

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

The 5th



International Disaster Resilience
Leaders Forum **Incheon 2026**

인천 국제재난복원력 지도자 포럼



2026. 9. 7.(월) - 9. 8.(화)
September 7-8, 2026



송도컨벤시아 그랜드볼룸 A
Songdo Covensia, Grand Ballroom A

Turning Risk into Resilience

Presented by

Yeongbae, Yoon

Ulsan Research Institute

Republic of Korea

A Compound-Risk City by Design

#1

GRDP per capita in Korea —
9 consecutive years
(2024: ₩85.19 M)

1.10_M

residents (1,095,014 · Mar 2025)
on **1,062 km²**

3

heavy-industry clusters —
**automobile, shipbuilding,
petrochemical**

- **Compound risk by design** — aging petrochemical complexes and nuclear facilities sit alongside dense urban systems
- **Climate hazards are intensifying** — Typhoon Hinnamnor (2022): 313 mm in two days, two dams overtopped. Typhoon Khanun (2023): 150 damage reports, zero casualties
- **Yet risk can be reversed** — the Taehwa River, once heavily polluted, became Korea's 2nd National Garden in 2019

Layered hazards, one place

Dense urban systems

03

1.1 million residents, concentrated housing,
transport and energy networks

Climate hazards

02

Typhoons, river flooding and record heat — 2024
was the city's hottest year on record

Structural industrial risk

01

Aging petrochemical complexes; nuclear facilities in
the wider region



Compound risk

Many hazards, interconnected, in one place — never one at a time

Certified as a Resilience Hub



October 2023 – certified by UNDRR as an MCR2030 Resilience Hub

The **2nd in Korea** – following **Incheon**, our host city and Korea's first Resilience Hub (2021)

BEFORE 1962

A fishing village
and market town

1962 →

Korea's first Special
Industrial District

2023 →

**A certified
Resilience Hub**

What it means

International recognition of leadership in disaster risk management – earned by a high-risk **industrial city**

How we got here

An integrated disaster management system, plus collaboration networks across government, industry and civil society

Why it matters

Resilience is achieved not by the absence of risk, but by actively managing it

AI Guarding an Underground “Powder Keg”

1,853
KM OF PIPE

The problem

1,853 km of underground pipelines run beneath our National Industrial Complex – accumulated over 60 years. A hidden powder keg: leaks were often found only **after** something went wrong.

24/7
SINCE OCT 2025

The solution

Our **Integrated Safety Management Center** – completed May 2025, in round-the-clock operation since October 2025 – fuses CCTV, AI and IoT into one control room. Acoustic-emission and vibration sensors detect micro-leaks, corrosion and damage in real time, with a hotline pushing alerts to 31 agencies instantly.

22→50
PLANNED BY 2027

The scale-up

AI diagnostic sites are planned to grow from 22 to 50 by 2027, with IoT monitoring points from 58 toward 1,000 – shifting from reactive response to predictive prevention.



Data flow



Acoustic &
vibration sensors



AI real-time
diagnosis

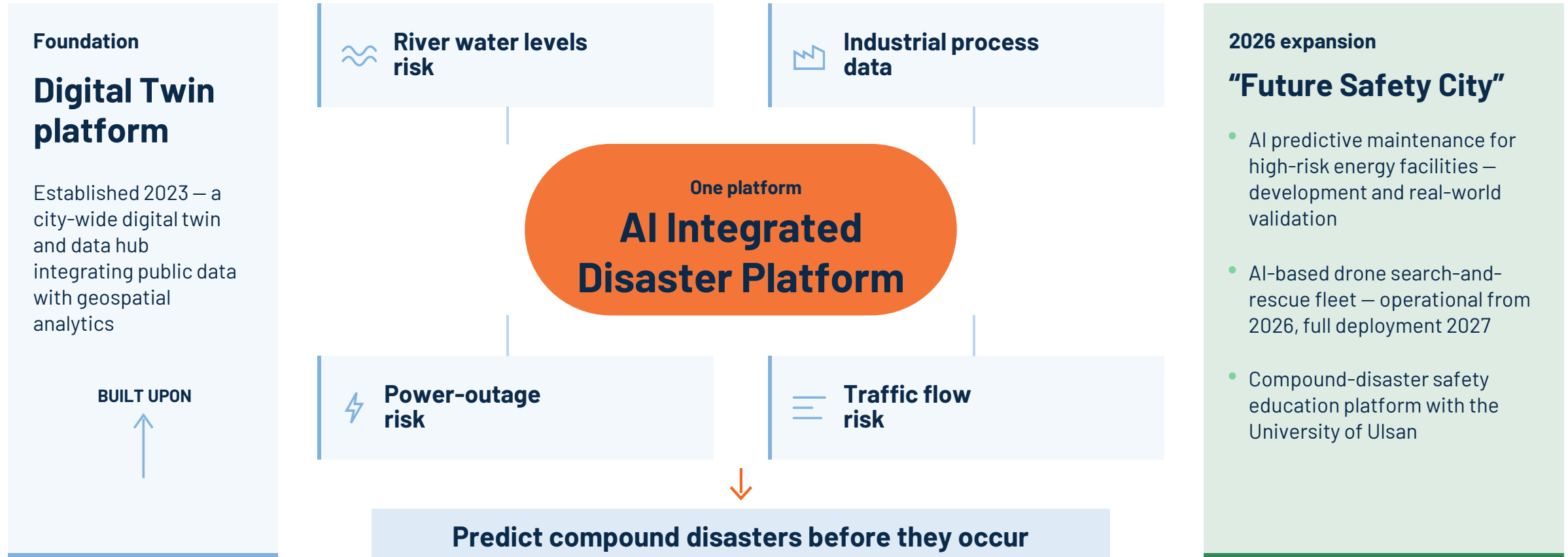


Alert to 31
agencies

From “respond after it breaks” to “predict before it leaks.”

Sources: Ulsan Metropolitan City / Ulsan Technopark briefing (Feb–Mar 2026); Yonhap News (13 May 2025); Ulsan press coverage (Nov 2025). Expansion targets are planned figures.

Toward an AI-Powered “Safe City” Platform



Honest framing — much of this is still being built. We share the journey and our early lessons, not a finished product

Resilience as an Industry – and an Invitation

Resilience as an industry

Korea's first heat-wave-specialised Disaster & Safety Industry Promotion Facility

KRW 13.2_{BN}

₩6.6 bn national + ₩6.6 bn municipal

2026–28

Hosted by Ulsan Technopark

The virtuous cycle

Resilience → **Technology** → **Jobs** → **Economic value** ↻ **Reinvest**

Turning climate-risk response into technology, jobs and economic value —
resilience that pays for itself

An invitation to collaborate



City-to-city partnership — a standing DRR cooperation MoU with Greater Manchester, UK, since 2019



Mutual learning — DRR consulting and peer exchange through global platforms such as MCR2030 and this forum



Open invitation — to industrialising cities in Southeast Asia and beyond: let's share the resilience journey of the industrial city

From a small fishing village to a global model where industry, safety and the environment coexist

Thank you

Yeongbae, Yoon / hydro@uri.re.kr

<http://www.uri.re.kr>

