FREE TESLA-FLEET SHARING

Using simulation and AI to optimize offer

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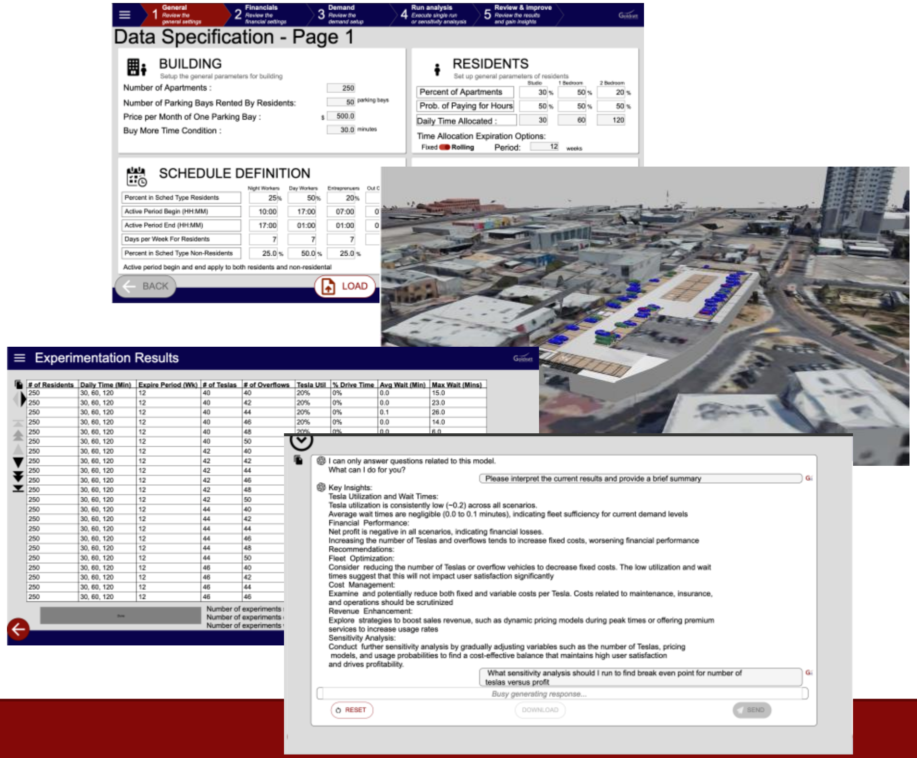
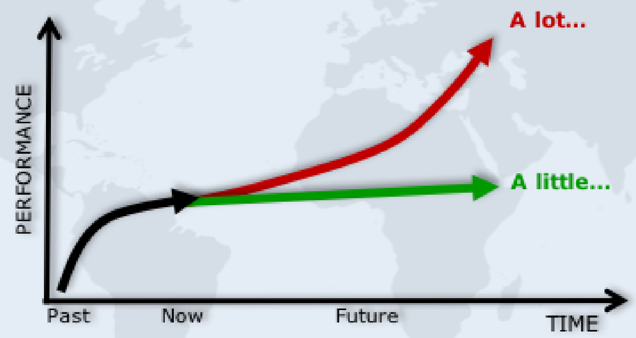


Goldratt Research Labs

Our vision: Helping organizations and individuals make better faster decisions… when it really matters

We are passionate about helping organizations answer two simple but important questions:

1. How much better can you do … ?



2. How best to do it… ?

… in the simplest and fastest way, with lowest cost and risk…?

Our CUSTOMERS include…

Our RESEARCH PARTNERS include…

2. Client background

The Company

- **The Z-Life company:** cutting-edge real estate development company focused on innovative structural design and modern living experiences.
- They aim to **redefine the industry by helping to solve the inner-city housing shortage**, combining the affordability of pre-engineered functional designs with modern designs to create unique living spaces in inner-cities.
- Their projects reflect a commitment to contribute to **reducing the cost of inner-city living and improving quality of life**

Their properties

- **Luxury Residential Apartments and Hotels**: High-end living spaces with modern amenities and innovative designs.
- **Mixed-Use Developments**: Projects that integrate residential, commercial, and retail spaces for a cohesive urban experience.
- **Sustainable Buildings**: Focus on eco-friendly and energy-efficient structures.

3.1 Project and Model Objectives

Project Objectives

- Find **win:win:win** for **residents: developers: city council:**
  - By how much can we **reduce the Transportation cost** per month for residents?
  - By how much can you **reduce the number of parking bays** needed?
- How many **Free-to-Use** Teslas would be needed to ensure an average waiting time of no more than **5 minutes**?
- How many **Pay-to-Use** Teslas would need to be added to achieve a **breakeven for the developer**?
- How sensitive are the decision parameters on the above outcomes

Model Objectives

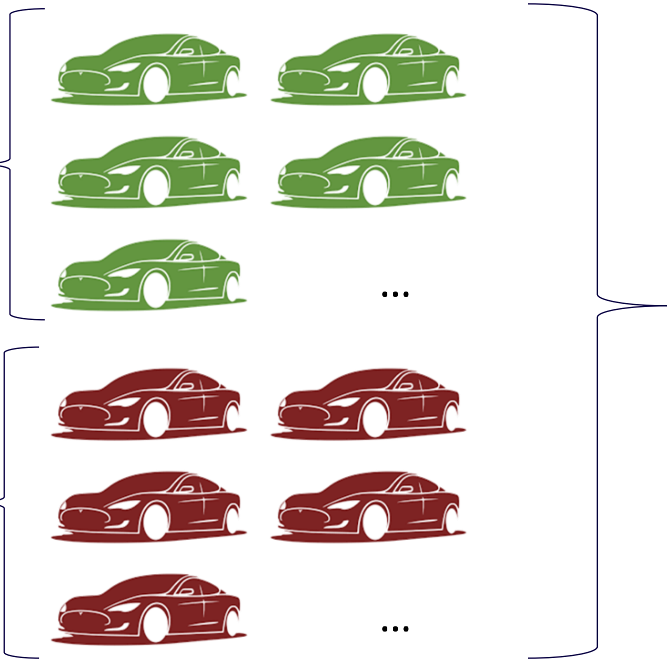
- Build a model that can easily be configured through only the User Interface
- Model must be able to consider **critical system interdependencies, constraints, complexities and variability.**
- Model must be able to easily test:
  - **Changes in offer in terms of free minutes** per apartment type and minutes expiration options
  - Sensitivity to resident demographics and usage patters by resident type
- The model needs to be able to:
  - Incorporate **Artificial Intelligence** when analyzing results
  - Perform **automated sensitivity analysis** on the main input parameters

3.2 Model design

Tesla Fleet

Free to use

Pay to use

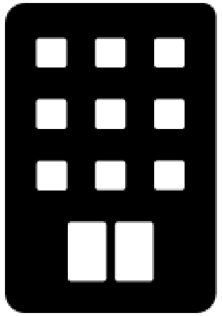


Parking Space

Either rented or parking garage built

#50

Apartment Complex



#250

Residents

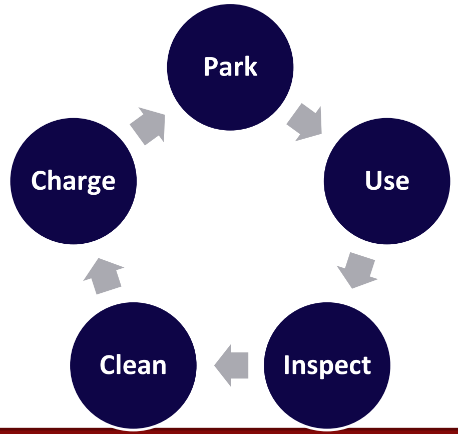
Non-Residents

Free to use minutes accumulate either to a rolling or fixed X weeks

Type	Fraction	Minutes/day
Studio	30%	30
1 Bedroom	50%	45
2 Bedroom	20%	60

Type	Fraction	Active period
Night Worker	25%	10 AM -> 5 PM
Day Worker	50%	5 PM-> 1 AM
Entrepreneur	20%	7 AM -> 1 AM
Out of state	5%	7 AM -> 1 AM

Tesla Usage Cycle



Trips can either be short or long trips lasting multiple days

- Non-residents and residents with no free to use minutes can use a Pay-to-use Tesla.
- Non-residents pay higher rates than residents
- Probability of use differs by day of week

4. Why Simulation, Why Anylogic ?

Why Simulation?

- Can consider all the **critical system interdependencies, constraints, complexities and variability**
- Can provide a **range of likely outcomes** for single scenarios, do sensitivity analysis and direct scenario comparisons
- Can provide a **low-risk, low-cost** way to test the impact of any changes on both operational and financial performance

Why AnyLogic?

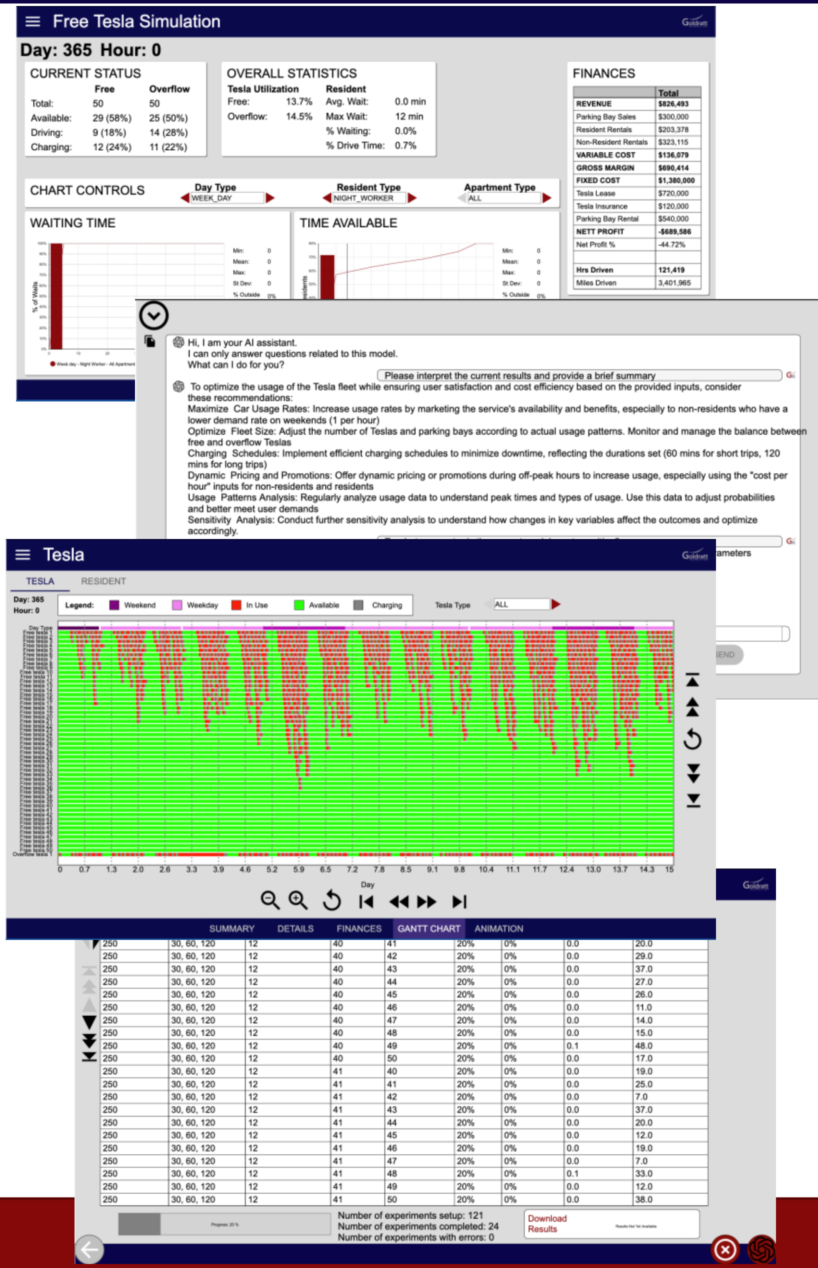
- Can replicate **the real-world complexity** using both **Agent-based** and **Discrete Event** simulation methods
- Ability to create **Self-Configurable** models to cut dev time, ensure usability and scalability for a range of system configurations
- Ability to export the model as a **stand-alone app** and option to use **AnyLogic Cloud** to run resource-intensive models
- Able to **utilize standard Java** libraries and integrate with numerous other applications (e.g Integration with ChatGPT assistants)

5. Model Demo

6. Summary of Results

- Initial Results from the model showed:
  - Transport Cost for Residents reduce from **$500 to $200/month**
    Need **35** Free Teslas (not **50** as expected) to achieve waiting time < **5** min
  - Need **20** Paid-to-Use Teslas to achieve breakeven
  - Reduces the Parking Bays needed from **250** to **105**
    - **35** for Free-to-Use Teslas
    - **20** for Paid-to-Use Teslas
    - **50** for Residents that cannot give up their cars and need parking

- Model is still actively being developed and improved to guide strategic decision making to help optimize the offer at the current and future planned properties to cater for the unique conditions of each property and its residents.



7. Questions and Answers

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