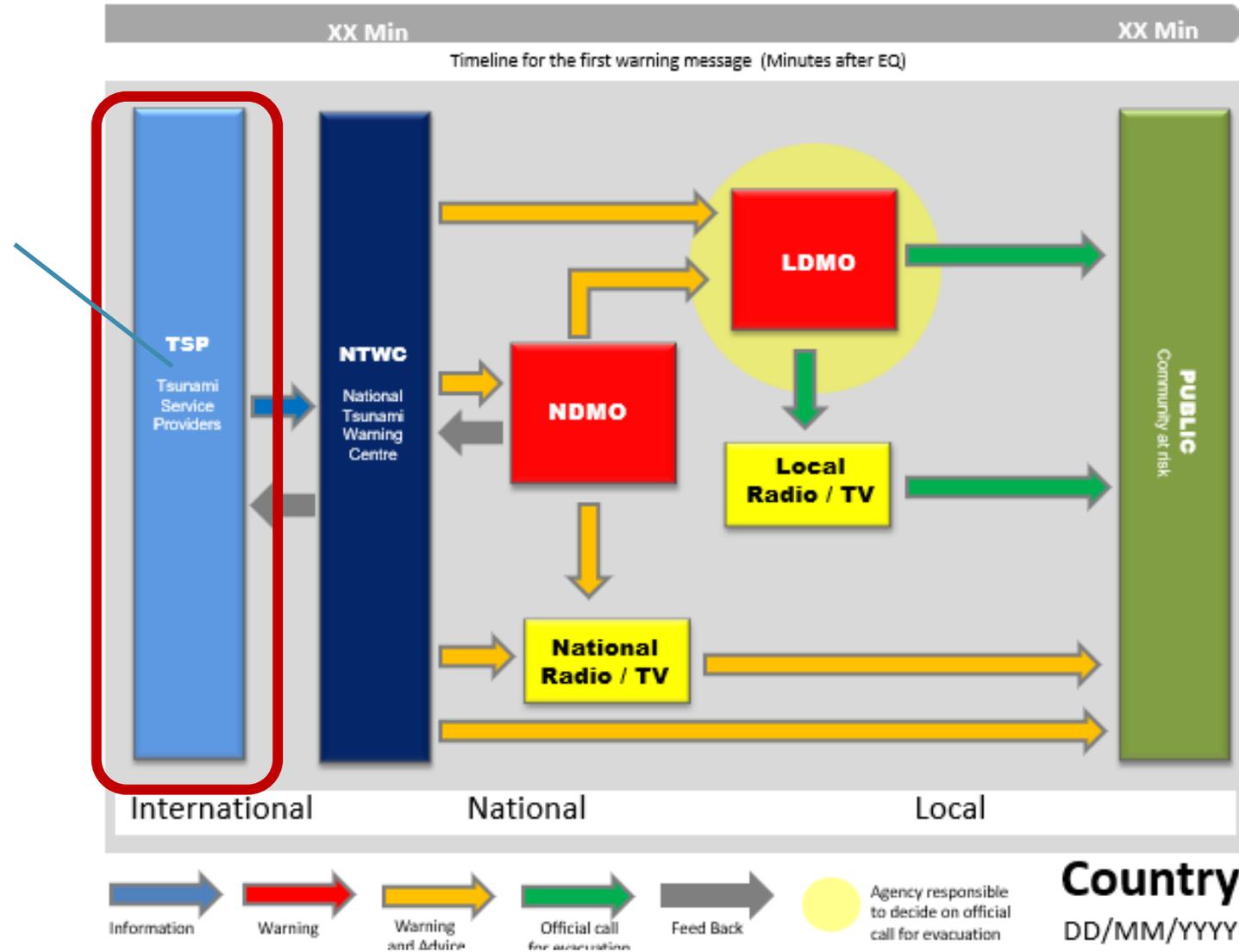
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Roles & Responsibilities

TSP

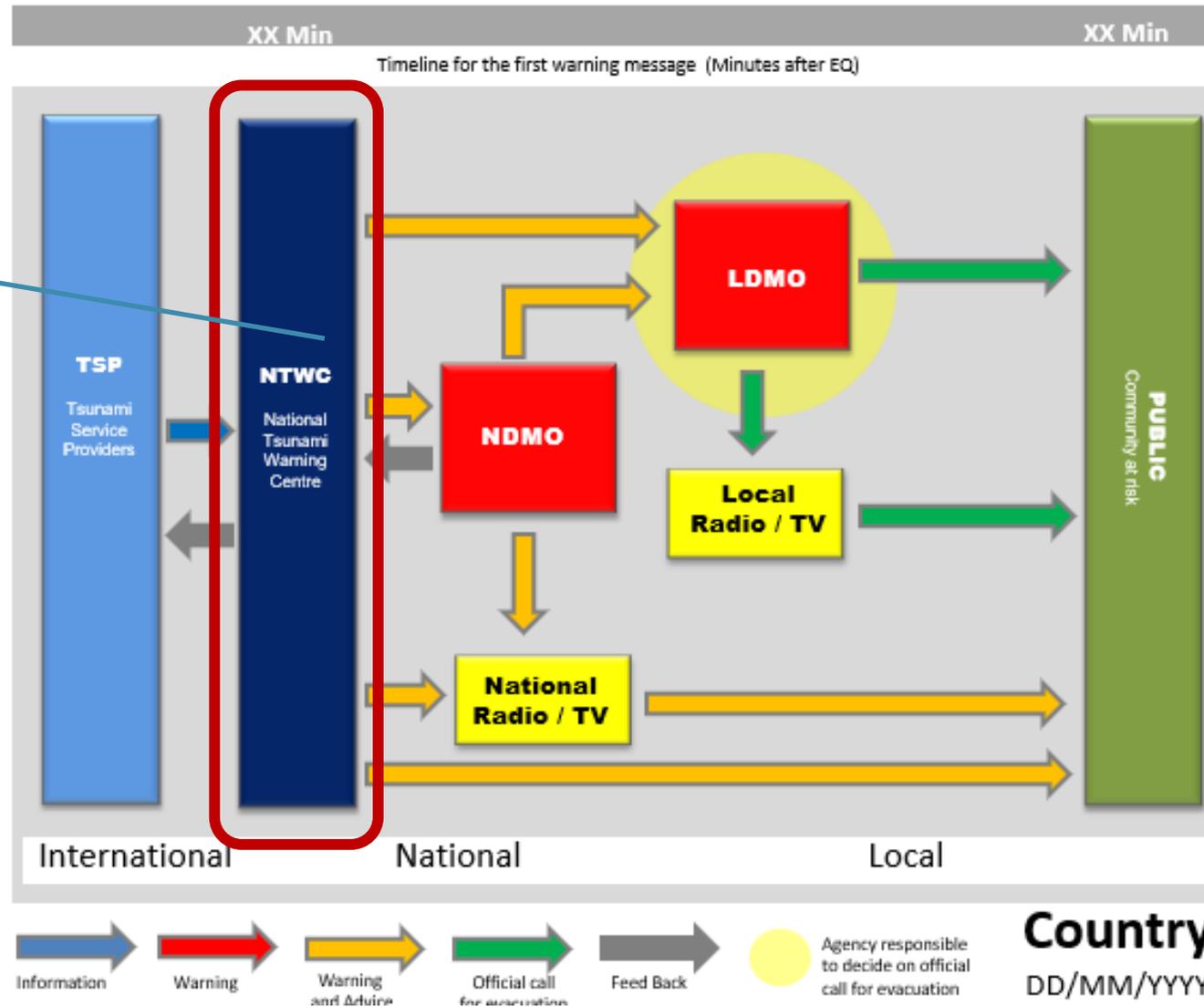
- Monitoring & detection
- Provide timely earthquake and tsunami threat forecast information as guidance to NTWCs for use in preparing and issuing of national tsunami warnings
- Provide timely **observed tsunami wave** amplitude data for use by other TSPs and NTWCs
- Provide 'Final Bulletin' once the threat is over



Roles & Responsibilities

NTWC

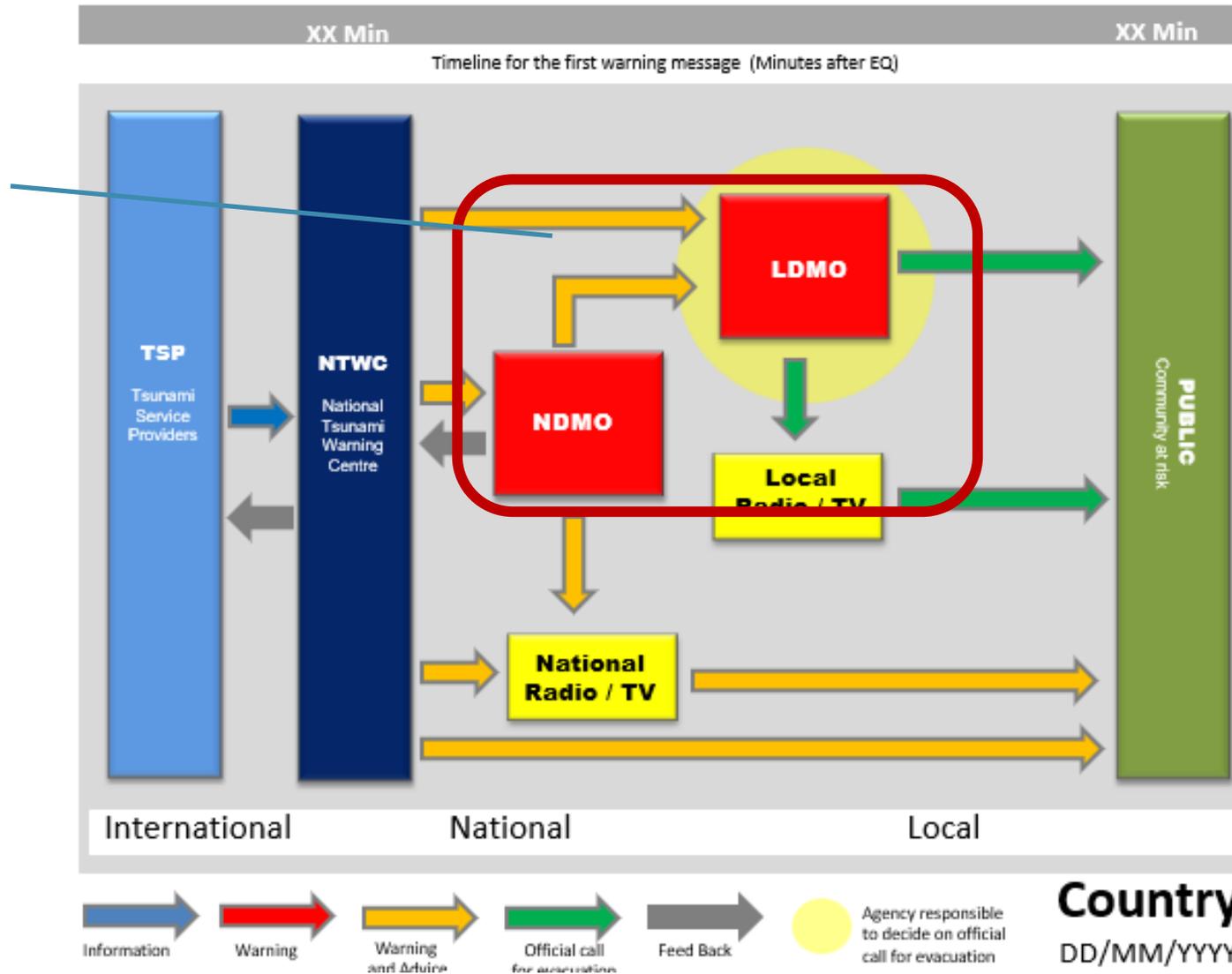
- Monitoring & detection
- Receive TSP threat information
- Decision on national warning (level)
- Issue warnings to DMOs & Media (and Public)
- Provide “Final Warning” (End of Threat or Threat Passed) once the threat is over



Roles & Responsibilities

N/LDMO

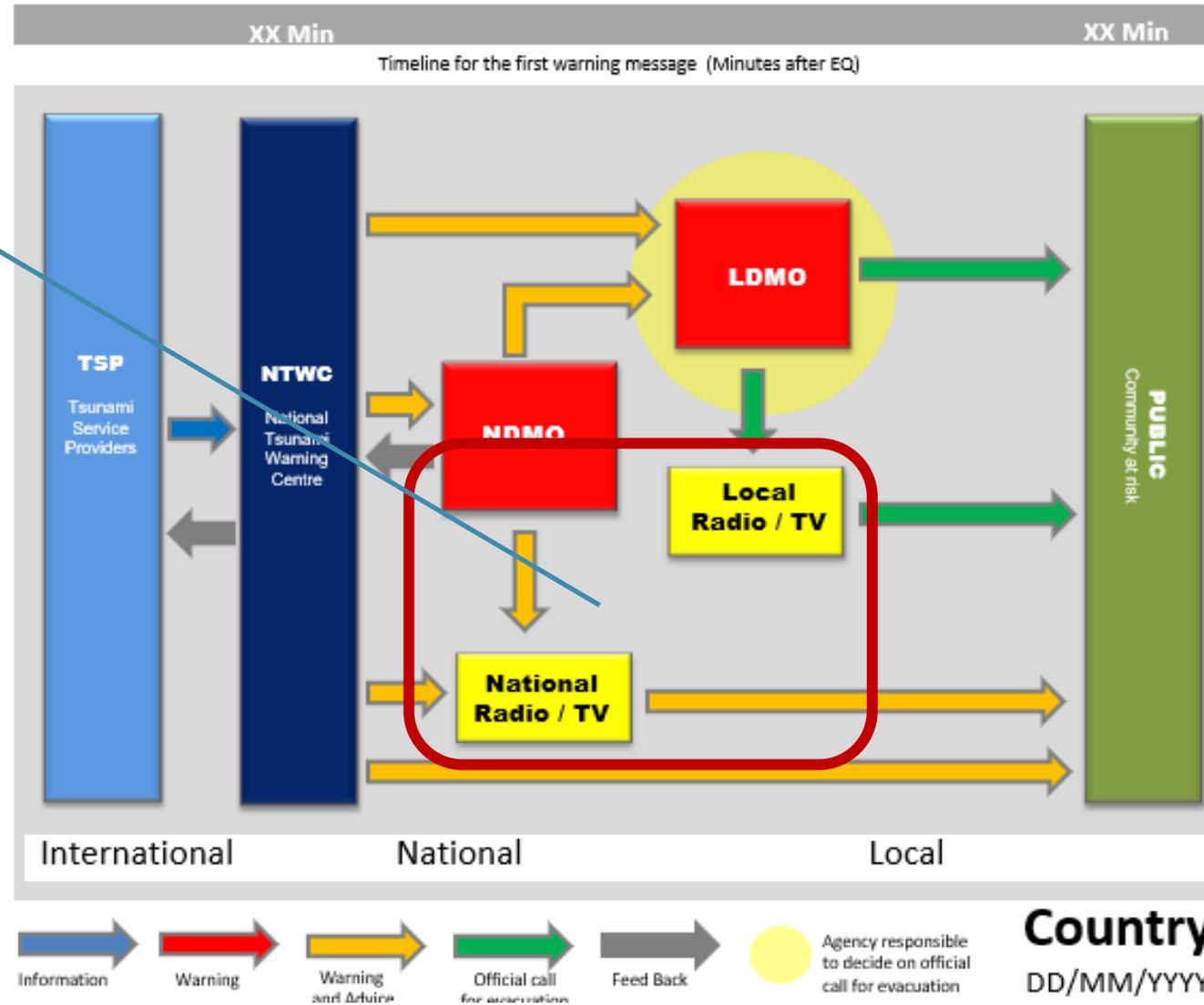
- Receive warnings from NTWC
- Decide on appropriate action and evacuations
- Communicate the warnings, with instructions, via public alerting systems (incl. sirens) and the Broadcast Media
- Communicate 'All Clear' once the threat is over and safe to return to any impacted areas



Roles & Responsibilities

BROADCAST MEDIA

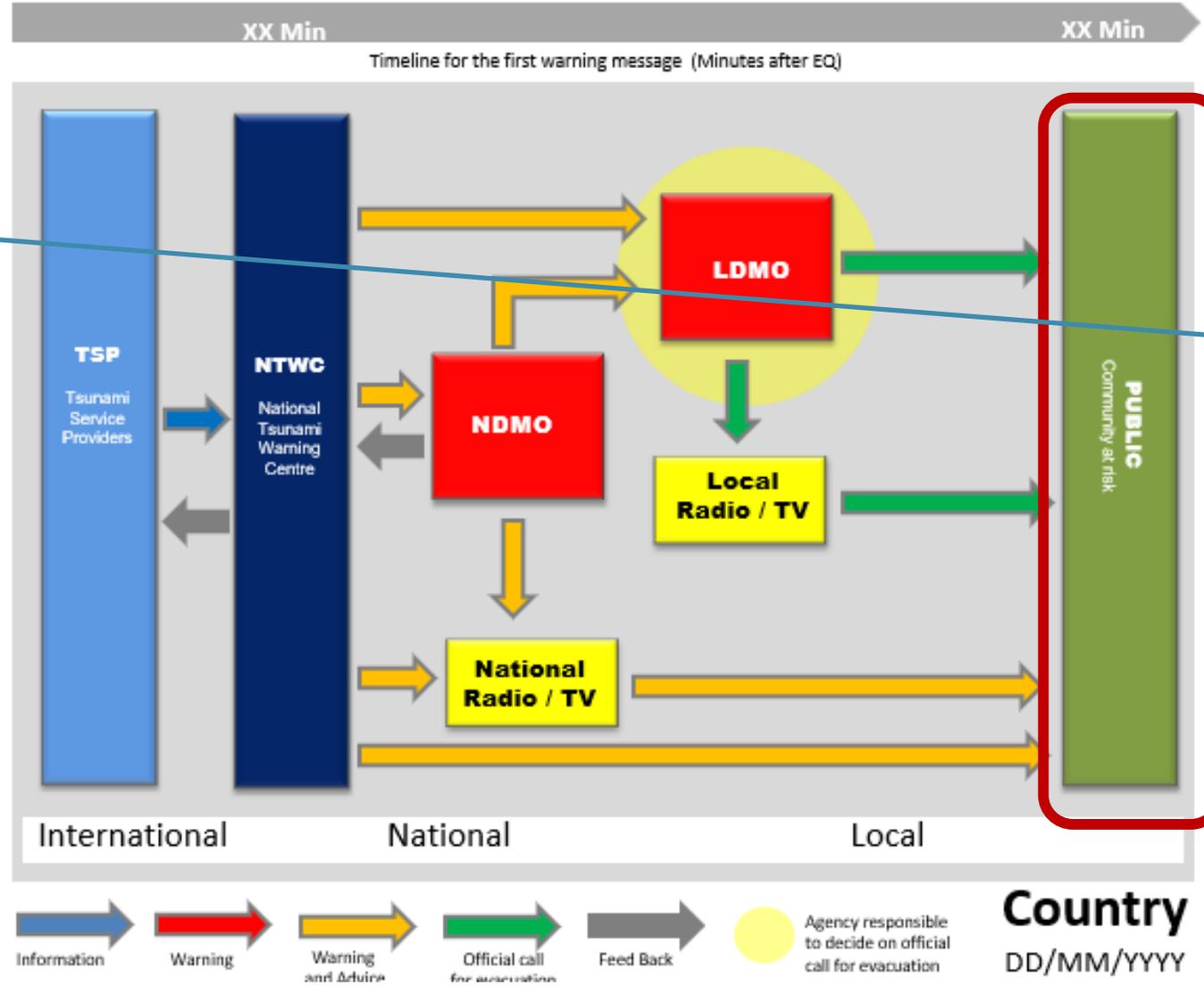
- Receive warnings from official sources (NTWC / national or local DMOs)
- Broadcast warnings (immediately / timely)
- On advice from the authorities help inform public once the threat is over and safe to return to impacted areas



Roles & Responsibilities

PUBLIC

- Understand and react on natural warning signs
- Able to access and understand official warnings
- Response to warnings following local evacuation procedures or “thumb rules” in case no evacuation zones are defined
- Stay out of impact zones until “all clear” is provided





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Operating Tsunami Warning chains by Standard Operating Procedures

Pre-IOWave25 Workshops on Standard Operating Procedures for NTWCs and DMOs
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Definition: Standard Operating Procedure (SOP)

A SOP is a written document that describes the **actions to be taken in a system or process**. A SOP describes each individual activity in a sequence of activities, documenting **who does what, when, where, and how** for each activity.

Source: IOC Manuals and Guides, 76

Definition: Standard Operating Procedure (SOP)

“A description and **procedure on agreed steps** by institutions used in coordinating **who, what, when, where** and **how** for tsunami early warning and response”.

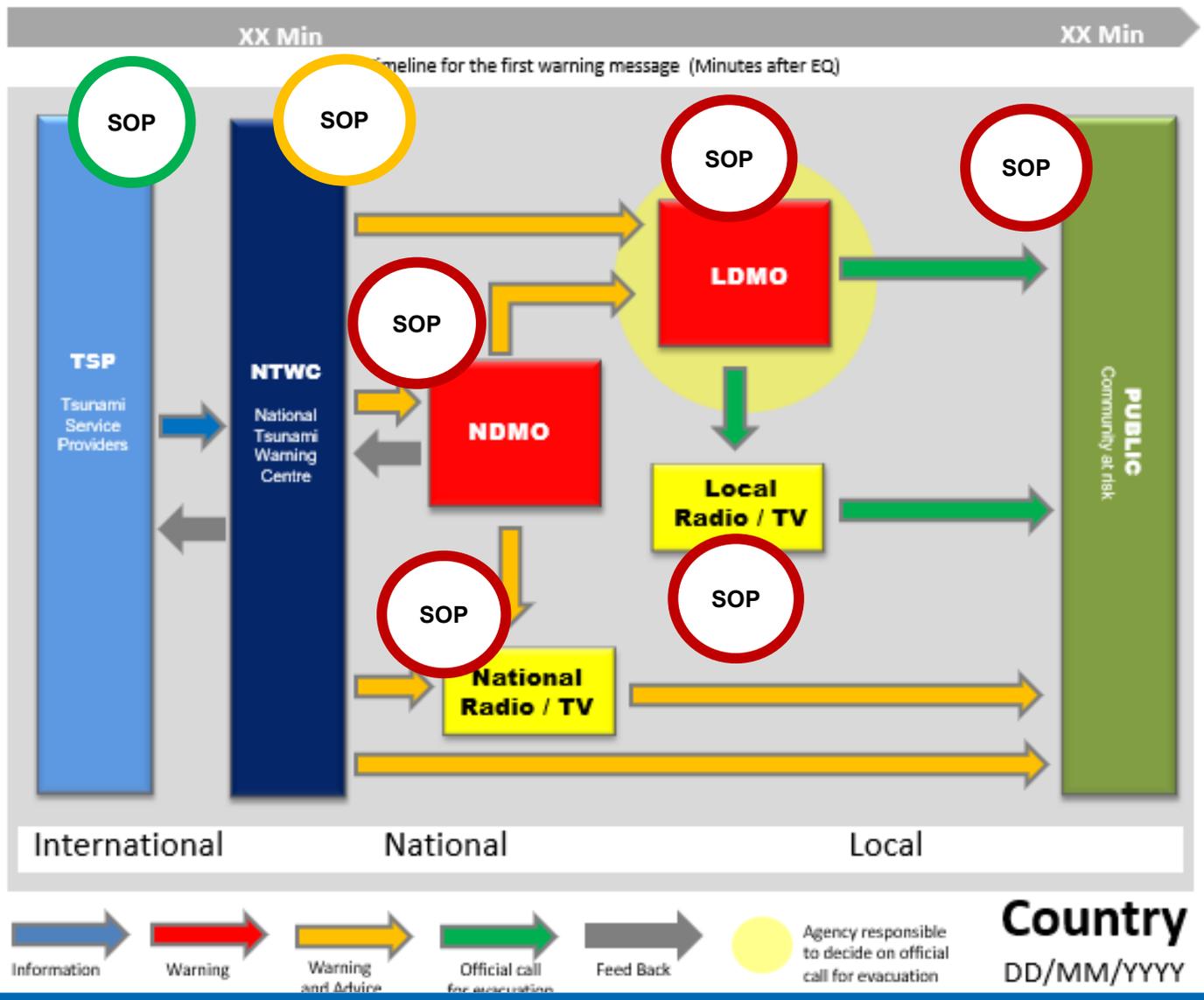
Source: SOP Workshop Indonesia

Definition: Standard Operating Procedure (SOP)

“To identify, coordinate, integrate and document, in a logical order or sequential, a **standard set of steps** to be followed **to ensure tasks are performed in the same way** and to the **same standard each time**”.

Source: SSOP Reference Guide, ESCAP/WMO Typhoon Committee, 2015

Tsunami warning chain is operated by institutional SOPs

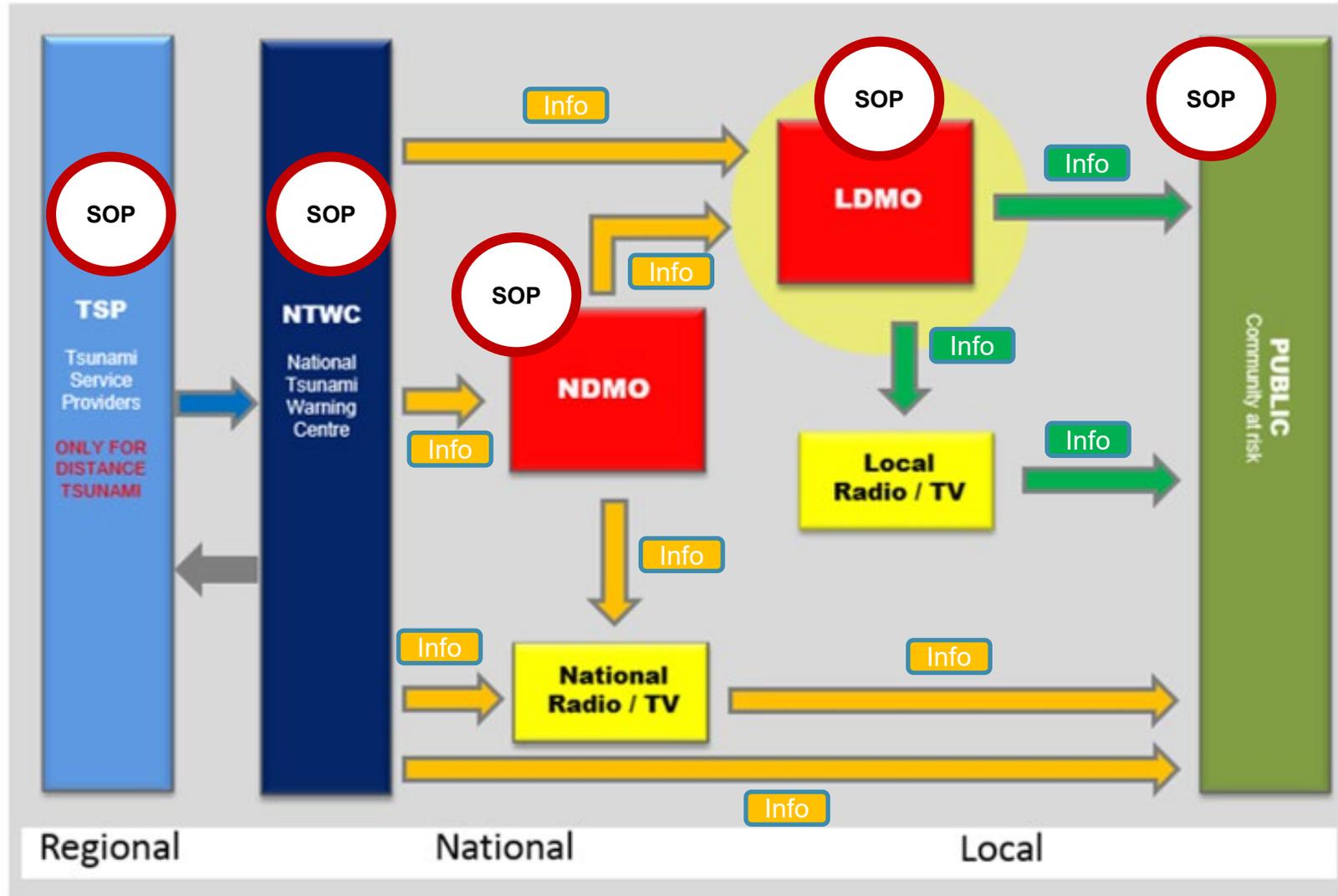


Information products are distributed and processed along the warning chain



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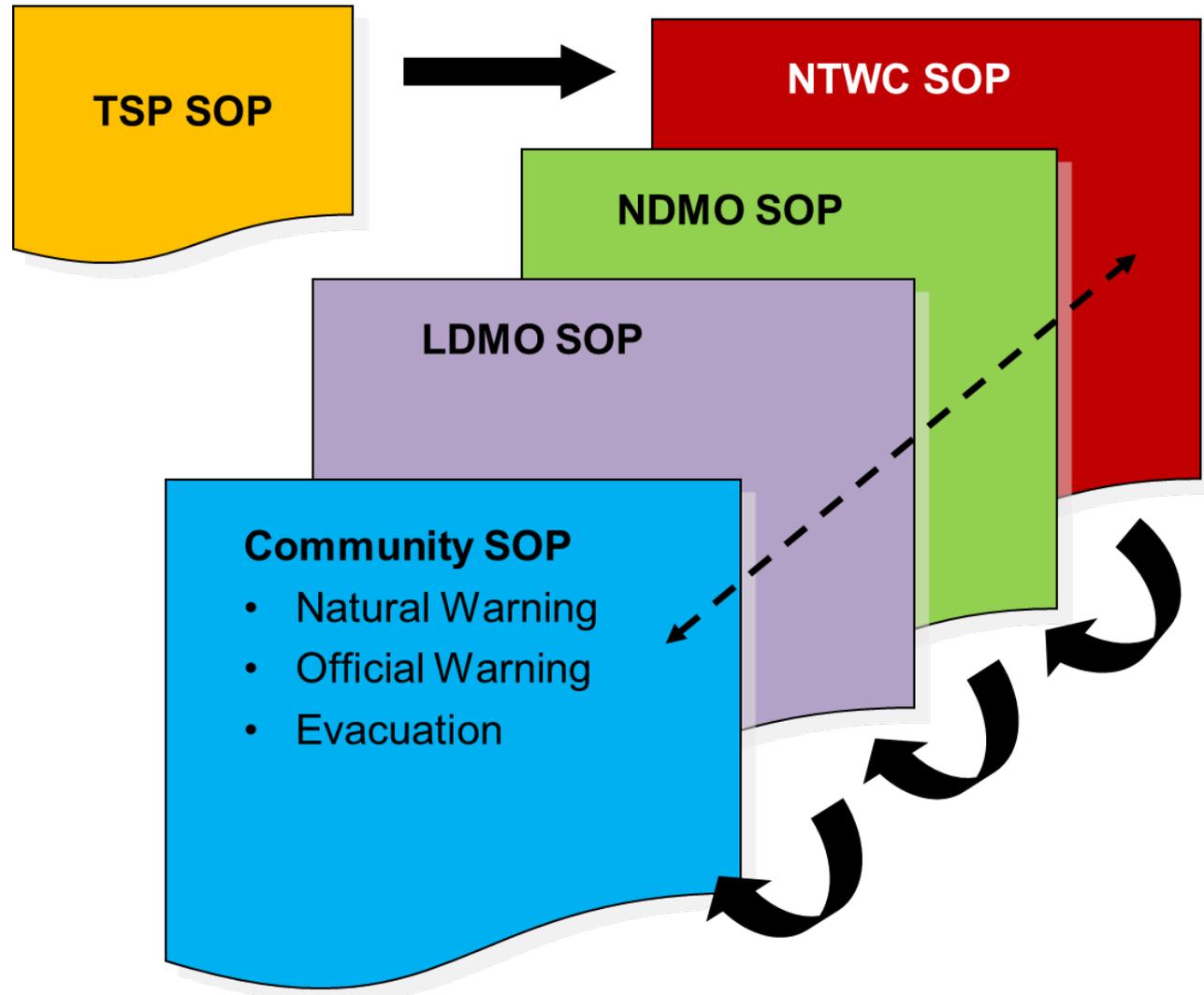


Institutional SOPs must be well integrated

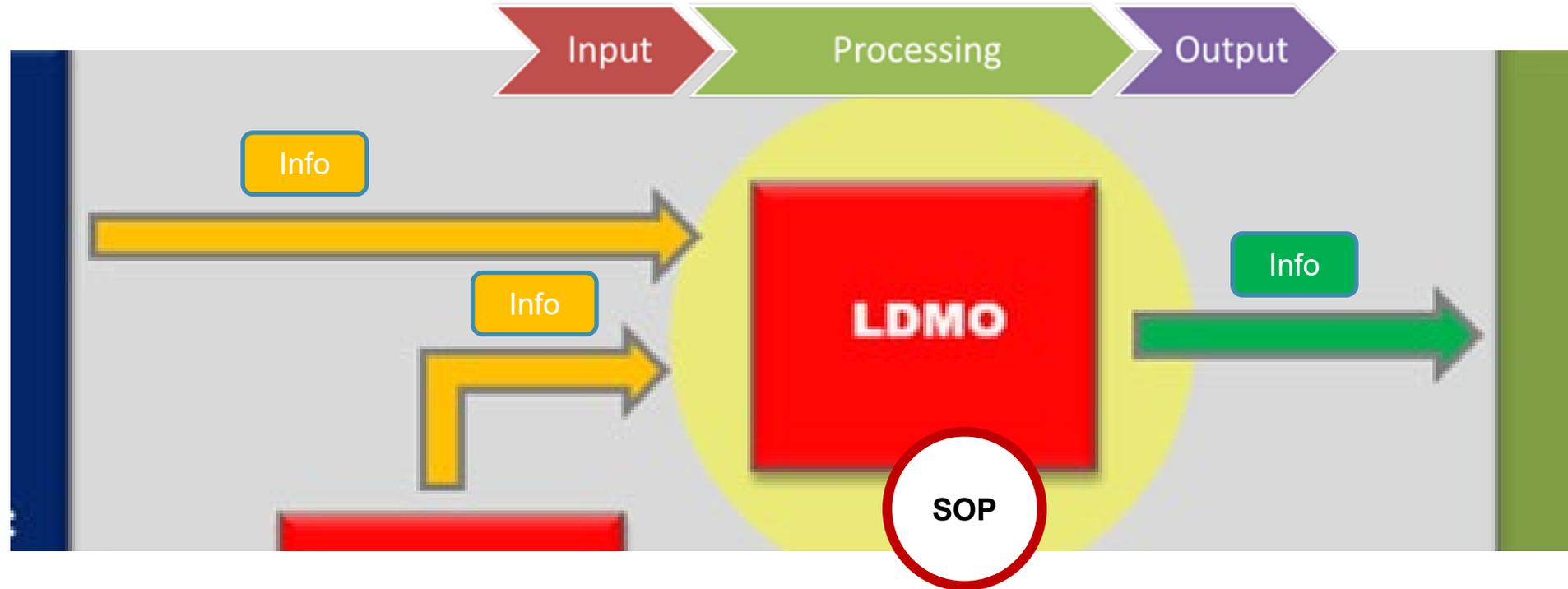


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Example of logic of institutional SOPs in the warning chain



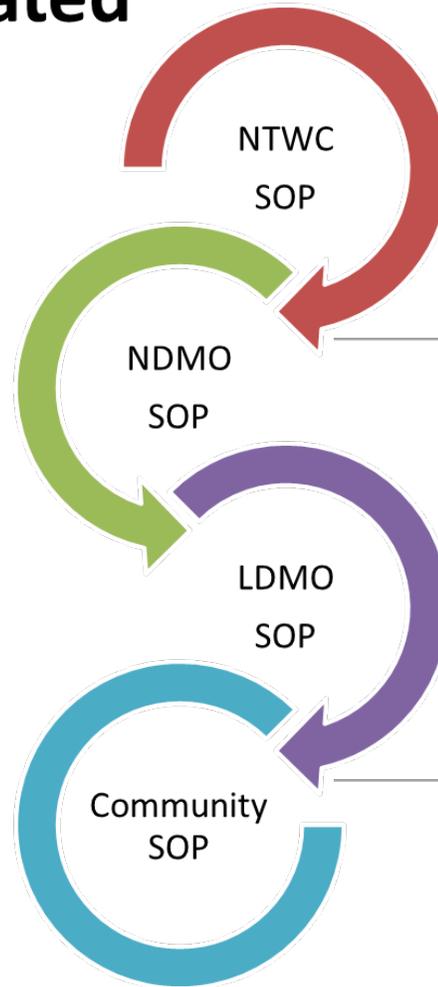
The logic of institutional SOPs in the warning chain



Input			Proceeding	Output		
What	From whom	How received	Processing the input, decision making and generating the output	What	To whom	How disseminated
						
Time in: EQ + x min			Timeline	Time out: EQ + x min		

Integrated and timeline-driven SOPs

Integrated



5 Min

Timeline-driven

7 Min

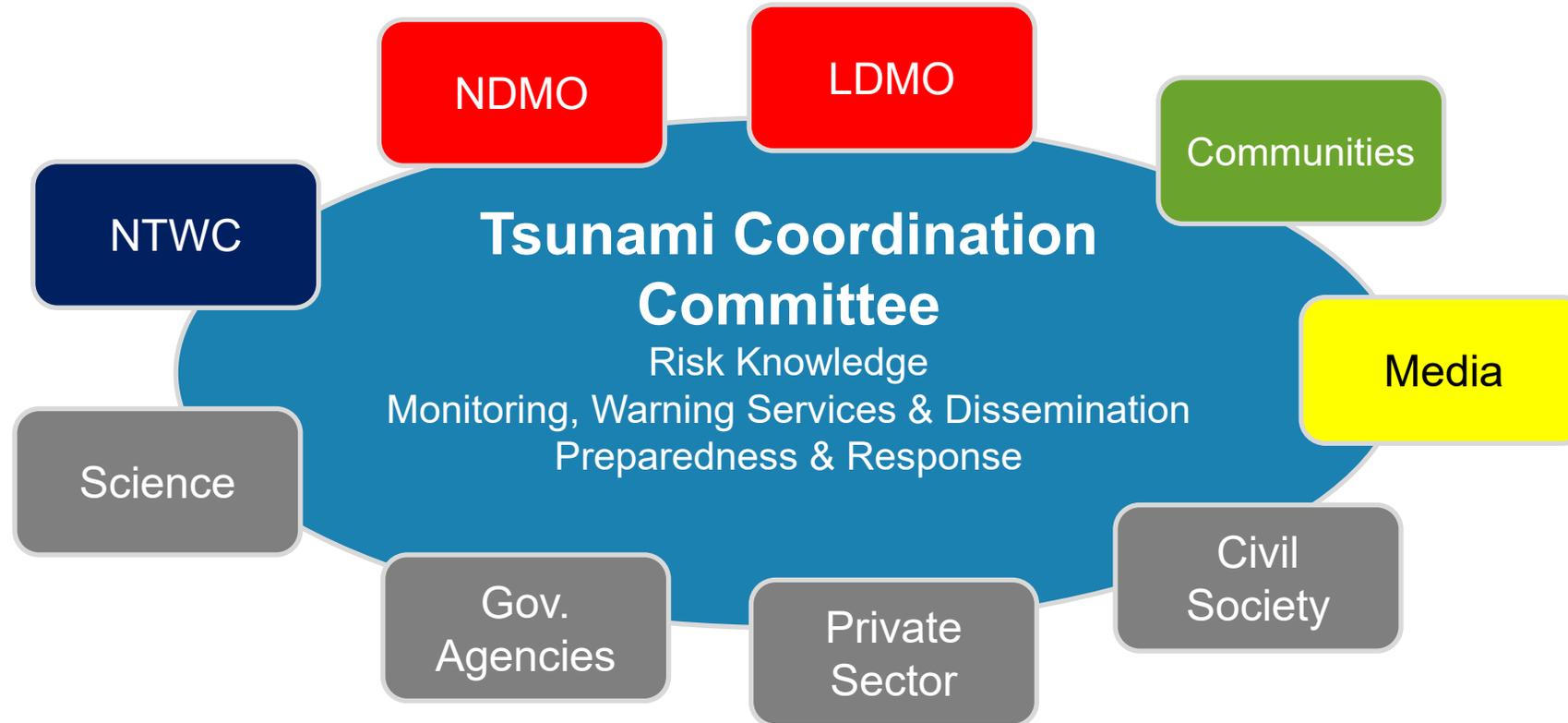
Warning chain scheme & timeline

- describe the **overall flow of information** and provide the **time frame**
- display the **main actors** involved and their **principal role** in the process
- both are a main reference for the SOP development

SOPs

- provide concrete and **detailed instructions to operate the warning chain** at institutional levels
- describe decision making processes as well as contents and dissemination of warning messages
- Must be **integrated** and **timeline-driven**

Stakeholder Coordination is Essential!



Status of Warning Chains and SOPs in EIO countries

Australia, Bangladesh, Indonesia, Malaysia, Maldives, Myanmar, Singapore, Sri Lanka, Thailand, and Timor-Leste

Warning Chains

- Most warning chains graphics have been updated during the SOP training in 2023. They provide a good overview of the current set-up and at the same time also allow to identify issues which still need to be followed-up. Main issues for improvement are: further **clarification of roles & responsibilities** (4 countries), **decision making to evacuate** (3 countries), **timeline for issuing first warning** (3 countries)

SOPs

- While NTWC SOPs in the EIO Member States look solid, most **DMO SOPs** are very general in nature and do not yet represent detailed SOPs at institutional level, which would actually be necessary.

Based on Status Report, March 2024

Status of Warning Chains and SOPs in WIO countries

Comoros, France Indian Ocean Territories, Kenya, Madagascar, Mauritius, Mozambique, Seychelles, South Africa, and Tanzania

Warning Chains

- Warning chains graphics in the WIO Member States provide a good overview of the current set-up and at the same time also allow to identify issues which still need to be followed-up.
- Main issues for improvement are: further **clarification of roles & responsibilities** (6 countries) and **better alignment of the timeline for issuing first warning** with the flow of monitoring and warning information provided by the TSP (most countries).

SOPs

- Only a few **DMO SOPs** have been shared, which mainly represent the time-line driven information flow as defined for the IOWave20 exercise. These do not yet represent solid SOPs at institutional level, which would actually be necessary.

Based on Status Report, March 2024

Status of Warning Chains and SOPs in NWIO countries

India, Iran, Pakistan, Oman, and United Arab Emirates

Warning Chains

- Warning chains in all NWIO Member States can be considered solid
- Main concern is the lack of a 24/7 NTWC service in 1 of the countries.

SOPs

- There is still a need for improvement in the SOPs in several NWIO Member States, particularly on the part of the **DMOs** and the **Media**, as well as on the part of the population. An important reference for the SOP development is the proposed harmonized approach to warning levels and NTWC products in the NWIO region, which has been developed in 2020.

Based on Status Report, March 2024



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THANK YOU



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