**Title:** SmartBike Data Analytics to Improve Bike Sharing Service and Efficiency

**Invention:** SMARTBIKE, is a three-layer tool to aid bike-sharing company executives and city administrators in making more efficient decisions when implementing bike sharing systems. The first layer incorporates the use of big data to produce accurate demand estimations. The second layer interprets the bike flow patterns of a specific community. The last layer is primarily based around decision making with assistance from metrics and dynamic visualizations designed specifically for city administrators and managers. These three layers work to improve the overall workability and efficiency of bike sharing networks in cities by means of analytics consulting.

**Background:** Major cities worldwide have been adopting bike-sharing programs for several reasons including combatting global warming and promoting healthier lifestyles. These programs, which allow users to borrow bikes from various stations, are provided by companies or cities that wish to provide riders with ease of access. However, there is often more demand for bikes than there is supply. In addition, certain stations can quickly reach their bike capacity, causing riders to go out of their way to return their bike to a station with open spaces. SMARTBIKE aims to relieve this issue by helping city planners and bike-sharing companies to make data based decisions to best meet riders' needs and avoid further demand-based circumstances.

**Applications:**
- Bike-sharing programs (both city and company based)
- Potential for aid amongst car-sharing programs

**Advantages:**
- Increases efficiency
- Increases user satisfaction

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• Long term cost savings through strategic location planning
• Projects a reduced need for labor hours spent on sorting/replacing bicycles and overall operations

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