

# Enabling Sustainable Cities



Integrated Impact Modelling: Economic, Environmental, Social

[www.sentient-hubs.com](http://www.sentient-hubs.com)



# Award-Winning ESG Decision Support Platform



Sentient Hubs is an award-winning decision support platform addressing the need to accurately model and account for the cumulative and cascading impacts of decisions across economic, environmental, and social dimensions.

## Multi-Domain Simulation & Optimisation: Global to Hyper-Local.

### 1. Unified Situation Awareness

Gain a unified 'systems-wide' view across assets, systems, and the dynamic factors that affect performance.

### 2. Ecosystem Intelligence & Optimisation

Proactively anticipate conditions and disruptions to reduce OPEX, Carbon Footprint and Waste.

### 3. Sustainable Capital Allocation

Test resilience and improve planning outcomes through interactive multi-domain 'What If?' scenarios.

“The capabilities demonstrated by Sentient Hubs are unique in the market. This innovative Australian company has developed a product that is truly unparalleled in its ability to help solve complex policy problems so well and so quickly. It’s a game changer.”

Kirsty Linehan  
Public Sector Innovation Partner



## Integrated Simulation & Optimisation Platform

User-Defined Dashboards – Transparent, Evidence-Based, Dynamic

### Test Resilience

Interactively flex variables and visualise changes to assumptions across infrastructure, operations, and dynamic external factors.

### Account for Impacts

Structural shifts in stakeholder expectations driving evidence-based accounting for non-financial impacts (Carbon Footprint, Natural Capital Accounting, ESG, TCFD). Social license and shareholder support increasingly tied to impact accounting.

### Visualise Potential Futures

Run multi-domain 'What If?' scenarios. Quantify trade-offs and trigger points. Complex scenarios that previously required months to model can now be set up in minutes. Decision-makers at every level can easily adjust, visualise and communicate impacts.



“Sentient Hubs offers an unrivalled capability to understand the unknowns, such as unintended consequences and unforeseen impacts, leading to better supported decisions and ultimately, better outcomes.”

Andy Wood - National Lead Civilian Government  
Microsoft Australia



# Better Answers to Complex Questions

## An Integrated Approach to Planning, Governance and Optimisation



Dominique Thatcher, demonstrating how Fremantle Port is partnering with Sentient Hubs to change for good.

Planning and investment decisions depend on wide-ranging scenarios and assumptions across multiple domains and disciplines. The problem is, the underlying models and assumptions are developed in isolation from each other, and often reflect stakeholder bias.

Inter-dependencies between economic, environmental and social impacts are hard to quantify. When it comes to potential futures and unintended consequences, there are many unknowns. We try to compensate by adding in margins and contingency, and that drives up cost and waste.

It's now possible to interactively visualise complex inter-dependencies between factors like population growth, climate change, or COVID-19, against demand for transport, energy and water. 'What if?' scenario modelling that previously required teams of specialists for months can now be run by decision makers on demand.

### Tackling Wicked Problems

Sentient Hubs is an award-winning decision support platform that enables integrated impact assessment across economic, environmental, and social dimensions. It's an open 'APEX' platform that enables convergence across diverse systems, domains and stakeholders at scale - delivering decision makers a better understanding of when, where and how to deploy resources.

Notably, we make it easier for organisations to accurately assess Climate-Related Financial Disclosures (TCFD) on how climate change could affect assets, investors and stakeholders.

**“Based on my experience, the capabilities demonstrated by Sentient Hubs are unique in the market at this time.”**

Michael Rillstone - Head of Business & Platform Solutions  
Atos Australia and New Zealand



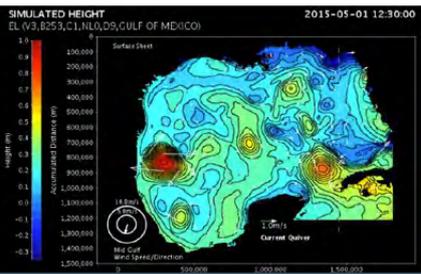
### Breakthrough Innovation

Built on 30 years advanced environmental science and field-proven predictive modelling, Sentient Hubs is a next-generation simulation and optimisation platform that leverages the full power, speed and scalability of Cloud computing. Decision-makers can now rapidly generate, share and compare complex 'What if?' within minutes.



# THE ADVENT OF MULTI-DOMAIN 'SUPER-SIMS'

## 100% Vendor Agnostic 'APEX' Platform Linking Diverse Ecosystems



- Ecosystem-Wide Awareness
- Built, Natural, Human Factors
- Global to Hyper-Local Scale

### Collaborative Platform Linking BIM, GIS, ML and Multi-Physics Simulations

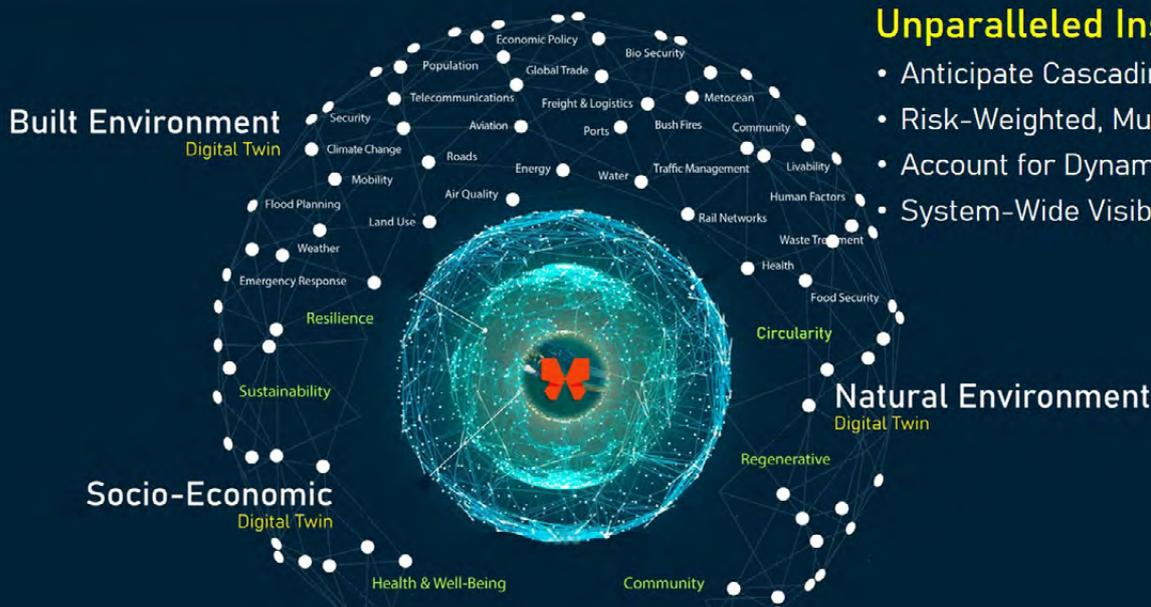
The advent of machine learning, IoT and Digital Twins has opened up incredible new opportunities, however until now, assessing risk and determining optimal options across complex, multi-modal environments has remained hard, expensive and slow. It's been impossible to get a realistic and dynamic overview of the big picture. To move at speed with decisions during disruption – and rely on fewer 'judgement calls'.

Sentient Hubs improve outcomes across the asset lifecycle: from complex 'What if?' Scenario Planning (CAPEX) to Proactive Adaptive Operational Intelligence (OPEX). The Platform is 100% technology neutral and vendor agnostic. It sits above and outside existing platforms and ecosystems – linking them to create interactive 'super simulations'.

Improving outcomes for society and the environment by better understanding inter-dependencies between natural systems like climate, and communities' demand for transport, energy and water.

### Convergence: Built, Environmental and Societal Digital Twins

Sentient Hubs make it easy to integrate a virtually unlimited number of hardware, software, and data sources.



### Unparalleled Insights

- Anticipate Cascading & Cumulative Impacts
- Risk-Weighted, Multi-Factor Decision Support
- Account for Dynamic Externalities
- System-Wide Visibility & Resilience

### What is a Sentient Hub?

APEX Platform Linking and Executing Diverse:

- Simulations, Digital Twins & Data Sources
- Operational Technologies & Applications
- Financial + AI + Climate/Ocean Models



 Sentient Hubs

**WINNER**

Best New Disruptive Platform

# Integrated Multi-Domain Impact Assessment

## Better Quantify the Total Cost and Impact of Decisions

### How much will a 4% increase in population affect:

- Demand for power, water, logistics?
- Urban Encroachment, traffic congestion and air quality?
- Infrastructure priorities over the next 20 years?

The development of major infrastructure in urban settings is a highly complex endeavour. Planning, design, environmental and social impact assessment, diverse stakeholder consultation, investment attraction, approvals and construction can span decades.

Determining the best location, size and timing for critical infrastructure can be particularly difficult: multiple competing stakeholder interests, technical factors, transport & logistical considerations, and resourcing constraints must all be taken into account.

Dynamic factors affecting decisions can include: trade and economic development forecasts, adjacent communities and industrial developments, local ecology, noise levels, traffic congestion, and air quality.

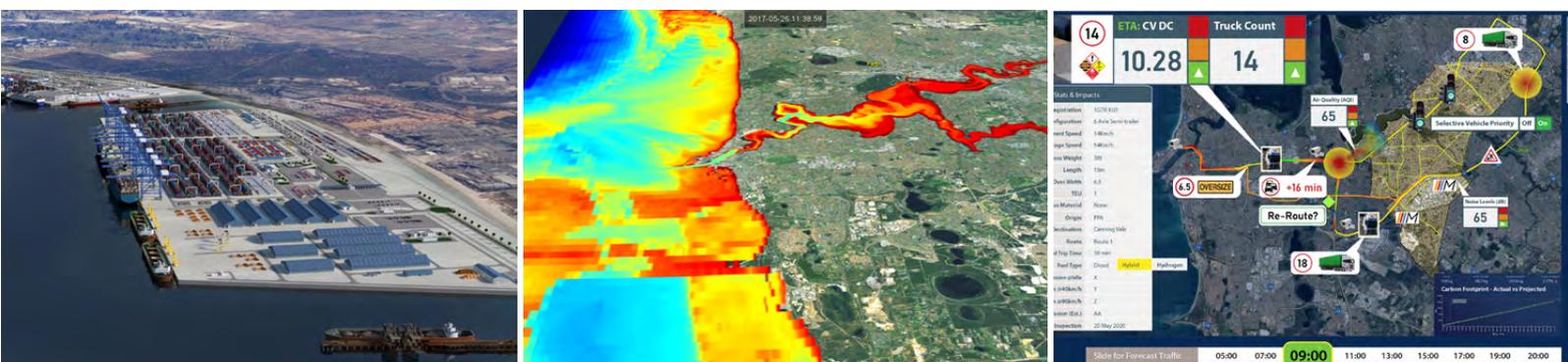
**The complexity and long-term planning horizons involved in major infrastructure development combine to create considerable levels of uncertainty and risk for proponents, communities and regulators alike.**

Planning and investment options analysis is necessarily dependent on widely-ranging scenarios and assumptions. Sentient Hubs has been expressly developed to allow interactions between complex, multiple, interdependent systems to be modelled, so that planners and decision-makers can run through and test multiple 'What if?' iterations quickly and cost-effectively.

Whatever the context, Sentient Hubs provide internal and external stakeholders access to a powerful ecosystem-wide multi-variate simulation platform that greatly simplifies and accelerates complex infrastructure planning; and reduces uncertainty and risk.



- Dynamically model cascading and cumulative impacts
- Visualise inter-dependencies: economic, environmental, and social
- Understand when, where and how to deploy resources more sustainably



# EPA-Compliant ESG/TCFD SCENARIO MODELLING

## Cumulative Impact Modelling & Trigger Point Optimisation

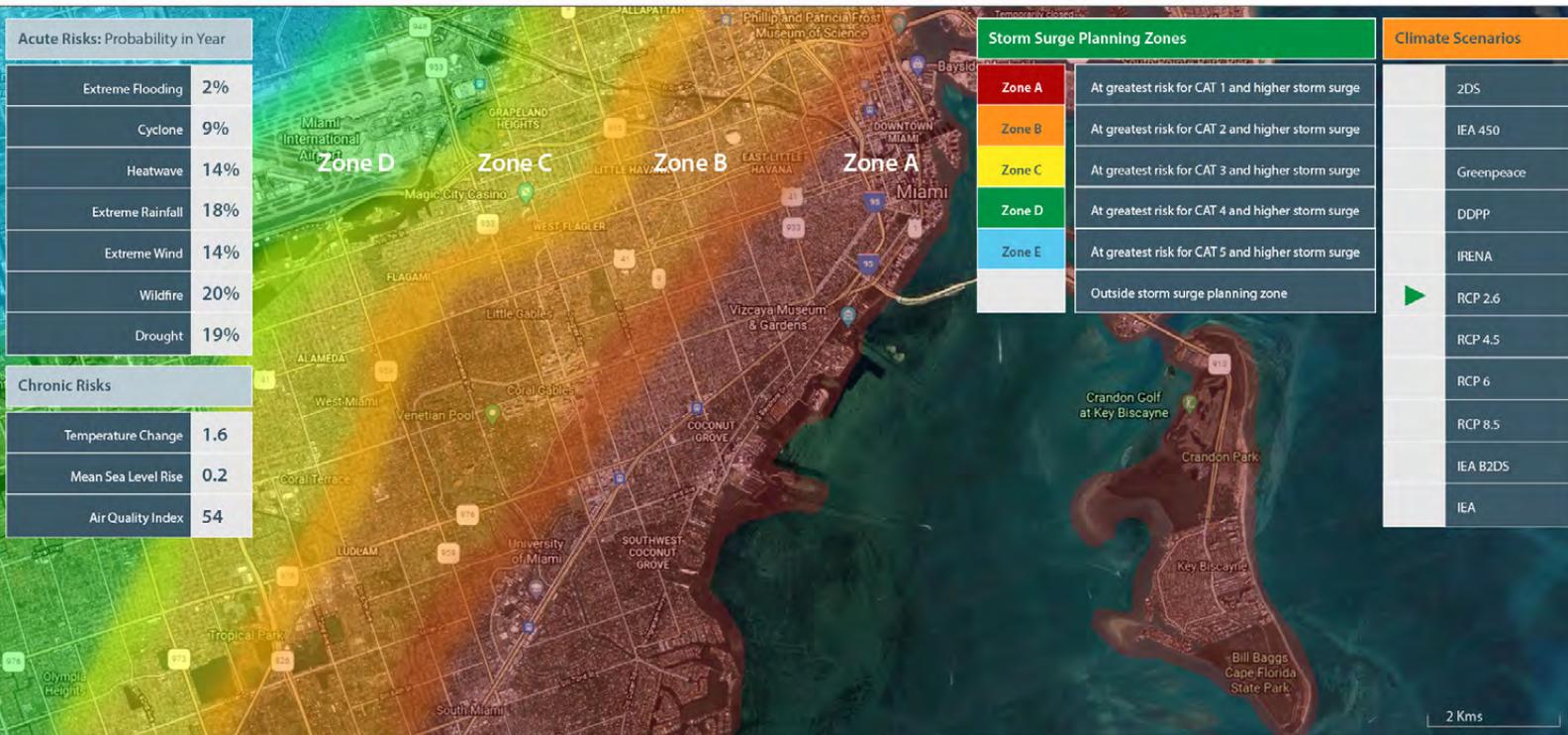
### Access a Growing Library of Linked Applications and ESG Services

Run multiple scenario models (eg: Excel, Machine Learning, Physics) separately, or daisy-chained, via Sentient Hubs collaborative Software as a Service (SaaS) Platform. Link in-house models to a growing list of 3rd Party and open-source models and ESG consulting services.

- Air Quality Tool (SOx, NOx, Odours)
- Capital Allocation Optimiser
- Bushfire Modeller
- Carbon Footprint Predictor
- Climate Scenario Modeller
- Coastal Erosion Modeller
- COVID Impact Modelling
- Distributed Energy Use Simulator
- Dynamic Trade Forecaster
- Economic Impact Simulator
- Grid Resilience Simulator
- Social Impact Modeller
- Structural Risk Simulator
- Flood Damage Simulator (TCFD)
- Infrastructure Impact Simulator
- Land Use Modeller
- Long Supply-Chain Simulator
- National Energy Simulator
- Noise Pollution Simulator
- Ocean Current Simulator
- Ocean Plastic/Debris Tracker
- Operations Performance Optimiser
- Scope 3 Emission Forecasting Tool
- Sediment Transport Simulator
- Solar Radiation (PV) Forecasting Tool
- Traffic Congestion Simulator
- Water Balance Simulator
- Water Quality Simulator
- Wind & Wave Modelling Tool
- Weather & Climate Models



### Climate Change Impact Modelling Tool



City, Zip Code, Address:

South Miami

Flood risk over time

2021

2025

2030

2035

2040

2045

2050

2055

2060

2065

2070



# Better Outcomes for Society and the Environment

## Achieving Transformative Change Sooner

### 'Best Practice' No Longer Good Enough

Humanity is more dependent on nature now than at any time in our history. However, nature everywhere is under threat to a degree never previously seen, and our increasing need for more food and energy is the main driver.

The simultaneous challenge of protecting nature, while accommodating the demands of population growth, requires transformative change.

Our world is an interconnected system. Understanding how to balance society's ever-growing needs with nature's fragility requires a new and better approach to urban planning and governance.

### A Holistic Approach to Planning, Governance and Optimisation

Moving beyond GDP as a key measure of economic wealth, Sentient Hubs offer a more holistic approach that captures quality of life and long-term effects. We support a shift to the idea that a fulfilling life is aligned with a good relationship with nature, and a good relationship with other people. 'Best Practice' is no longer good enough.

We help decision makers improve their understanding of the impact of planned developments on an ecosystem-wide basis. We then enable collaboration, transparency and better governance to ensure sustainable practices and outcomes over time.

*Contact us if you're ready to go past the hype and change for good.*



David Lucido

Founder & Managing Director  
Sentient Hubs



Sentient Hubs Pty Ltd  
info@sentient-hubs.com  
[www.sentient-hubs.com](http://www.sentient-hubs.com)  
2 Brook Street  
East Perth, Western Australia 6004