



DEPARTMENT OF EMERGENCY MANAGEMENT CITY & COUNTY OF HONOLULU

CITY COUNCIL BRIEFING

AI-Based Early Warning Detection & Monitoring

DEM Modernization Plan Objective 3

Earlier recognition. Faster decisions.

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THE OPERATIONAL NEED

Why O'ahu Needs Earlier Detection

Hazards can affect several community lifelines at the same time.

ALL-HAZARDS RISK

Storms, flooding, wildfire, tsunami, cyber incidents and public health threats.

CONNECTED IMPACTS

Alert & Warning, evacuations, and emergency response depend on one another.

CURRENT GAPS

One system, data analytics, historical comprehension, corollaries, limited instrumentation.

OBJECTIVE Move from reactive monitoring to anticipatory emergency management.



OPERATING CONCEPT

From Signals to Action

AI supports the monitoring process. DEM staff make operational decisions.

01 INSTRUMENTATION

Hazard monitors are installed and feed near real-time data into an AI system that learns patterns and corollaries.



02 DETECTION

Flag unusual changes

Connect related signals

Assess cascading risks



03 VALIDATION

Cross-check sources

Apply threat thresholds

Analyzes & synthesizes plans

Records uncertainty



04 ACTION

Notifies response partners

Supports EOC Shared Orientation

Increases timing of public messaging

Human review is required before escalation, EOC decisions or public notification.



IMPLEMENTATION ROADMAP

Four Phases with Decision Gates

Sequence reflects planned work, not an approved deployment schedule.

1 ORGANIZE

Set scope and requirements

Convene agency partners

Prioritize hazards and data

2 DESIGN & BUILD

Arrange data access

Select secure architecture

Install monitors

Configure dashboard and thresholds

3 PILOT & TEST

Measure accuracy and speed

Exercise EOC workflows

Initiate machine learning

4 OPERATE & IMPROVE

Train staff and update plans

Monitor system performance

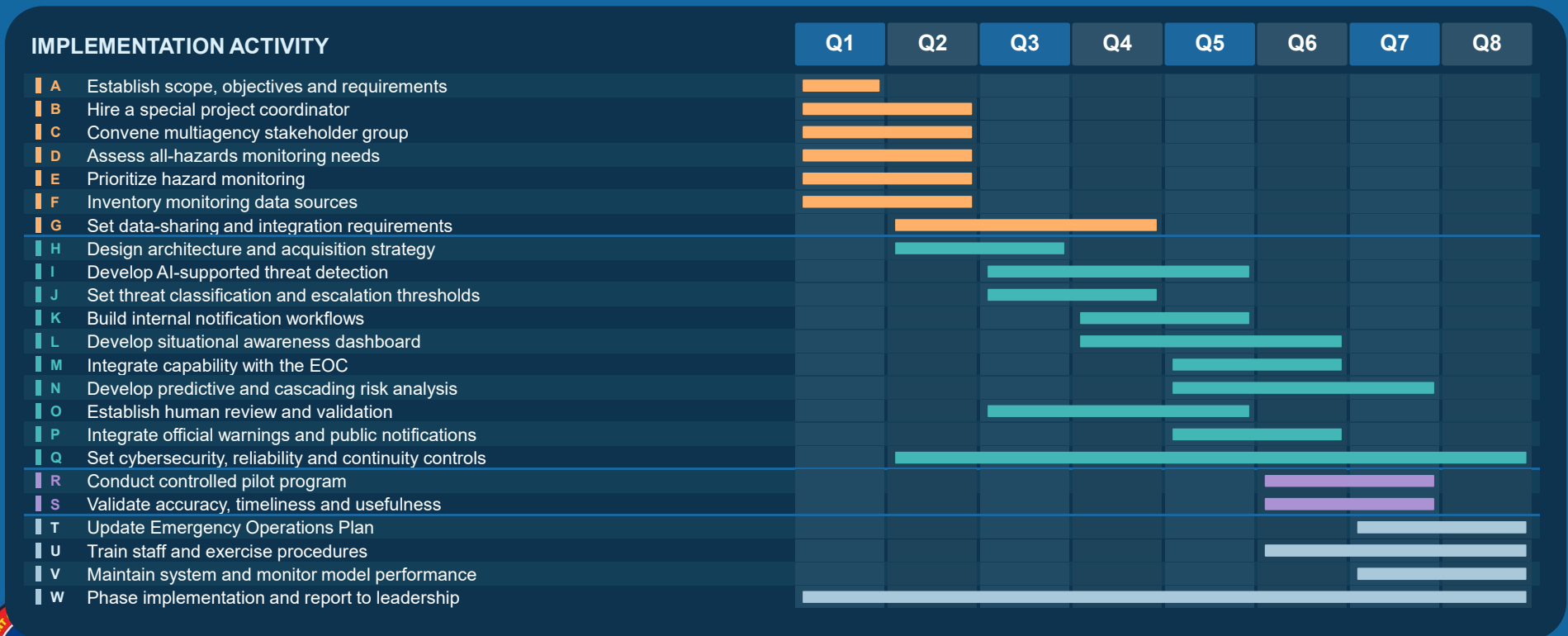
Report and refine

Proceed only after operational, cybersecurity and performance checks.



Implementation Chart

Illustrative 24-month sequence after project authorization. Activities overlap by design.



■ A–G Staffing, governance and data ■ H–Q Build and integration ■ R–S Pilot and validation ■ T–W Sustain and report

Schedule is conceptual. Procurement, funding, data agreements and pilot results determine actual dates.

FUTURE OPERATING MODEL

Earlier Action. Clear Accountability.

Measure operational value before expanding the capability.

EXPECTED OPERATIONAL BENEFITS

- Earlier identification of emerging threats
- Faster partner coordination
- Better readiness and EOC decisions
- Timelier public information

REQUIRED SAFEGUARDS & MEASURES

- Human review and public accountability
- Cybersecurity and continuity testing
- Accuracy, false alarms and missed signals
- Notification timeliness and staff usefulness

NEXT STEP Establish the working group and complete the monitoring needs assessment.

