



# Research, Innovation & Enterprise (RIE) 2030

## Unveiling MND Family's R&D Plans

5 February 2026

# RIE2025 Cities of Tomorrow (CoT) Programme

Research is well underway...

Verticals

Advanced  
Construction



Resilient  
Infrastructure



New Spaces



Greater  
Sustainability



City in Nature



Horizontals



Urban Environment Analytics

Complexity Science



Smart & Advanced FM

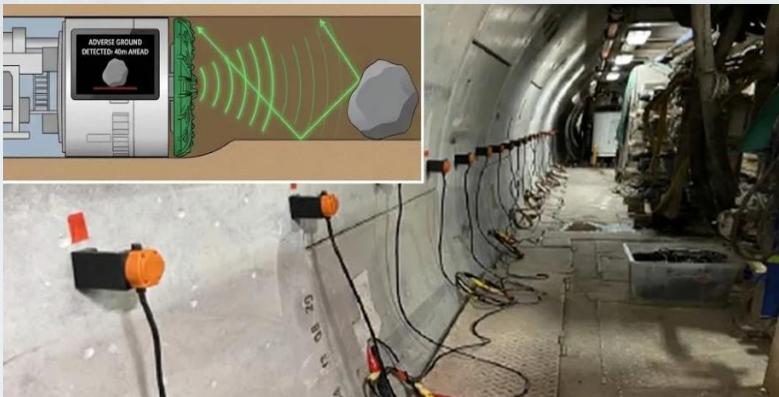


# Examples of Key Achievements

## Tunnelling Look-Ahead Technology



A tunnel look-ahead technology that can detect risks up to 40m ahead of a Tunnel Boring Machine (TBM), which will be used for future tunnelling projects.



## Carbon-capturing Concrete

Production of low-carbon concrete with 57.5% lower embodied carbon emissions



Implemented in structural concrete at Lumina Grand EC



## Intelligent Lifting Frame

Self-levelling anti-sway device for improved precast component hoisting productivity

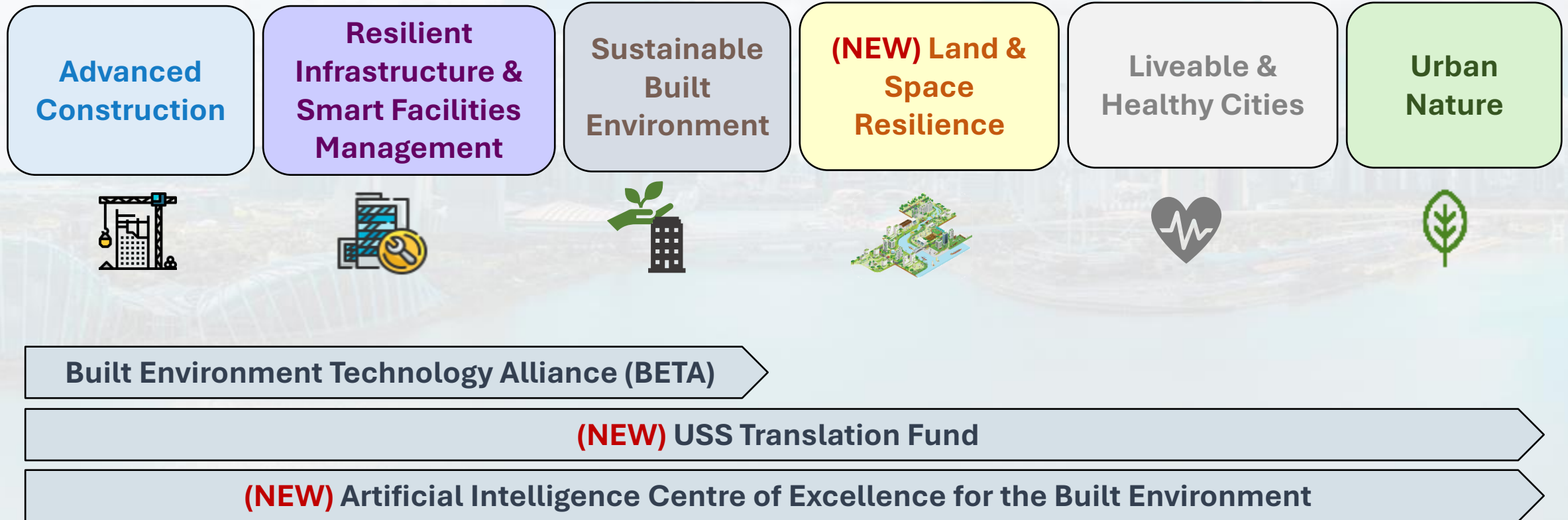


# Key Shifts in RIE2030

- 1 Strengthen core research to improve Built Environment (BE) productivity, with new focus areas to support a resilient and future-ready BE
- 2 Strengthen policy-research-implementation nexus to drive land and space resilience
- 3 Enhance liveability in face of climate change and increasing urban densification
- 4 Develop integrated, multi-disciplinary and systems-level solutions to meet the future needs of large-scale estate rejuvenation
- 5 Strengthen support for successful translation and deployment of research outcomes

# RIE2030 CoT Programme

## 6 Strategic Pillars and 3 Enabling Horizontals




# Strengthening core research for a future-ready BE

## Advanced Construction







Contractors adopting use of robots to boost safety, productivity levels

-  Advanced productive construction solutions and systems
-  Stronger, more durable and sustainable construction materials
-  **(NEW)** Productive and safe building demolition


## Resilient Infra & Smart FM

New technology road map for facilities management companies to increase productivity




-  More reliable and productive maintenance services
-  AI-powered predictive maintenance
-  Stronger and more resilient structures
-  Enhanced noise resilience


## Sustainable BE





**80%** of buildings (by GFA) to be green by 2030



**80%** of new developments to be SLE buildings by 2030



**80%** improvement in Energy Efficiency for best-in-class buildings by 2030

-  Energy-efficient green buildings
-  Low carbon materials, technologies and solutions

# Driving land and space resilience

Continued R&D investments to support Singapore's long-term growth and development:

1

Creating and optimising space in land and sea to support long-term land needs



R&D in advanced underground construction & maintenance methodologies to **overcome feasibility constraints** and accelerate underground development



Increase **development potential of sea space** to meet increasingly diverse & competing needs



R&D to **develop next-gen reclamation methods** that are more productive, cost-effective and sustainable

2

**(NEW)** Knowledge-building in impact mitigation to ensure sustainability of new spaces development



Develop novel **nature-based solutions**



Build local capabilities in **impact assessment & biodiversity conservation** to better inform land use planning



Deepen **understanding of our rich marine ecosystem** and strengthen capability in impact mitigation



# Enhancing liveability of our urban environment



Human



Nature



Understand the **relationship between BE and health**, and mitigate undesirable impacts

Study the **impacts of land intensification** on well-being and liveability



**Noise mitigation**



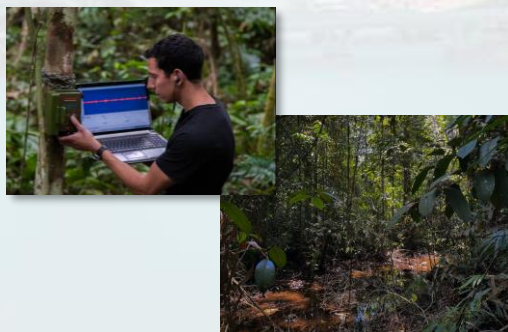
**Heat resilience**



**Regenerative urban development**

Understand **human-nature interactions** and enhance effectiveness of **urban nature management**

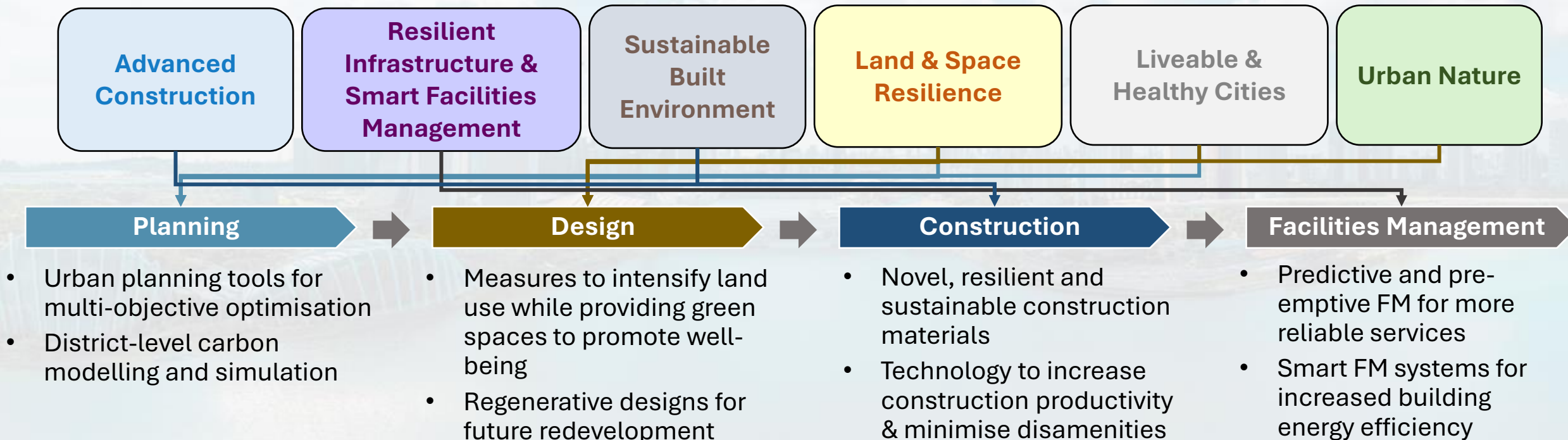
**Increase resilience of urban ecosystems** to climate & anthropogenic stressors



**Establishing a more inclusive, resilient and sustainable living environment for all to enhance population health and well-being**

# Tackling complex, long-term challenges

We will pull together efforts across the various CoT thrusts into an integrated package of solutions to support major national challenges such as **large-scale estate rejuvenation**.



## Socio-Behavioural Research

- Public sentiments surrounding lease decay
- Socio-behavioural perspectives on estate rejuvenation

# Tackling complex, long-term challenges

Unlocking the **potential of Artificial Intelligence (AI)** to transform Built Environment processes to save time, money and manpower

Examples of AI-enabled solutions to support large-scale estate rejuvenation

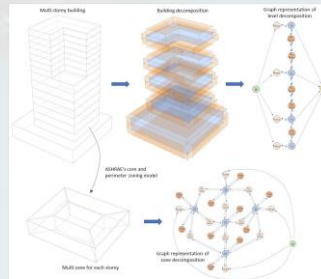
## Planning

AI-assisted planning tools to characterise, optimise & identify potential relocation scenarios



## Design

Contextualised AI models to visualise and iterate through building layouts for optimal sustainability and liveability for occupants



## Construction

Using AI to orchestrate autonomous construction robotics to increase productivity and safety



## Facilities Management

AI-enabled coordination of intelligent monitoring systems and FM robotics to improve maintenance efficiency




## Socio-Behavioural Research


AI-enabled analysis tools to aggregate and study public sentiments across multiple data sources to inform better policy-making

# AI Centre of Excellence for the BE




MND, in partnership with the Singapore University of Technology and Design (SUTD), has established a **new** S\$30M AI Centre of Excellence (CoE) for the BE.

 Main R&D vehicle to **develop and translate impactful applied AI research for the BE** to address challenges and support long-term national goals

 **Collaborative CoE** led by SUTD as convenor to bring in other research & industry partners to **co-develop solutions, and accelerate translation to market**



 **Build up AI capabilities** within Singapore's BE ecosystem by developing deep local expertise and anchoring talents.

# Supporting successful research translation



A **new** S\$40M USS Translation Fund has also been set up under RIE2030, to be administered by the USS Innovation & Enterprise Office (IEO).



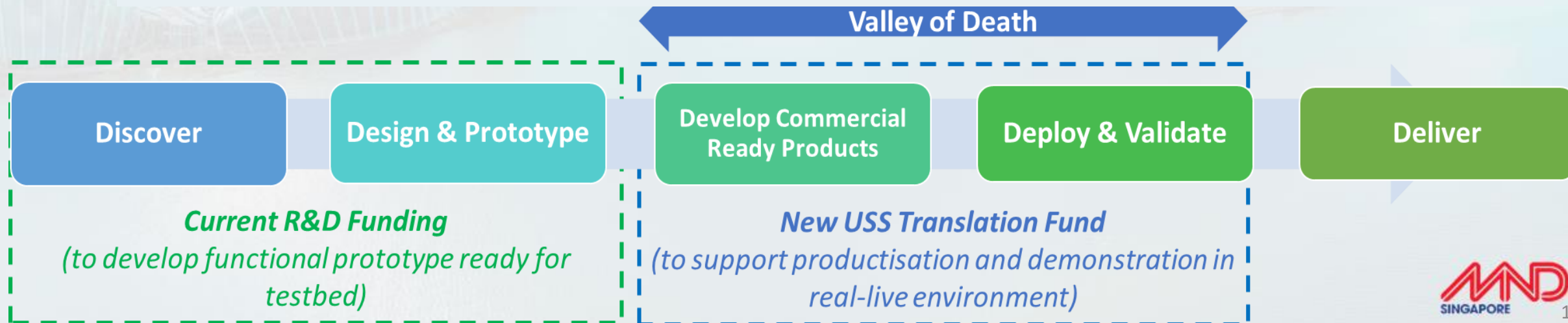
Support the **productisation of R&D outcomes** from USS projects



Demonstrate technical feasibility under first deployment **in real-world conditions**



**Close the “last mile” translation gap** across the innovation-to-impact pathway through coordinated public sector funding



# Our Research Today to Shape the City of Tomorrow

**RIE2030 plans will be progressively rolled out over the coming months. We look forward to everyone's active participation!**

**Scan QR Code below  
for more information:**



[https://mnd.gov.sg/  
cities-of-tomorrow](https://mnd.gov.sg/cities-of-tomorrow)

**For enquiries, please  
contact us at:**

**[usscongress@mnd.gov.sg](mailto:usscongress@mnd.gov.sg)**