SIMUDYNE®
ENGINEERING REALITY

Simudyne

A 21st century cognition platform

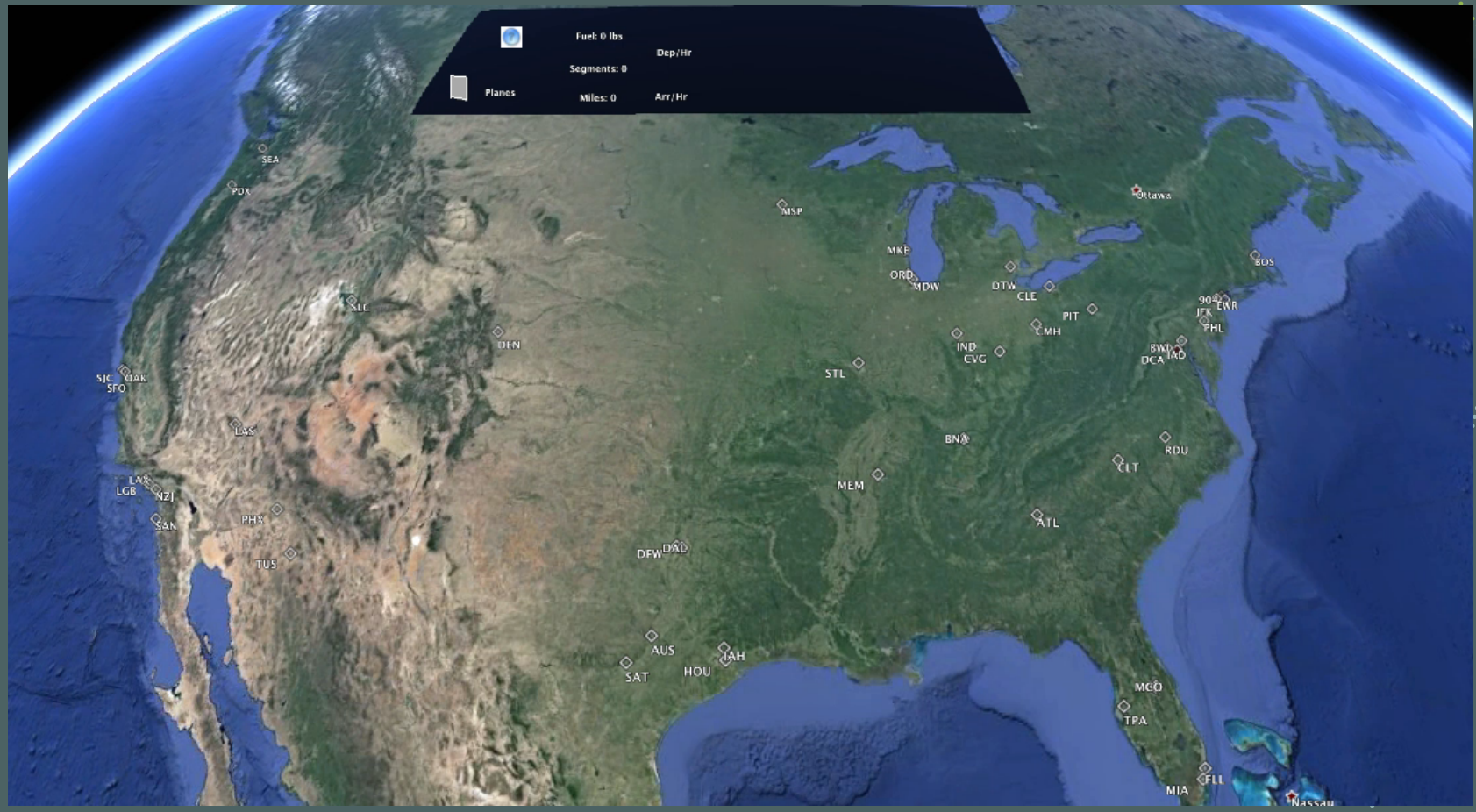
Southwest Airlines Fuel Purchasing

Problem

- *Current flight routes were costly, and used large quantity of fuel*
- *SWA wanted to reevaluate the routes, and refueling points, to determine more cost-effective paths*

Solution

- *Aircraft's routes, and fuel consumption was tracked to determine current outputs.*
- *Using simulations, hundreds of alternate routes were ran in a test environment, and compared to the current.*
- *A number of optimal routes were identified and allowed SWA to determine best option.*



Source: StrIVE by Simudyne - http://www.simudyne.com/strive/

Gate Setup Simulation

Problem

- *Airside gate expansions are very complicated and intricate*
- *A vast number of factors and variables need to be taken into account*
- *Projects are often very expensive and time consuming*

Solution

- *Visualisation technology allows planners and architects to map out*
- *Specialist tools can flag up factors that cause hindrance to general operations.*
- *Examples of factors are:*
  - *distance of parked aircraft from fuel wells*
  - *wingtip clearance distances*
  - *Jetway accessibility*

Source: AeroTURN, by Transoft Solutions - http://transoftsolutions.com/aeroturn

FlightQuest Savings Simulation

Problem

- *Flight planning includes many variables such as fuel usage, flight restrictions, weather, etc.*
- *Refinement of flightplans is very time consuming*
- *Refinement information is often not available fast enough to be taken into account during planning.*

Solution

- *Multiple tests allow users to refine ideas and 'see' what factors work best*
- *Simulations are able to determine the optimal flightpaths that save time, fue,l and cost.*

Source: GE Data Visualisation - http://www.gequest.com/

Aerodrome Ground Traffic Simulation

Problem

- *Hard to keep track of aircraft movements in large airports*
- *Ability to know which aircrafts are taking which taxiway routes is limited*

Solution

- Interactive map shows aircraft locations and details which aircraft is transmitting
- Ability to highlight proposed/directed taxi routes
- Filter allows visibility toggle to show/hide different map elements (hold short markers, taxiways, etc.)

Source: ASR-driven Communications - https://www.youtube.com/watch?v=_9dW5Eq85bg

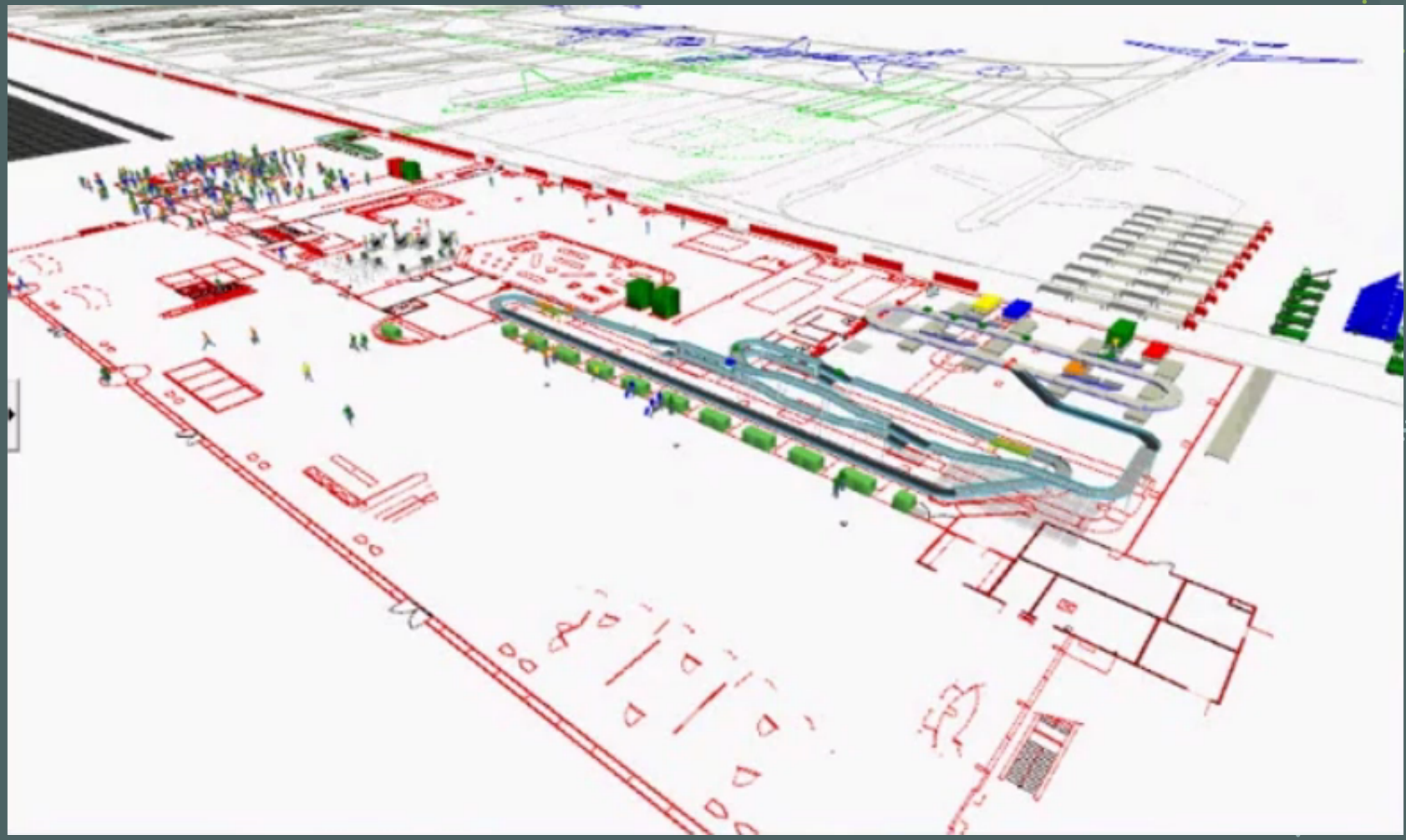
Airport Passenger Flow

Problem

- *Flow of passengers throughout an airport is complex and hard to track*
- *Various upgrades to an airport's layout is directly tied to how passengers move though it*
- *Passenger flows should be reviewed and improved to allow faster transition through the airport, and the ability to process more customers.*

Solution

- *Visualisations allow users to accurately follow individual and groups of passengers as they move through the airport*
- *System can flag choke points and congestion areas that may not be noticeable in person*
- *Layouts can be dynamically changes to view the impact on passenger flow and find optimal layout*



Source: FlexSim Logistics; https://www.flexsim.com

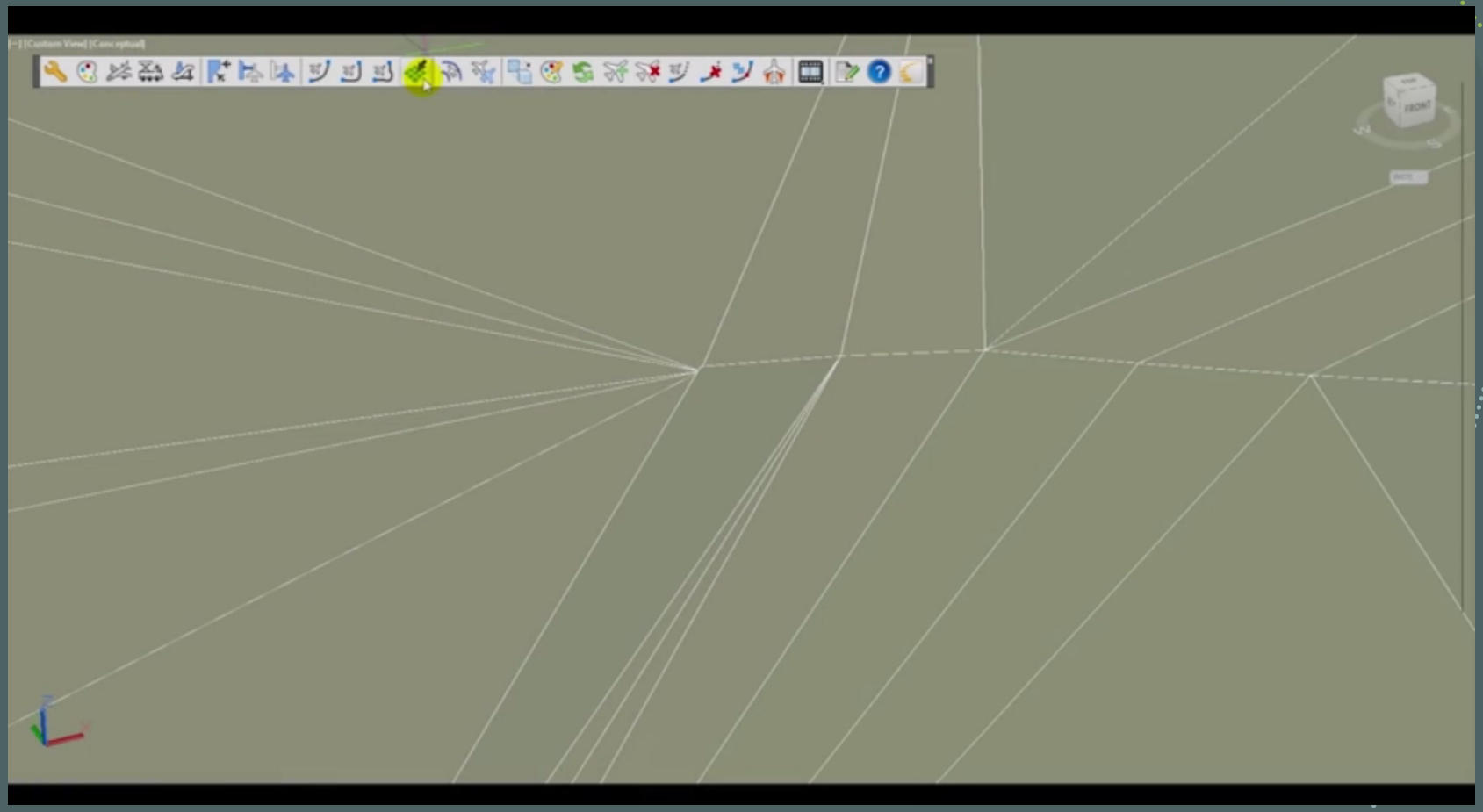
Ground Service Vehicle Collision Detection

Problem

- *Ground service vehicles are custom/ purpose-built, and often have low ground clearance or wide bodies*
- *These custom shapes increase the chance of collisions with either ground inclines or static structures.*

Solution

- *Simulations and visualisation allows vehicle details to be loaded in, including heights, width, clearances etc.*
- *This data, coupled with terrain elevation information of an airport allows routes to be plotted, and possible collisions detected and analysed.*
- *Detecting these collisions beforehand saves millions of pounds worth of damage repairs each year.*



Source: AeroTURN, by Transoft Solutions.; http://transoftsolutions.com/aeroturn

Airspace Tracking Visualisation

Problem

- *Around 6000 flights operate in UK airspace every day*
- *Heathrow is the busiest two-runway airport in the world*
- *Tracking flights in this environment is an exceptionally difficult task*

Solution

- *Visualising flights in and around UK airspace allows congestion zones to be identified as 'hot spots' on the map*
- *Restricted flight zones can be visualised in 3D with both area and ceiling height, allowing flightpaths above or below to be accurately mapped.*
- *Holding stacks can be observed in conjunction with neighboring traffic, to determine best placements*

Source: UK24, by NATS; http://www.nats.aero/