

Translating Locally-led Resilience into Action
in the Age of Complex Risk and Digital Transformation
복합위험과 디지털 전환시대, 지역주도 복원력의 실행

The 5th



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송도컨벤시아 그랜드볼룸 A
Songdo Covensia, Grand Ballroom A

From Smart Technologies to Institutional Capacity

Institutionalizing AI-Driven Local Disaster RiskReduction:
Perspectives and Practices from China

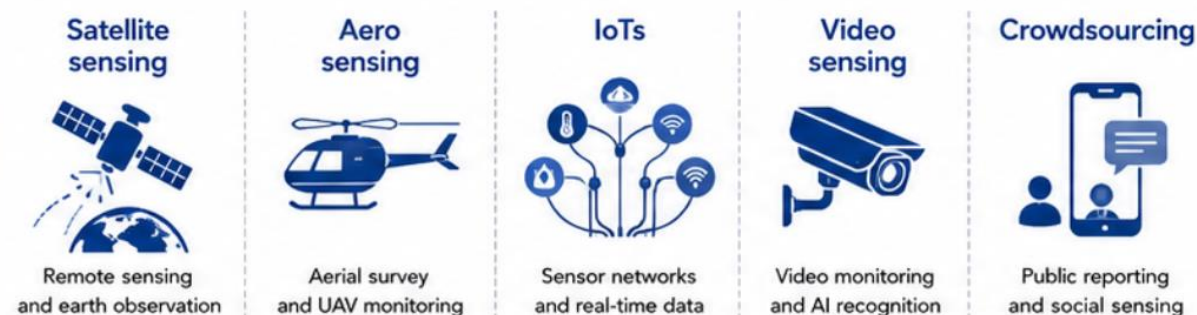
Liang Xin

School of Emergency Management,
Shanghai Jiao Tong University, China

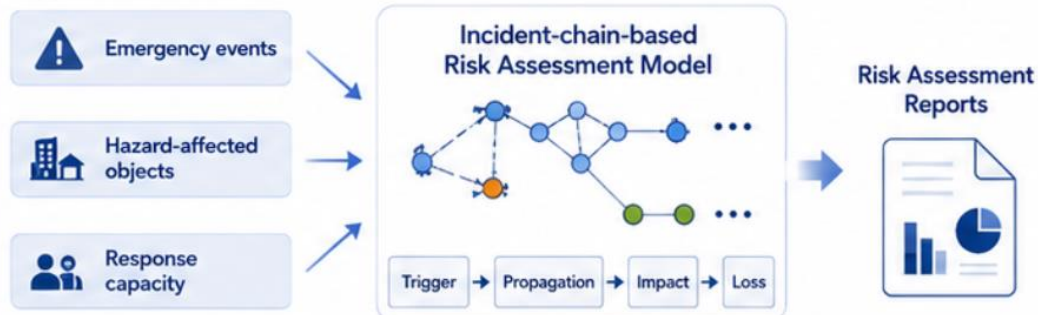
UNDRR Session 4 | 8 September 2026

China's Progress in Technology-Enabled Disaster Risk Reduction

1 Multi-source Monitoring and Early Warning



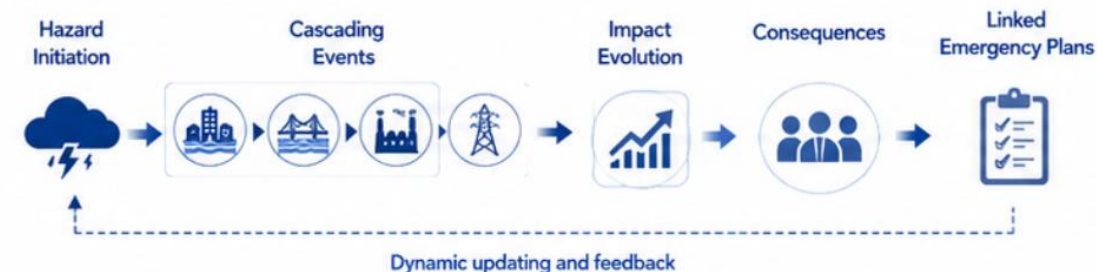
2 Multi-hazard Risk Assessment



3 Scenario-response-based Decision Support



4 Synthetic Forecast Based on Incident Chain



5 Emergency COP for Command and Dispatch



Case 1: Emergency-Oriented Foundation Models

Representative LLMs supporting disaster risk reduction and emergency management in China



Jiu'an Emergency Management Model

Jiu'an (久安)

- ✓ integrated into emergency cloud
- ✓ supports intelligent monitoring and warning
- ✓ assists command decision-making and rescue
- ✓ opened to the national emergency management system



Meteorological Foundation Models

e.g., "Fengqing" (风清),
"Fuxi" (伏羲)

- ✓ AI weather prediction
- ✓ short- and medium-range forecasting
- ✓ impact-based warning support
- ✓ stronger support for typhoon, heavy rainfall and flood response



Earthquake Foundation Models

e.g., "DiTing" (谛听),
public-service "QuakeGPT"

- ✓ seismic-wave understanding
- ✓ earthquake monitoring and warning
- ✓ risk assessment and data services
- ✓ public science communication and knowledge support

Typical emergency use scenarios



1 Knowledge base



2 Monitoring & warning



3 Decision support



4 Field response



China's 15th Five-Year emergency planning period calls for advancing the "Jiu'an" series foundation-model base and scenario-based AI applications.



LLMs are becoming the intelligent foundation for monitoring, forecasting, decision support, and emergency response.

Case 2: Embodied Robotics for Emergency Rescue

How drones, quadruped robots, and other unmanned systems support safer and faster response



1. Aerial reconnaissance

Drones / UAVs

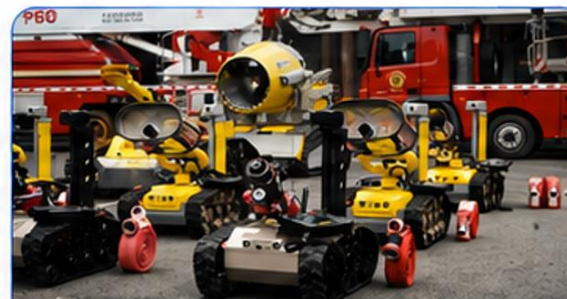
- ✓ rapid situational awareness
- ✓ thermal imaging and night vision
- ✓ high-resolution mapping
- ✓ communication relay and coverage extension



2. Ground exploration

Quadruped robots / robot dogs

- ✓ enter dangerous and unstable zones
- ✓ climb stairs, rubble, and narrow spaces
- ✓ gas and environmental sensing
- ✓ visual inspection and data collection



3. Search, rescue, and delivery

Tracked or wheeled rescue robots

- ✓ debris and void search
- ✓ equipment transport and supply delivery
- ✓ hazardous-environment operations
- ✓ victim localization and initial support



4. Specialized emergency tasks

Fire • Flood • Underground • Hazardous chemicals

- ✓ inspection, detection, and monitoring
- ✓ patrol and area coverage
- ✓ sampling and hazard assessment
- ✓ task support in extreme environments

Operational logic: from perception to protection



1 Perceive
Sensing and
data collection



2 Enter
Safely access
dangerous areas



3 Detect
Identify risks,
hazards, and victims



4 Support
Deliver aid, equipment,
and situational data



5 Protect Rescuers
Reduce exposure and
enhance responder safety



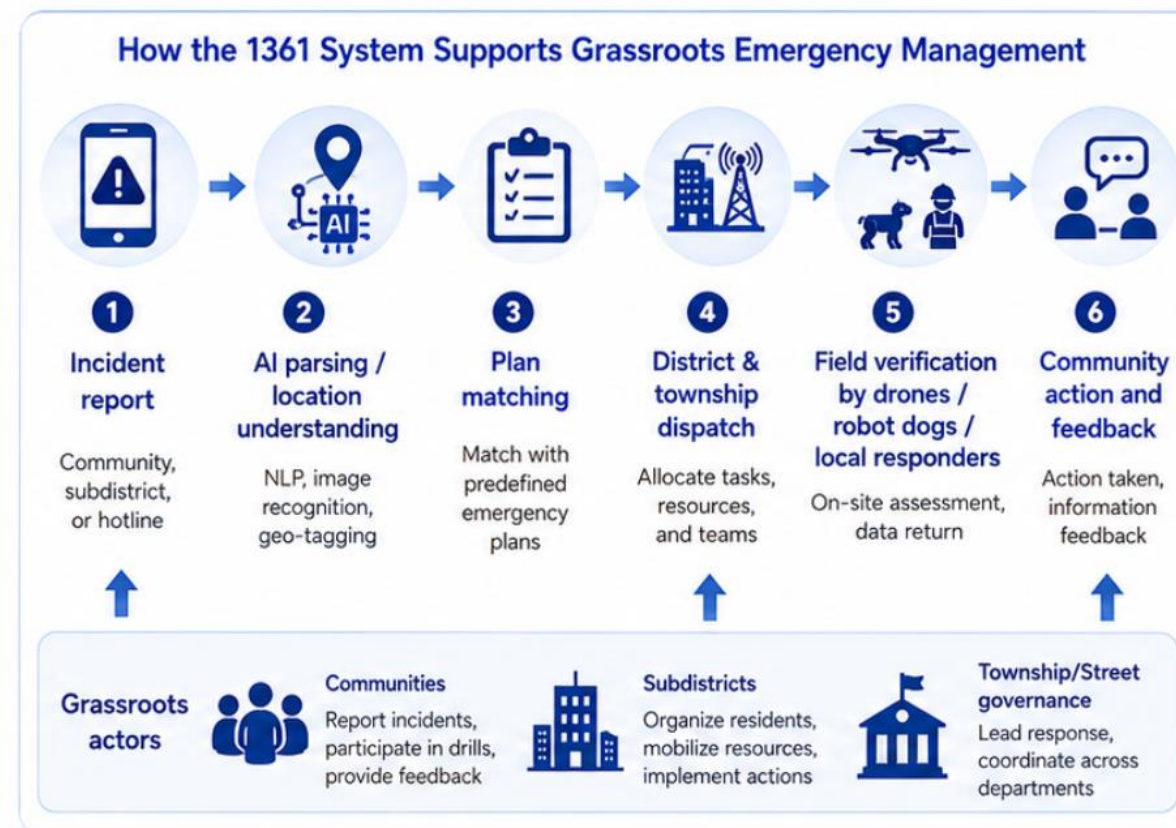
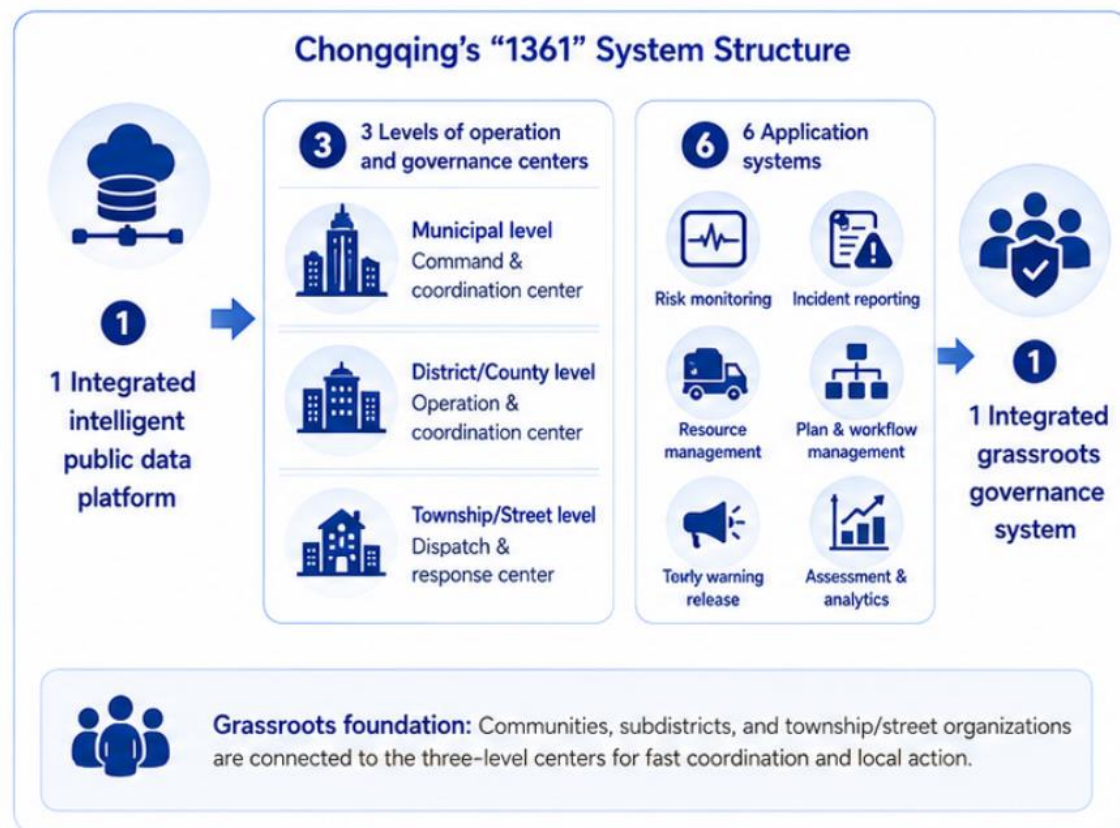
China's emergency-robot policy

Policy emphasizes five key areas:

- ✓ monitoring and warning
- ✓ search and rescue
- ✓ communication command
- ✓ logistics support
- ✓ operations in dangerous environments

Case 3: Chongqing's e-System for Grassroots Emergency Governance

Combining digital governance, AI-assisted workflows, and local response capacity



Digital governance becomes effective at the grassroots level when data platforms, coordinated workflows, and local response actors work together.

The Real Challenge: From Technology to Institution



Technology-driven projects

- Sensors and platforms
- AI models and digital twins
- Stand-alone pilot applications
- Short-term project budgets
- Limited operational integration



Institutionalized capacity

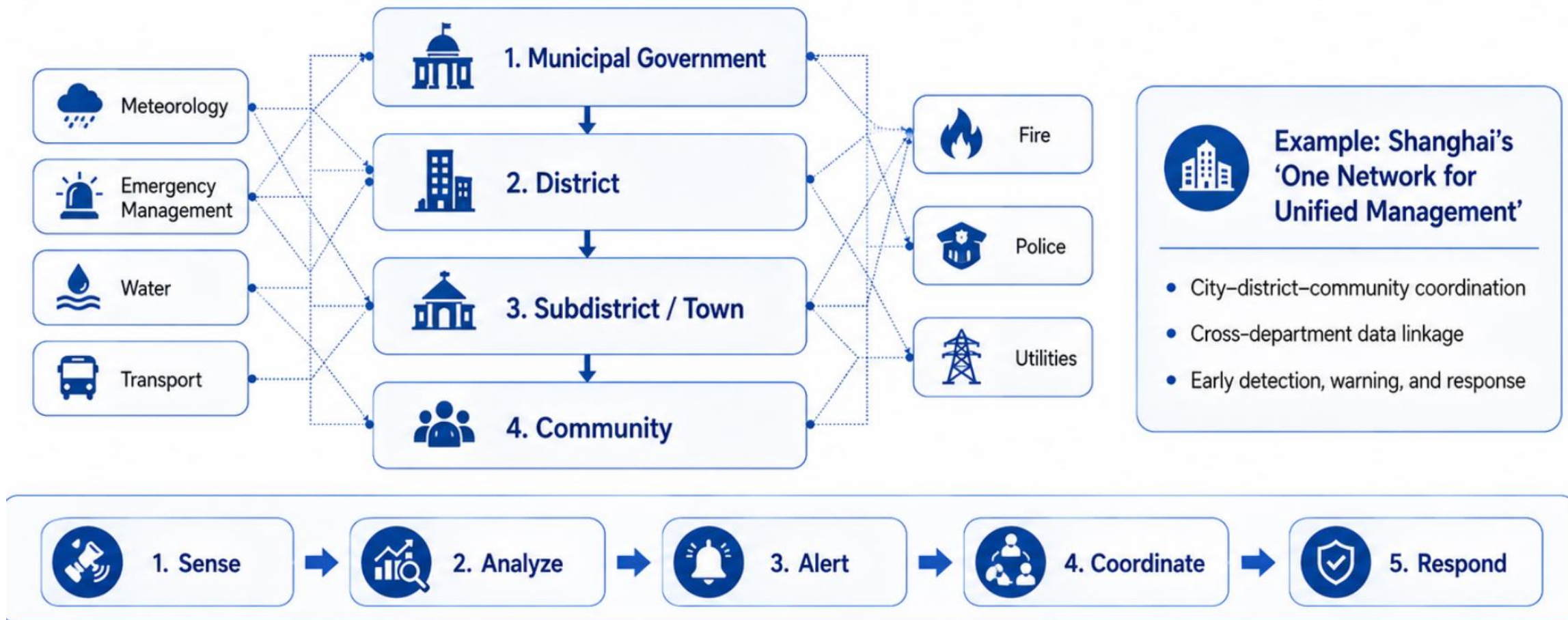
- Clear responsibilities
- Data-sharing rules
- Standard operating procedures
- Human–AI decision protocols
- Sustainable funding
- Evaluation and accountability

From 'Can AI do it?' → 'How does government routinely use it?'



AI becomes sustainable only when it is embedded in governance structures, routines, and responsibilities.

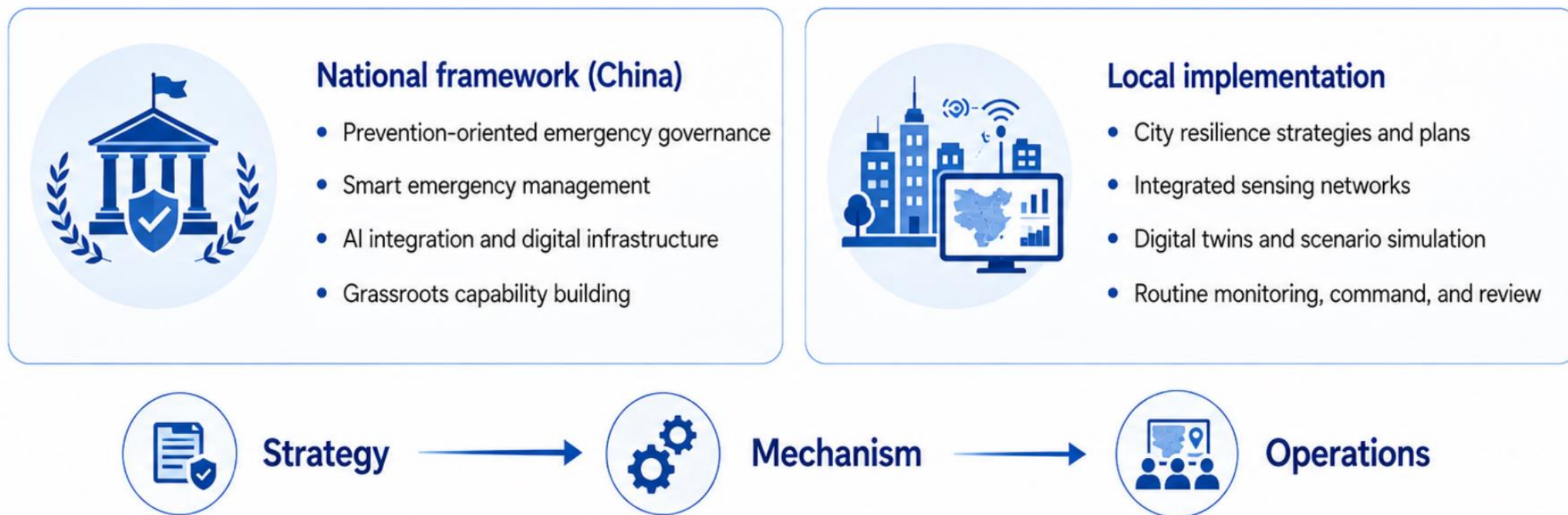
Building an Integrated Local Risk Governance System



- *Institutionalization starts with governance architecture*

From Pilot Projects to Long-Term Institutionalization

Policy frameworks turn AI applications into routine governance capacity



Institutionalization means moving AI from a pilot budget to a permanent governance mechanism.

Government-Academia-Industry Collaboration

AI for DRR requires an ecosystem, not a single agency



Government-Academia-Industry Collaboration

Talent cultivation



September 2020: the Emergency Management School was jointly established by SJTU and Shanghai Emergency Management Bureau



Over five years, master's and doctoral students completed full-time in Emergency Management Bureau in Shanghai

Government-Academia-Industry Collaboration

Communication platform

International Conference on New Horizons in Emergency Management by SJTU

- 10 parallel forums, 70 academic presentations, 4 roundtables, 20+ companies, 400+ participants
- Special forums advanced Yangtze River Delta coordination, and government-industry-university-research collaboration



Government-Academia-Industry Collaboration

Joint research lab



Shanghai Key Laboratory for Urban Complex Risk Prevention and Resilient Governance

Mode: The government poses the questions, and universities provide the answers

Five Recommendations for Local Governments

From AI projects to AI-enabled institutions



1

**Start with risks,
not technologies**

Focus on local hazard and
governance needs first.



2

Integrate

Connect data, departments,
and operational systems.



3

Institutionalize

Embed AI in warning,
command, and daily
workflows.



4

**Keep humans
accountable**

Define the boundary
between AI advice and
public decisions.



5

Co-produce

Build long-term
government–university–
industry–community
partnerships.



The unit of innovation should not be an AI application. It should be an improved governance process.

Thank You

The future of AI for DRR is not simply smarter technology,
but stronger institutions enabled by technology.

Xin Liang

School of Emergency Management

Shanghai Jiao Tong University, China

Email: xinliang@sjtu.edu.cn

