Detection → Evaluation → Decision → Communication → Execution → Logging → Review/restart

THUNDERSTORM & LIGHTNING

1. DETECTION
Goal: Early, reliable identification of a potentially relevant lightning threat.

1.1 Data Inputs (parallel)
- Lightning detection system (cloud-to-ground + intra-cloud)
- Weather radar (storm cell intensity, direction, speed)
- Professional weather service alerts / nowcasting
- On-site observers (visual / audible thunder)
- Control room weather dashboard

1.2 Trigger Conditions (any applies)
- Lightning within **X km radius**
- Thunderstorm cell **ETA < Y minutes**
- Lightning density exceeds **Z strikes / min / area**
- First thunder heard on site ("flash-to-bang" method)

1.3 Validation
Cross-check at least **two independent sources**
Timestamp confirmation
Assign confidence level (high / medium / low)

→ **Output:** *Confirmed weather trigger + con level*

2. EVALUATION
Goal: Translate meteorological input into **event-specific risk**.

2.1 Storm Characteristics
- Distance and movement vector
- Speed of approach
- Cell type (isolated / multi-cell / line)
- Expected duration
- Development trend (intensifying / weakening)

2.2 Site Vulnerability Assessment
- Tall conductive structures (tower, crane)
- Temporary roofs and rigging
- Open audience areas
- Elevated platforms (FOH, camera towers)
- Power distribution and grounding quality

2.3 Crowd & Operations Assessment
- Audience size and density
- Current phase (build-up / live / egress)
- Alcohol level / mood
- Shelter availability and capacity
- Time required to reach shelter
- Ongoing critical activities (artist on stage)

2.4 Risk Classification
Green: Monitoring only
Yellow: Pre-actions required
Amber: Pause likely / imminent
Red: Stop & shelter mandatory

→ **Output:** *Risk level + recommended action*

3. DECISION
Goal: Make a **clear, accountable, time-bound decision**.

3.1 Decision Authority
- Named role (e.g. Event Director / Safety Manager)
- Backup authority defined
- Meteorological advisor consulted (if available)

3.2 Decision Options
- Continue & monitor
- Activate pre-actions
- Pause performance
- Stop performance
- Partial area evacuation
- Full site sheltering

3.3 Decision Rules
- If lightning ≤ **X km** → *No elevated structures occupied*
- If ETA ≤ **Y min** → *No show continuation*
- If lightning ≤ **X-Δ km** → *Immediate stop*
- If shelter capacity insufficient → *Controlled dispersal*

3.4 Decision Confirmation
- Decision verbalized
- Time-stamp recorded
- Clear "GO / NO-GO" statement

→ **Output:** *operational decision*

Detection → Evaluation → Decision → Communication → Execution → Logging → Review/restart

THUNDERSTORM & LIGHTNING

4. COMMUNICATION
Goal: Ensure **synchronized action** without confusion.

4.1 Internal Communication
- Control room → Security → Stewards
- Control room → Production → Artists
- Control room → Medical & Fire teams

4.2 Public Communication (Audience)
- PA announcement (prepared script)
- Screens / app push
- Staff verbal guidance

Principles:
- Short sentences
- Behaviour-focused ("move to…", "stay away from…")
- Calm tone, no technical explanations

4.3 Confirmation Loop
- Key teams acknowledge receipt
- Stewards confirm crowd understanding

→ **Output:** *Shared situational awareness*

5. EXECUTION
Goal: Reduce exposure **immediately and safe**

5.1 Pre-Actions
- Secure loose elements
- Power down non-essential systems
- Clear elevated work positions
- Prepare shelter routes

5.2 Pause / Stop Actions
- Show stop signal executed
- Stage power down
- Pyrotechnics locked out
- Artists escorted

5.3 Crowd Management
- Guide audience to shelters
- Keep escape routes clear
- Prevent bottlenecks
- Monitor crowd behaviour continuously

5.4 Continuous Monitoring
- Lightning distance trend
- Secondary hazards (rain, wind, flooding)
- Shelter conditions

→ **Output:** *Risk exposure minimized*

6. LOGGING
Goal: Create a **defensible and learnable record**.

6.1 Logged Elements
- Trigger source and time
- Risk evaluation summary
- Decision maker and rationale
- Communication channels and scripts
- Execution timeline
- Observed issues or deviations

6.2 Responsibility
- Dedicated log keeper
- Entries in real time where possible

→ **Output:** *Complete operational record*

THUNDERSTORM & LIGHTNING

7. REVIEW / ALL-CLEAR / RESTART
Goal: Controlled return to operations or safe closure.

7.1 All-Clear Criteria
- No lightning within **X km** for **T minutes**
- Storm cell moving away
- No thunder audible
- Secondary risks assessed (slippery ground, damage)

7.2 Decision: Restart vs. End
- Technical systems checked
- Structures inspected
- Artist availability confirmed
- Crowd condition assessed

7.3 Communication
- Clear all-clear message
- Restart timing explained
- Alternative programme if needed

7.4 Post-Event Review
- Thresholds adequate?
- Timing appropriate?
- Communication effective?
- Crowd reaction appropriate?

→ **Outcome:** *Improved procedures & updated thresholds*