

RUNWITHIT SYNTHETICS

CALCULATING INTERCONNECTED FUTURES
IN SINGLE SYNTHETIC ENVIRONMENTS

APPLIED RESEARCH MEET YOUR FUTURE

Reimagining futures driven by disruptive changes requires a new approach to designing and deploying various combinations of solutions that meet specific locational needs and objectives. With RUNWITHIT Synthetics Inc.'s (RWI), Single Synthetic Environments (SSE's), decision-makers and stakeholders can explore and engage with live, complex, hyper-localized, large-scale simulations with ease, supported by compelling data and visualizations. SSE's combine all types of domain expertise, research, and even anticipated data into models, completing and producing data for analysis. Unlike point-in-time, scoped research results, SSE's are limitlessly extensible, ensuring a nexus for continuously adding new insight, exploring new scenarios and translating results into action.

HYPER-LOCALIZED, INTERCONNECTED, ENTITY MODELS

SSE scenarios include all of the relevant entities in order to quantify impacts and outcomes for readiness, sustainability and resilience. Some examples of the building library of modelled entities include:



People (individuals)- demographics, psychographics, segmentation, abilities, health, disease transmission, activities, motivations, economics, barriers, choices, basic needs, household composition, cultural, historical, and situational preferences, patterns of life, energy consumption, marginality, and intersectionality.



Movement models- human movement, group behaviour, pedestrian, micro-mobility, public and private transportation, congestion, evacuation.



Infrastructure- buildings, utilities, roadways, transportation corridors, sidewalks, paths.



Physics based models- electrical consumption, utility infrastructure, capacity, and performance, geospatial environments and constraints.



Economic models- reactive/responsive supply and demand, GDP loss, business loss, utility rates and incentives, willingness to pay.



Environmental Models- GHG emissions and contaminants, weather, earthquakes, climate change, disasters (including cyber attacks).



Technology- existing, available, and anticipated technology (IoT, Digital Media, IIoT sensors, networks and controls, in-vehicle systems, public transportation modes, micro mobility, EV, PV, Battery Storage, Vehicle-to-Grid (V2G), Vehicle-to-Building (V2B), Battery-to-Building (B2B), meters, chargers, microgrids).



PLANNING, ANALYZING, OPTIMIZING, COMMUNICATING

RWI's SSE momentum continues to build delivering to customers in an ever-expanding number of sectors from its start in digital systems to current applications in energy transition, public health, defence, disasters, and mobility. Some historical highlights include:

2014 RWI began creating SSE's for validating and optimizing global digital systems readiness including in vehicle with complex edges and interactions with other systems, user interfaces, behaviours and environmental context. These environments are utilized to accelerate development and minimize critical system delivery risk.

2016 RWI extended SSE's to model people interacting with wearable technology while experiencing emergency events. These geospatial environments explore device performance, human/machine interface inflections along with biometric data, human behaviour, and evacuation outcomes.

2019 RWI applied SSE's to an earthquake resilience environment for Silicon Valley as the IoT World Expo Keynote with Itron, a global leader in IIoT utility technology. RWI worked with the support of the National Research Council and the University of Alberta to extend this utility and energy transition layer to Synthetic Edmonton, a fully synthetic city where behind-the-meter consumption and adoption patterns of EV's, PV's battery storage, and energy sharing could be inflected, the impacts on grid assets identified. RWI synthesized each household based on publicly available data, including segmentation, incentive responses and patterns of life to explore the demand-side of grid futures.

2020 RWI extended Synthetic City SSE's into energy as winners of the Incubatenergy® Labs Challenge for EPRI (Electric Power Research Institute) modelling resilience environments and impact calculations for a dual-disaster outage during COVID-19. Backup power access, utility communication investments, and COVID-19 rates were inflected to analyze the impacts on vulnerable populations, consumer energy-sufficiency plans, willingness to pay, trust in utility, health risk, GDP losses and future GHG emissions.

2021 RWI is tackling mobility as a Finalist with the Toyota Mobility Foundation's City Architecture of Tomorrow (CATCH) delivering Synthetic KL, an SSE design environment to achieve "Mobility for All" as a part of the Kuala Lumpur 2040 plan. RWI and EPRI have also been selected as partners to participate in the AFWERX Showcase, Reimagining Energy Culture Policy and Education for the US Airforce.

THE COMPANY

RUNWITHIT Synthetics is a women-led, Certified Aboriginal Business, and has been recognized for its commitment to diversity and inclusion in hiring practices, corporate culture and the environments/data RWI builds for clients. RWI's highly technical team is representative, diverse, and all team members are GBA+ certified. RWI's brings a unique creative and collaborative approach, a direct result of our inclusive practices and leadership.



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