* 1. **Search Strategy Based on Maximum Density**

Set the initial deployment point of the AUV at sea level directly above the impact point and mark that point as the origin point of the coordinate axis. Taking into account the time required for the incident determination, equipment deployment and route planning process, we assumed that the equipment would be put into service two hours after the incident, with the operating time set at 6h to allow time for the device to return

For any device operating time , while the device position  is determined at this time, and we perform the following operations:

**Step1:** Take a certain time interval , calculate all the unexperienced possible positions of the submersible at and the density of each point, then compare them to get the maximum density point 

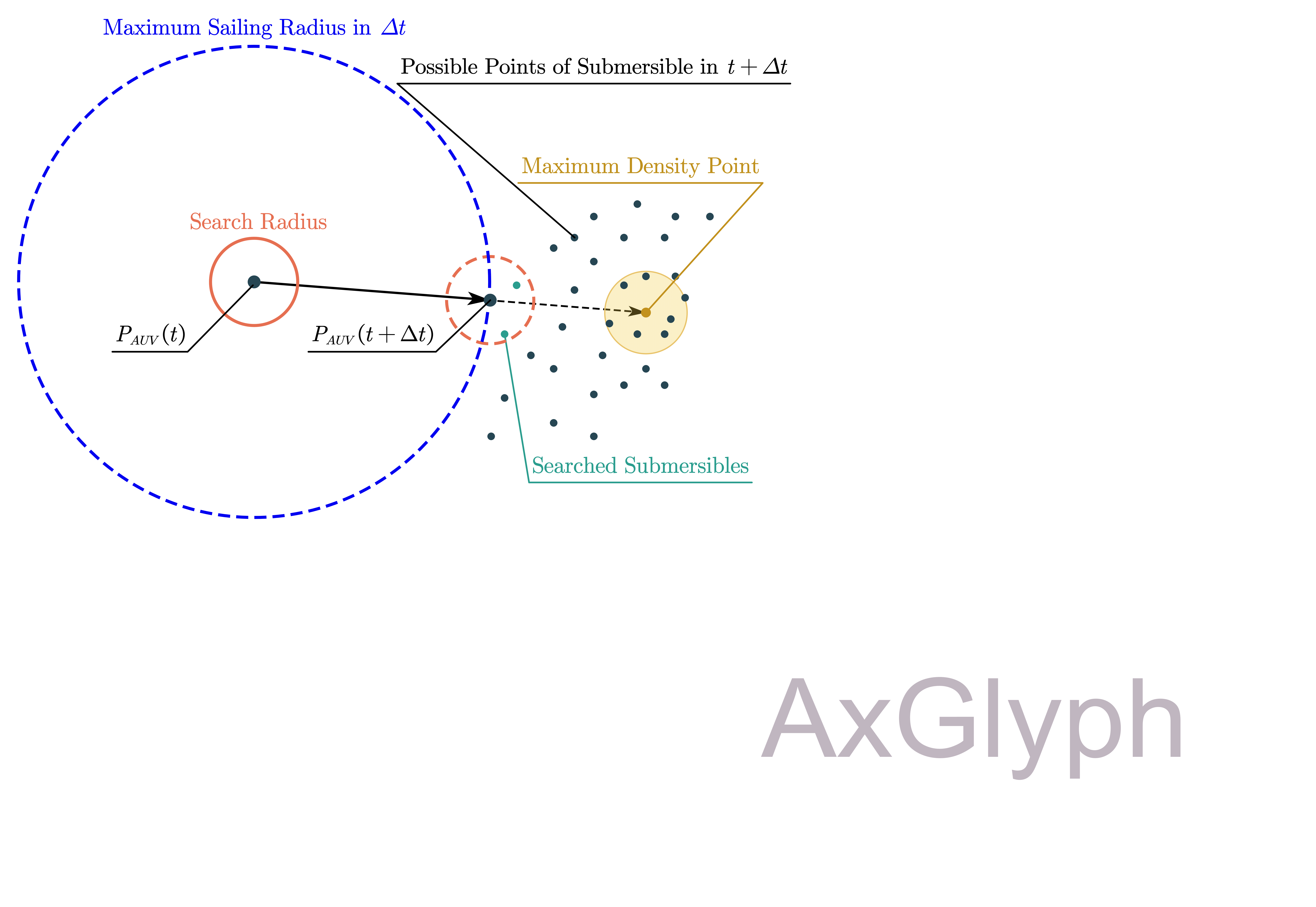
**Step2:** calculate the function：



• If , drive to the point within this time

• If , travel the maximum distance with the moving speed of AUV along the connecting line of  and it

**Step3:** Count all the points within the AUV's search radius at  and mark them as experienced

**Step4:** Repeat the above steps repeatedly within the time frame until the operating time is reached or the submersible is found.