Project Proposal – Group 3

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1. **The scope of the project in business terms:**

Our project analyzes the trends in property values across St. Petersburg neighborhoods from 2015 to 2022. We're looking into how different types of properties have changed in value over time. The goal is to understand the key drivers behind property value growth and how homestead status might influence these trends. This insight will help us grasp the real estate dynamics within the city, aiding homeowners, investors, and policymakers in making informed decisions. It will specifically examine:

* + **All properties** to get an overall market perspective.
  + **Strictly residential properties** to identify trends in this residential sector.
  + **Single-family residential properties** to understand growth in this key market segment.
  + **Non-homestead single-family homes** to assess the impact of tax incentives on property values.
  + **Single-family and missing middle properties** to explore broader residential market trends.
  + **Impact of homestead exemptions** on growth rates, providing insights into their influence on the real estate market.

# The potential data sets:

* + **2015 Property Data**: Contains initial property values, types, and details like square footage/acres and ownership, serving as the baseline for growth analysis.
  + **2022 Property Data**: Updates with the latest property values and details for calculating growth rates and current market conditions.
  + **Property Categorization**: Offers classifications of property types essential for segmenting data into specific categories for detailed analysis.
  + **Neighborhood Map**: Provides geographical context, enabling the mapping of property value growth by neighborhood and supporting spatial analysis to identify growth patterns.

# The methodology (applicable data tools, methods, and/or algorithms):

Our analysis will encompass data preparation, segmentation, growth rate calculations, spatial mapping, and comparative analysis using tools like Python, ArcGIS in PowerBI, and Power BI analytics. This approach will allow us to explore and visualize property value trends in St. Petersburg's neighborhoods comprehensively. Specific steps include:

1. **Data Preparation**: Utilize Python's pandas for cleaning and preprocessing the datasets.
2. **Segmentation**: Segment data by property type using pandas based on the Property Categorization.
3. **Growth Calculation**: Calculate mean and median growth rates with Python or R statistical functions.
4. **Spatial Analysis**: Employ GIS software (ArcGIS in PowerBI) for mapping growth rates referring the Neighborhood Map.
5. **Comparative Analysis**: Conduct comparisons of growth rates across categories using Power BI's built-in analytics and visualization tools
6. **Visualization**: Create trend charts, slicers and ArcGIS maps on Power BI for visual insights

# The anticipated business outcomes:

* + **Informed Investment Decisions**: Insights into high-growth neighborhoods and property types of guide investors.
  + **Strategic Development Planning**: Developers can identify lucrative areas for residential projects.
  + **Policy Formulation**: Policymakers can assess the impact of homestead exemptions on market dynamics.
  + **Market Trend Analysis**: Real estate professionals gain a comprehensive view of market trends for strategic advising.
  + **Enhanced Property Valuation**: Accurate growth rate analysis improves property valuation models.

1. **Project Management:** We will use Trello, a web-based application, to organize our workflow and collaborate with our team members. Trello helps us manage task distribution and time management.