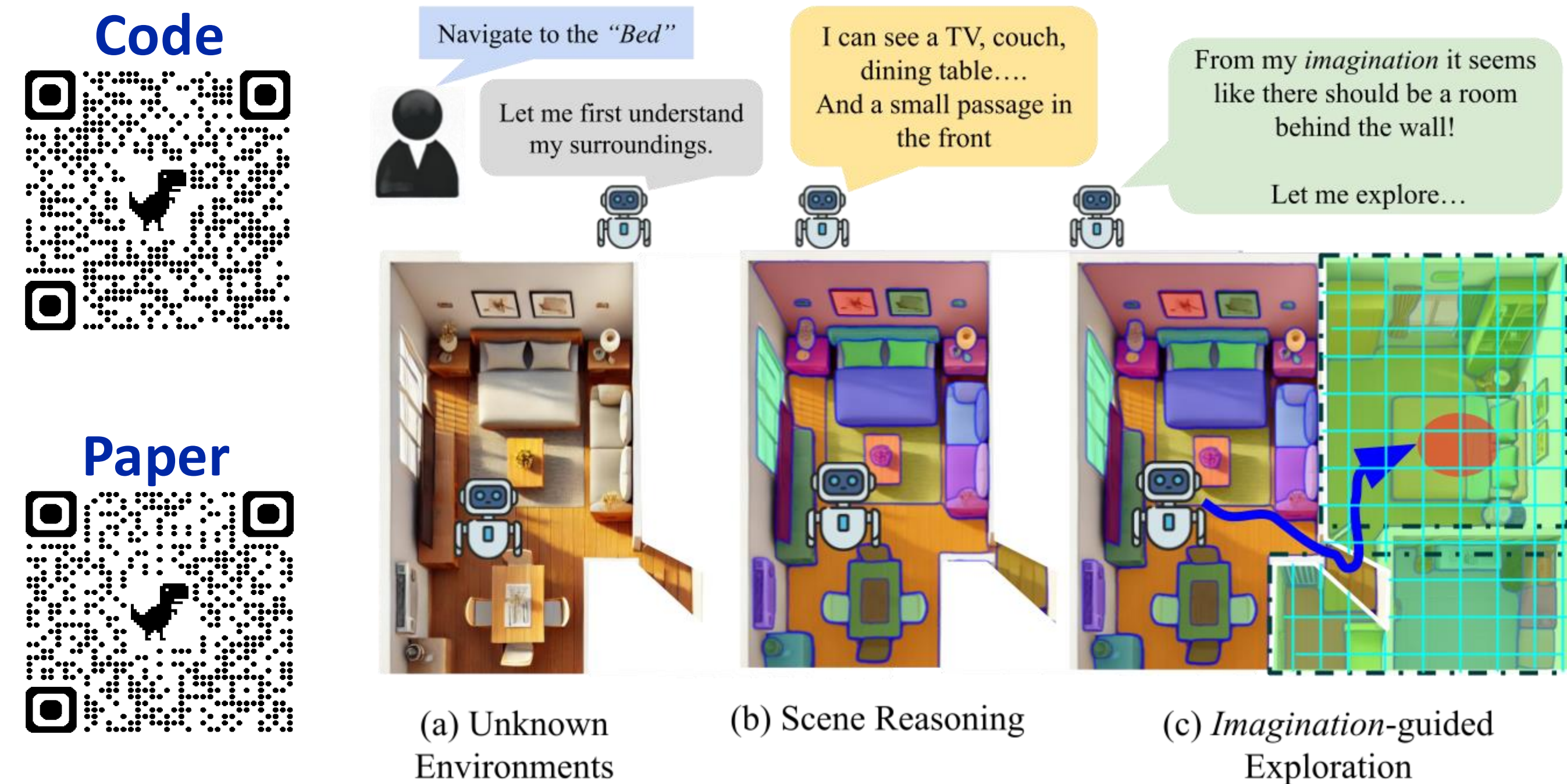
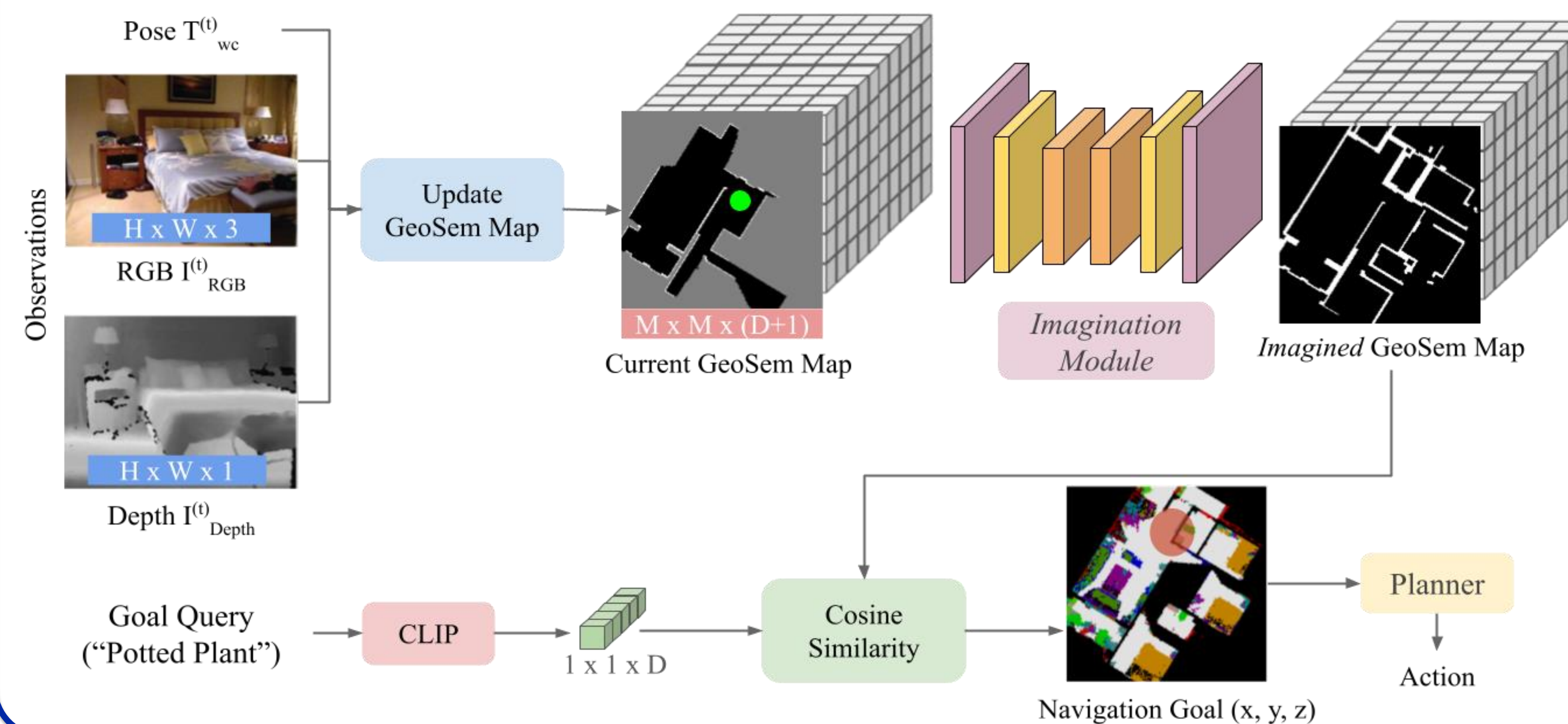


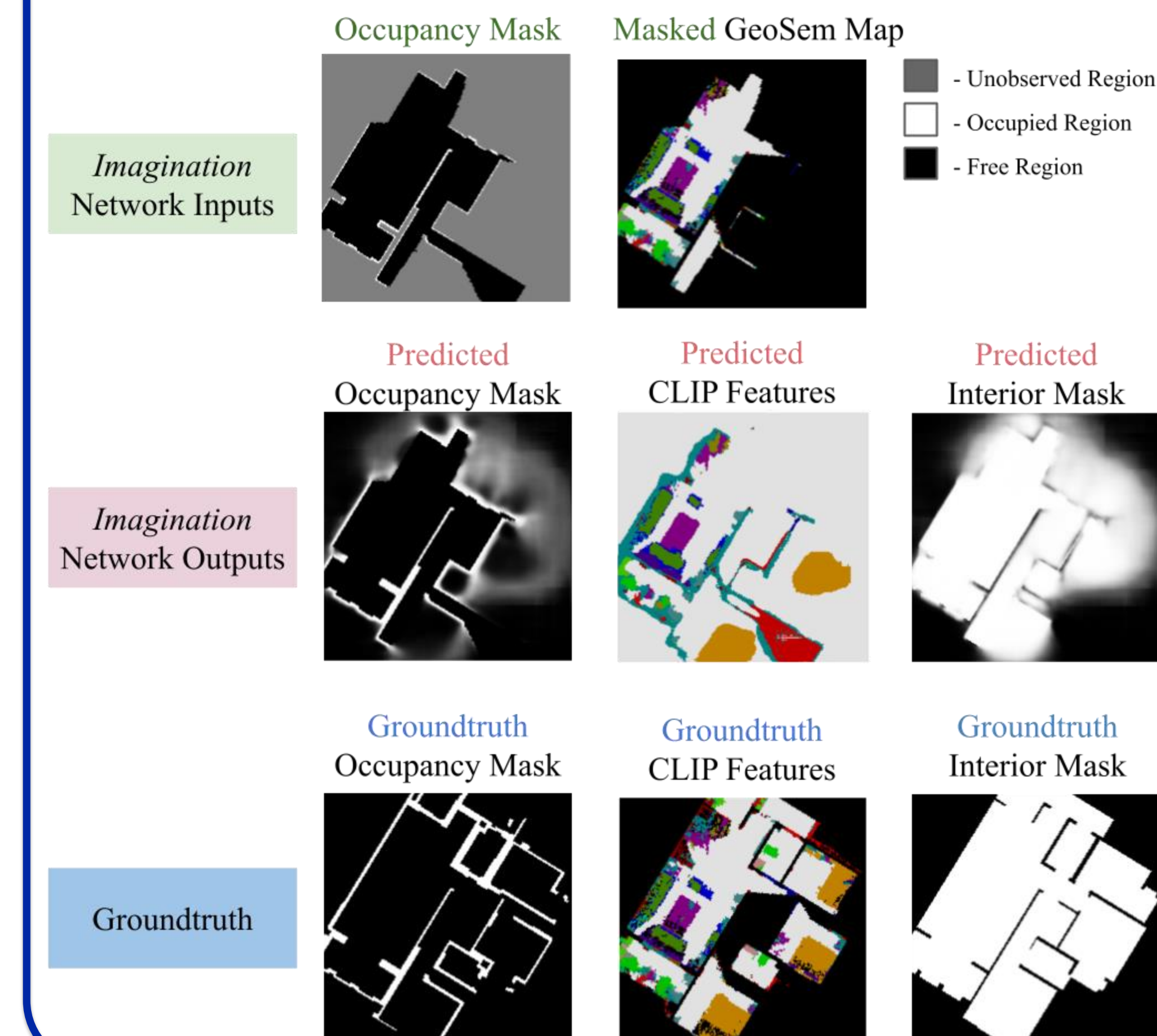
Imagination aided exploration for object goal navigation in unknown environments.



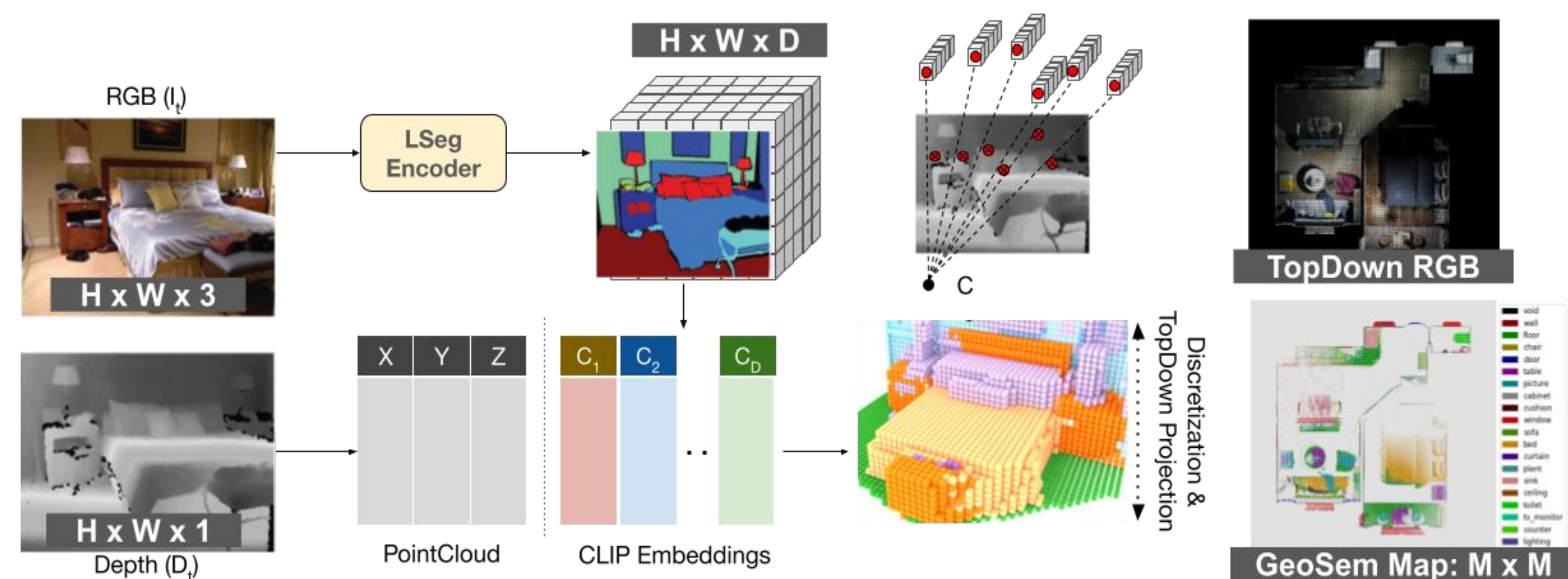
We model the Imagination Module as a **learnable function** that **predicts the ground-truth GeoSem Map** of a scene given a partially observed GeoSem Map.



Generating training samples: **Simulate agents** in the training scenes to **mimic real-world** partial observance of the environment.



Store past observations in a **GeoSem map** – a scene representation that acts as a memory for the agent to jointly store geometry [**Occupancy**] and semantics [**CLIP**], enabling **Open-Vocabulary Goal Localization**.



Structured3D dataset: Imagination aided by GeoSem Maps enhances the agent's ability to **infer promising frontiers**, prioritizing those most likely to contain the target object.

Method	SPL (\uparrow)	Distance To Goal (\downarrow)	Success (\uparrow)
ForesightNav (Ours)	0.67	25.32	0.73
VLFM-CLIP	0.66	27.36	0.71
StructNav-Frontiers	0.63	33.38	0.66
Random Agent	0.62	29.30	0.68
Greedy Agent	0.58	37.06	0.60

The imagine agent accurately predicts the structure of the scene.

