Question:

* Decide how you could use this software to create a model to help in developing a policy for a Smart City.
* Explain what policy you are trying to create (i.e. traffic light placement, surveillance camera coverage, taxi licenses issued, etc.), and what key features you would use in your model.
* Explain how EMA Workbench would help you.

Use the below link to finish discussion.

<https://emaworkbench.readthedocs.io/en/latest/basic_tutorial.html#a-more-elaborate-example-mexican-flu>

**Instructions**:

Need minimum 450 words

Need 3 APA references

No plagiarism please

Need 3 responses (150 words Each 🡪 Use uploaded document for responses)

**Initial Post 1**:

Decision modeling includes the utilization of express systems and scientific ways to deal with decide how the rare assets are allotted. This methodology advances the execution of a framework. Similarly, framework displaying in an IT situation includes the utilization of models to build and conceptualize frameworks utilizing strategies, for example, Functional Flow Block Diagrams. To achieve such basic errands, workbenches', for example, Exploratory Modeling and Analysis (EMA) are required. As per the Bankes (1993), EMA utilizes computational preliminaries to complete investigation of questionable frameworks in this way empowers steady basic leadership. EMA helps to create diverse model bundles at various conditions, for example, Net Logo, Excel, and Vensim. The EMA demonstrate utilizes connectors to complete recreation displaying, for example, Vensim connectors and Pysd connectors. Constantly, the investigation procedure utilizes representation methods to examine the data from exploratory displaying. The examination incorporates grouping trees, affectability investigation, and conduct bunching and enlistment techniques to yield practices.

As indicated by Hamarat (2010), usage of a model determines the vulnerabilities and results. A precedent that represents the EMA show is the Mexican Flu demonstrate. After the flare-up of the disease, USA, and Mexico stayed dubious on the conceivable expenses and elements of the following pestilence. There was a need to build up a straightforward, abnormal state structure that would help diminish the spread of the infection. As per the creator, the model was separated into Western World district, expanding locale which was thickly populated and the hardly populated region. The vulnerabilities of this season's cold virus were the powerlessness rate, casualty rate, and the contact rate. The model was created in a python program and a variant program by utilizing Time Series Outcomes (TSO) classes. The model at first conceptualize the influenced areas and afterward instantiate the model. For a fruitful model, explicit arrangements were utilized, for example, the static approach, running strategy and versatile strategy.

As of late, keen urban communities are produced and utilize the IoT advancements to enhance supportability, enhance the personal satisfaction for the general population around and enhance the financial improvement of the district. The idea of brilliant urban areas goes for checking general society resources, control plants enterprises, transport frameworks, information frameworks and network administrations. Following a report by the Navigant Research, outstanding city administrations go for coming to the net dimension of up to $225.5 billion later on. Segments of the brilliant urban communities incorporate savvy hardware, for example, computerized lightings, better stopping strategies, better security frameworks, for example, biometrics and remote alerts, better modern situations, for example, fire discovery frameworks and torrential slide location and shrewd city administrations, for example, wise booth and mechanized social insurance dispatch. Because of the expansion in innovation and hyper-urbanization the Exploratory Modeling structures are important to help oversee and relieve the dangers related with brilliant advancements.

An EMA model and approach can be shown on the shrewd charging frameworks. The explorative model would address issues on execution, framework use, and moral approaches towards the clever charging frameworks. The EMA display guarantees the utilization of genuine investigation of the charging framework speculation Decisions, executing the Decision procedure, knowledge into the arrangement, the approach menus, and thoughts to vulnerability spaces. Right now, there has been a challenge to the expansion on the feed-in of the sustainable sources and the increment in the buy of the electric vehicles hence awkwardness of the interest and supply of the items. The EV vehicles require charging utilizing brisk charging strategies, i.e., a vehicle to lattice innovations (V2G). Growing such frameworks requires a superior methodology as it includes value-based information, moral concerns, for example, security of the information. An Exploratory Modeling structure is important to adjust between the diverse EV charging frameworks and moral concerns. Basic highlights for an effective EV show incorporate the foundation of a savvy station and shrewd administrations hence will empower the charging framework to be refreshed remotely through the CCS Como and different gadgets. Furthermore, the EV vehicles charge by utilization of portable applications to discover stations and having computerized installments and RFID cards. The EMA workbench would help an individual draft an incorporated framework that would enable them to discover the charging areas, coordinate through the applications rapidly and giving profitable bits of knowledge on remote activities of the EV vehicles accordingly can be finished up to be a triumph (Bankes, 1993).

**Initial Post 2**:

With the recent technological advancements in the field of data science and machine learning we can create models which have great potential to help simulate our policies and make the right decision. These technologies can be used to create complex system models, having the right amount of data can provide complex possible outcomes for the simulation models. (Brailsford, S., Churilov, L., & Dangerfield, B. 2014).

In the following paper I would like to create a policy for waste management where people are engaged in recycling with waste. The first step would gather data on what products people are consuming in the communities and analyze which content is trashed and its pattern. Installing a policy to separate the recyclable waste such as electronics and plastic and non-recyclable waste would reduce the waste produced and helps the city to recycle the plastic and some waste. By imposing strict measure, fines and creating proper awareness would greatly aid in the successful implication this policy.

Also, I want to introduce some features for a smart city which greatly improves the trash management, public parking and power efficiency used for street lighting. (Brailsford, S., Churilov, L., & Dangerfield, B. 2014). To develop a model of such a system we must first understand how people use these facilities on day to day basis for example finding a parking space in a city’s downtown would be really difficult especially during the weekends and also when there is an event in such cases people can really benefit from an app which can provide a real time information of an available parking spot in the city. This can prevent people from roaming around for parking and makes efficient use of parking space. (Evans, G. W., Biles, W. E., & Bae, K. G. 2019).

One more feature would be Smart Street lights which can light up based on the motion detection and sensors during the night, this feature can save the city in its energy costs by efficiently managing and distributing the cities and also reducing the carbon footprint. The third feature which can be introduced is the smart waste management systems wherein the dumpsters are fitted with sensors which sense the load of the trash and send out a notification to the nearest garbage collection unit once it’s full. This will reduce the daily work load of the trucks, bring down noise pollution created by them and saves on fuel and maintenance costs.

The EMA Workbench software which is an open source tool for performing exploratory modelling and analysis can be used to develop a model for the trash management policy mentioned earlier as this tool is open source and can produce complex simulation outcomes it gives us great flexibility in understanding how the policy effects the people in the smart city and also insufficient information can provide a single outcome which may not describe the accurate outcome it sometimes becomes necessary to use ensembles of plausible models as they can capture more of the unavailable data . (Evans, G. W., Biles, W. E., & Bae, K. G. 2019). Overall, we can use this software to analyze the system models and greatly capture the effectiveness of the system.

**Initial Post 3**:

The Exploratory Modeling and Analysis (EMA) is one of the models that have been used to understand situations and make decisions on possible solutions. EMA uses computation experiments in the analysis of complex issues and model the issue. The aim of the analysis is to offer decision-based computation while dealing with uncertainty. There are various modeling packages for deferent environments. Some of the packages that are currently offered by EMA workbench includes Excel, Vensim and Netlogo. Using the three packages, EMA can help in designing experiments, conducting the experiment and analyzing results (Exploratory Modeling Workbench, 2019). This paper will explain how the EMA model can be used to create a policy of gas emission control in the Smart City.

Towns have been polluted for several decades because of the intensive activities taking place every day. One of the major pollutants of the environment in towns is gas emission. There are various sources of the gas emission that contains carbon dioxide and carbon monoxide that is dangerous to the environment including cars, industries, and homes. There are various uncertainties involved in gas emissions such as the average rate of emission of greenhouse gases, emission inventory uncertainty, and immediate damage to the source. Due to the uncertainty, the gas emission problem is an ideal candidate of EMA. In order to generate a policy to deal with gas emission, the policy can be built on the Vensim model. Using this model, it is assumed that ‘x11’ and ‘x12’ (figure 1 below) are uncertain is the uncertainty and ‘a' is the desired outcome.

The desired outcome, in this case, is damages caused by gas emission and possible policies. The model will list all the uncertainty and give the lower and upper limits. After running the uncertainty in the instantiated model, a database of results will be generated and then proceed to analyze the results. In conclusion, there are various methods that are used to generate policies. One of the methods is using computer models. EMA is one of the computer models that can be used to make policies. EMA can be used to generate a policy for a Smart City by creating a policy that minimizes gas emission.