If the function to add a map through user interface is invoked, the GML document importer fetches GML document. The GML parser performs parsing of the GML document invoked by the GML document importer to extract map objects. The extracted map objects contain coordinate information, features, shape information, and information to determine whether or not such objects are obstacles. The map objects created by the map GML parser are delivered to the map layer manager.

3) Map Layer Manager
The overall diagram shows the relation between the map layer manager and other major modules of the MSNS in figure 6. The map objects that come from the GML analyzer are transmitted to the map layer. The map layer distinguishes map objects from obstacles after examining whether or not the map objects are configured in polygon. Afterward, the obstacles are sent to the node manager. When the map objects and the obstacles are set up, the map layer manager calculates the boundary box of the map and sets the zoom ratio at 1.0. And it sets the map center point at the dead center point of the map. If the setting is completed this way, the map center point, the zoom ratio and the map boundary box are changed by the map controller, and the map is displayed on the MSNS through viewer broker.

![Figure 6. Relationship Map Layer Manager with other Modules](image)

4) Map Controller
The map controller receives order of controlling the GML map and sets value to ensure that the map layer manager displays the map in the MSNS, following the request by user. The