

Delta HQ

Research Infrastructure Ecosystem

An integrated end-to-end research infrastructure platform that connects environmental sensing, digital capture, advanced computing, simulation and decision support to generate evidence-based climate-responsive design solutions.

INPUTS



ENVIRONMENTAL SENSORS

Weather stations, air quality monitors, radiation sensors, heat stress meters



REALITY CAPTURE SYSTEMS

Laser scanners, imaging systems, photogrammetry and 360° capture



UAV & REMOTE SENSING

Drones, multispectral cameras, thermal payloads and GNSS/RTK systems



THERMAL IMAGING SYSTEMS

Thermal cameras and infrared systems for surface and building diagnostics



ENVIRONMENTAL MONITORING

Distributed monitoring networks and long-term data collection



FIELD MEASUREMENT TOOLS

Surveying instruments, laser distance meters and validation tools



1. FIELD

Real-world environments, buildings, infrastructure and communities



2. ENVIRONMENTAL SENSORS

Weather, air quality, radiation, thermal comfort and environmental monitoring



3. REALITY CAPTURE

Terrestrial laser scanning, UAV, photography and remote sensing



4. THERMAL IMAGING

Surface temperature, heat detection and thermal diagnostics



5. UAV REMOTE SENSING

Aerial mapping, multispectral, thermal and RTK positioning



6. ENVIRONMENTAL MONITORING

Continuous multi-parameter monitoring and data acquisition



7. HIGH PERFORMANCE COMPUTING

Data processing, storage, management and high-performance analytics



8. DIGITAL TWINS

3D models of the built and natural environment integration of multi-source data



9. AI ANALYSIS

Machine learning, pattern recognition and predictive analytics



10. CFD SIMULATION

Computational fluid dynamics and environmental performance simulation



11. VISUALISATION

Immersive visualisation, XR, dashboards and interactive exploration



12. DECISION SUPPORT

Evidence-based insights for design, planning, management and policy



13. IMPACT

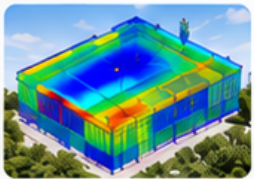
Climate-resilient, healthy, sustainable and liveable environments

OUTPUTS & APPLICATIONS



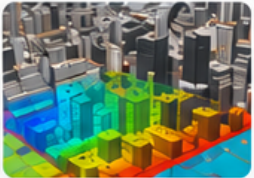
BUILDING PERFORMANCE

Energy efficiency, indoor environmental quality, thermal performance



URBAN CLIMATE & RESILIENCE

Urban heat, wind comfort, air quality, nature-based solutions



ENVIRONMENTAL MANAGEMENT

Ecosystem monitoring, vegetation health, land use and biodiversity



HUMAN HEALTH & WELLBEING

Outdoor thermal comfort, heat stress, air quality and healthy places



POLICY & PLANNING SUPPORT

Data-driven insights for planning, policy, risk assessment and reporting



MULTI-DISCIPLINARY
Integration of science, engineering, design and health perspectives



TRANS-DISCIPLINARY
Collaboration across academia, industry, government and communities



DATA-INFORMED
High-quality data for robust analysis, modelling and knowledge generation



TECHNOLOGY ENABLED
Advanced technologies for innovation, automation and intelligent systems



IMPACT FOCUSED
Creating real-world impact for a climate-resilient and sustainable future