

Strategic Two-Player Decision-Making for Residential Density Planning: Game-Theoretic Decision Structures in Urban Contexts

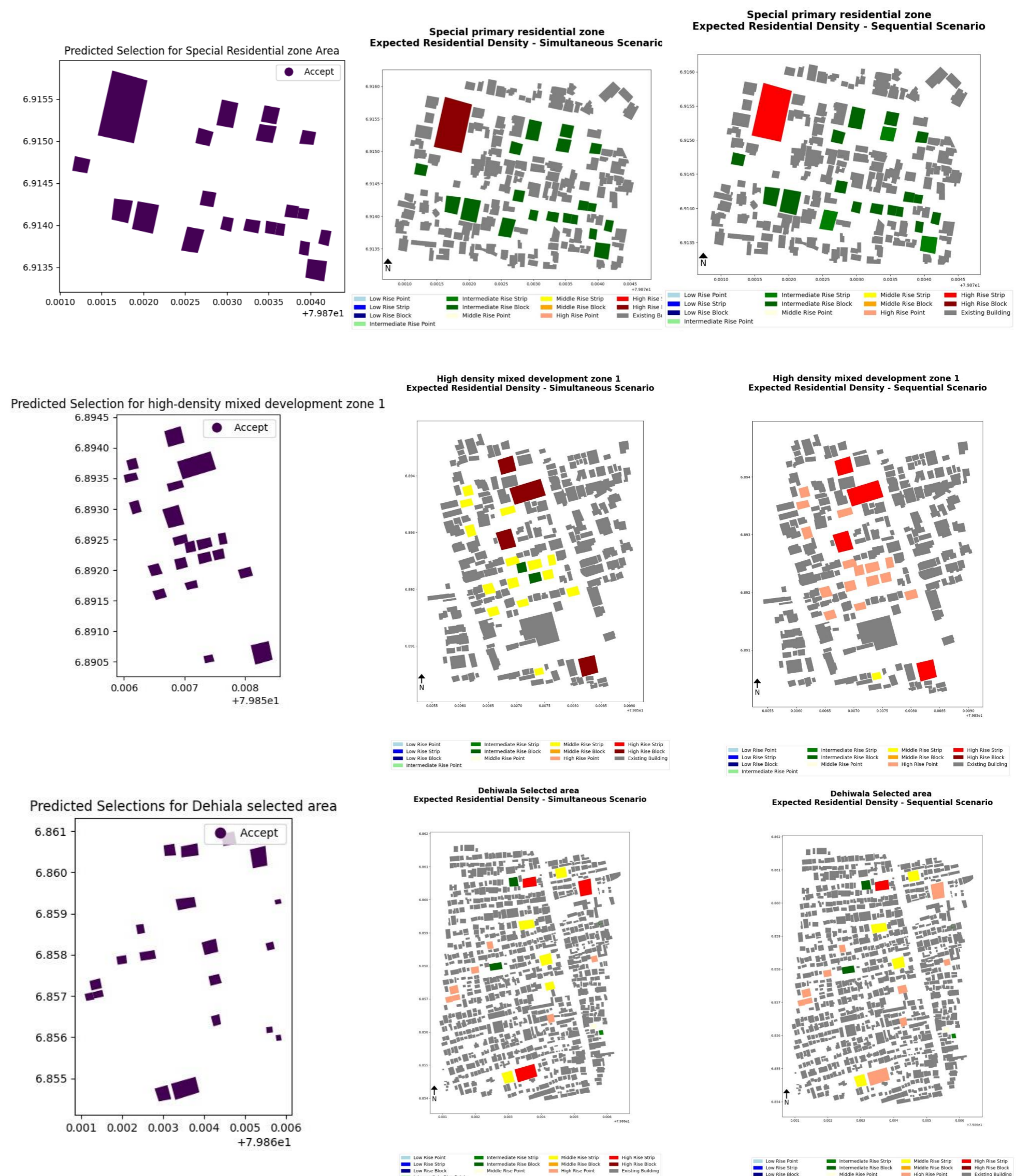
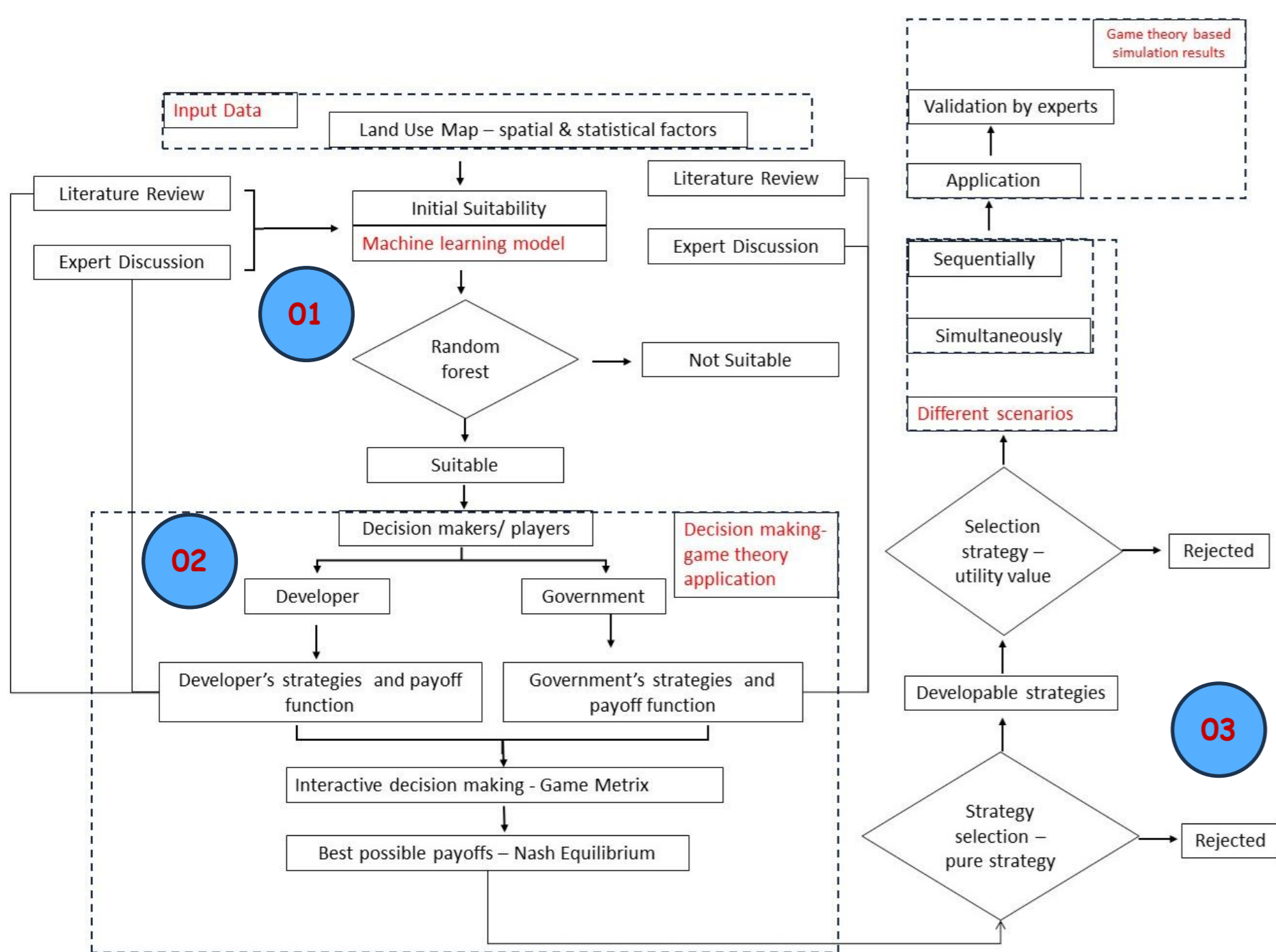
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Main Objective

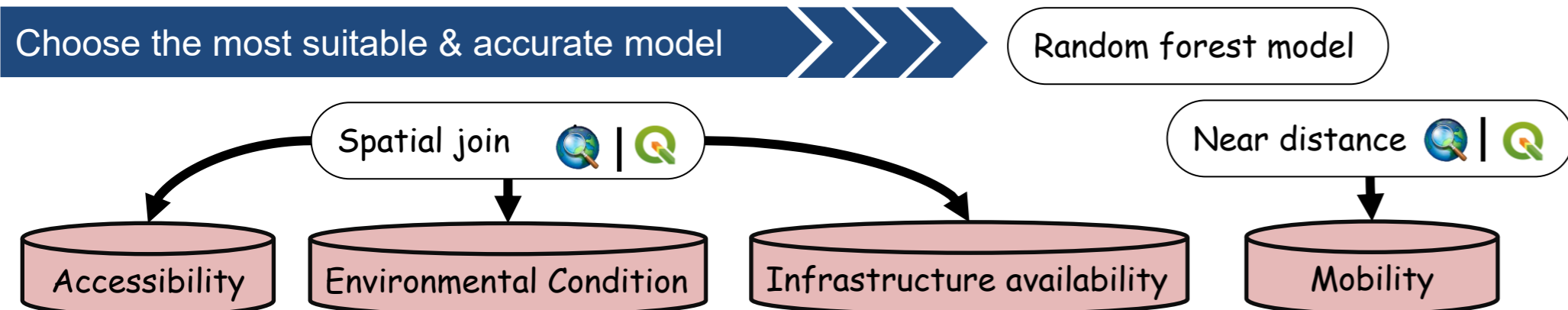
To develop and utilize a GTIDM framework integrated with machine learning to simulate stakeholder decisions, analyse and optimize outcomes in residential building density scenarios, and support the best payoffs for all parties.

METHOD

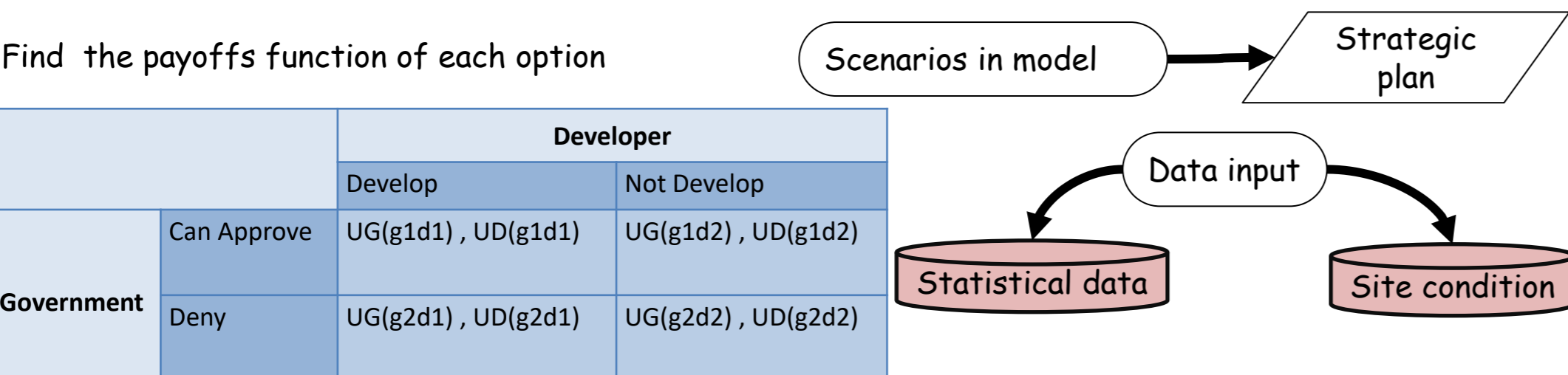


RESULTS & DISCUSSION

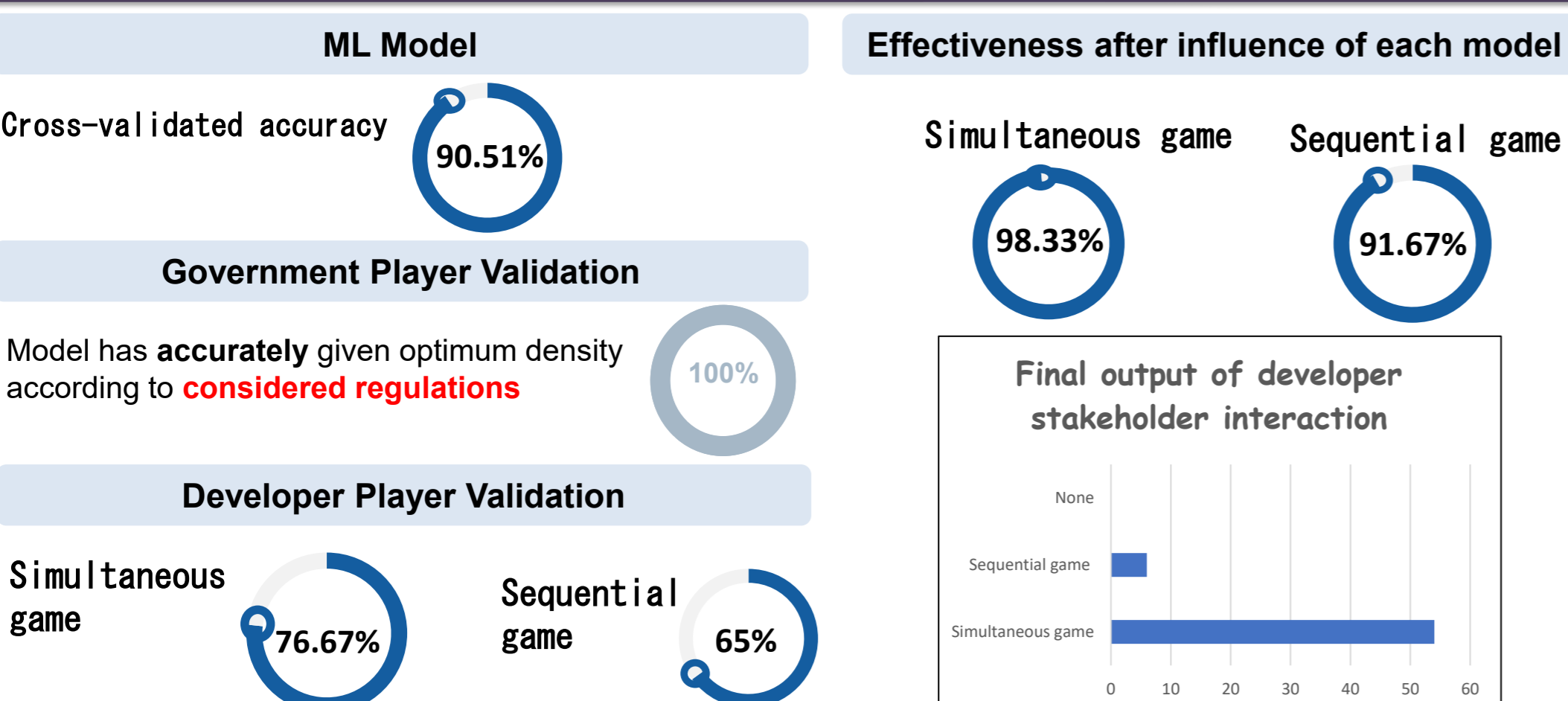
Initial suitability



Interactive decision-making



Validation



Findings & What Researcher Learned

- Density decisions involve with **initial self-oriented** input, moving to **collaborative decision-making** for aligned stakeholder interests.
- The **simultaneous model** is most suitable, & any **game theory (GT) model** is applicable according to the **strategy**.
- Applying GT reduces **complexity and conflict**, fostering **rational, interactive decision-making** and **enhancing stakeholder engagement**.
- Visual representation of density distribution supports understanding and comparison of policy impacts, enabling informed decisions.

CONCLUSION

- The developed framework **enables rational decision-making** based on **optimum density outputs**.
- The study explores the framework's **potential in various land-use decision-making processes**.

FUTURE WORK

- Integrate a **financial model in payoff** calculations for **improved accuracy**.
- Enhance **accuracy** in land and building **shape representations**.
- Utilize more **precise data**, such as floor plans and survey plans, to inform decisions.