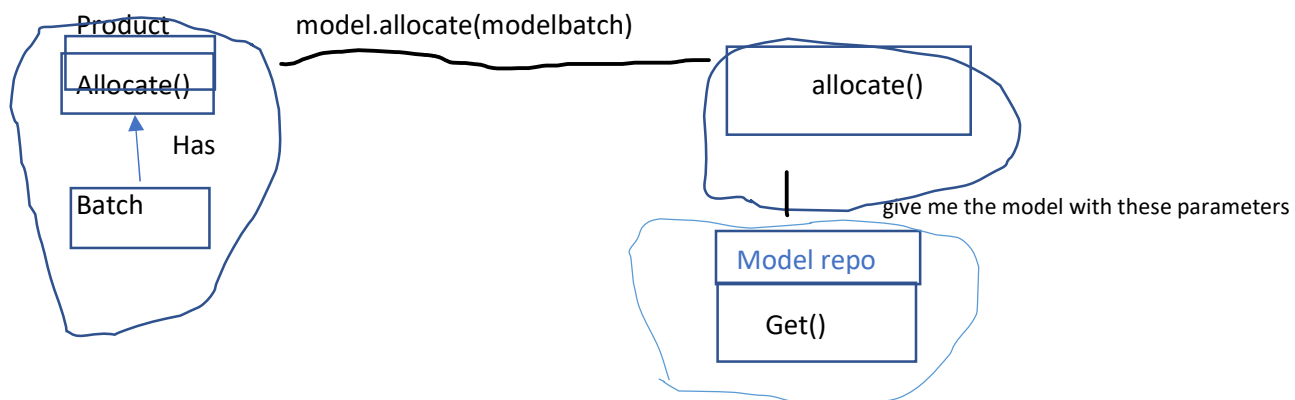


The author introduced the SEIRS plus model which could mimic the distribution of the diseases with several factors considered. Because of this, I believe the what the user can interact with is real statistics which function as the parameters for initializing the model. Then I will considering apply the following two aggregate patterns

1.

For apply the aggregate patterns, several rules need to be determined

1. Rule 1: for each request, must provide the rate of transmission, rate of progression and rate of recovery in order to let the model work properly.  
Invariant: each model can only be considered as to be used to either zero or one time in each request.
2. Rule 2: if the contact network is not specified in the model. Only SERIS model can be considered based on the request.  
Invariant: whether or not contact network is specified determine the model type
3. Rule 3: The model does not consider extra factors such as isolation.
4. Rule 4: The population in the network are set to default size.  
Invariant: The population in the network is in a fixed size



The model batch of SERIS and SERIS network will be an aggregate. All the details of the model including network generation and simulation loop cannot be accessed by the users except the parameter. This batch allocate the model. The model set the initial population and wait for parameters. This is the domain pattern. The service layer is the service that allocate the parameters to the provided model. The request part is the model repository that request the model with different settings. This part knows nothing about what happened inside the domain pattern.

2.

For apply the aggregate patterns, several rules need to be determined

1. Rule 1: for each request, must provide the graph specifying the contact network, rate of transmission, rate of progression to infectiousness and rate of recovery in order to let the model work properly.  
Invariant: each parameter can only be considered as to be used exactly one time in each request.
2. Rule 2: The model may consider extra factors such as isolation.
3. Rule 3: The population in the network are set to default size.  
Invariant: The population in the network is in a fixed size
4. Rule 4: All the requests must precisely follow the instruction of the documents when setting the parameters  
Invariant: required parameters must be used one time by the user. Optional parameters must be used either zero or one time by the user. Additional parameters must be used zero time by the user. The value of the parameters needed must in the range of the domain defined by the document of the package.

The model Extended SERIS is the aggregate. All the details of the model including network generation and simulation loop cannot be viewed by the requestors except the details of the parameter. The model aggregate allocates the model, which predefined all the details except the parameters. This is the domain pattern. The service layer is the service that allocate the parameters to the provided model. The request part is the model repository that request the model with different settings. This part knows nothing about what happened inside the domain pattern.

#### Summary:

The model is highly encapsulated and everything user can touch is the parameter. This perfectly fit the structure of the aggregate. Each time user has a request to simulate, the model will work based on the parameters. In addition, all the optional parameters of the model are detailly annotated in the document. The user cannot edit how to works. Other things will go wrong if it is done. What the user can do is that they can make use of the parameters based on the instruction on the document. It is highly impossible that such process will result a messy.