

Open data sources examples

Geospatial data	
OpenStreetMap (OSM)	A collaborative project that provides free, editable maps of the world, OSM can offer detailed geospatial information about campus layouts, surrounding infrastructure, and local points of interest, which can be integrated into your digital twin for better spatial accuracy.
USGS National Map	In the United States, the U.S. Geological Survey provides a wealth of open geospatial data, including topography, hydrography, and land cover, which can be used to enhance the environmental context of your campus digital twin.
Ordnance Survey (OS) open data (UK)	The Ordnance Survey offers a range of open geospatial datasets that cover the UK. This includes topographic maps, administrative boundaries, and vector map data. These datasets can be integrated into your campus digital twin to provide accurate geographical context.
European Space Agency (ESA)	Copernicus Open Access Hub: Copernicus, the EU's Earth observation program, provides free access to satellite data. This data includes imagery for land monitoring, marine environment, atmosphere, and climate change. It can be particularly useful for analyzing environmental conditions around your campus.
Inspire Geoportal (EU)	The INSPIRE initiative by the European Union provides access to harmonized geospatial data across member states. This portal offers datasets on various themes, including land use, environmental monitoring, and natural risk zones, which can be incorporated into your digital twin.

Environmental data	
NASA Earth data	NASA offers a range of open datasets related to climate, weather, and environmental conditions. Incorporating this data can help simulate environmental impacts or analyze sustainability measures within your digital twin.
EPA air quality data	Available in many countries, air quality data from environmental protection agencies can be used to monitor and simulate air quality on campus, which is particularly useful for research focused on environmental health.
European Environment Agency (EEA) data and maps	The EEA offers various datasets related to environmental conditions across Europe, including air quality, climate data, and biodiversity information. These datasets can help integrate regional environmental insights into your campus digital twin.

Transportation and mobility data	
City or regional transportation authorities	Many cities provide open data on public transportation routes, schedules, and usage. This data can be integrated into your digital twin to simulate transportation flow and study mobility on and around the campus.
Google transit feed specification (GTFS)	A standard for public transportation schedules and associated geographic information, GTFS data can help you to model and analyze transportation systems as part of your campus digital twin.

Building and infrastructure data	
Local government building permits	In some regions, local governments provide open data on building permits and construction projects. This data can help in visualizing ongoing or planned construction around the campus, which might be relevant for long-term planning with your digital twin.
Energy usage data	Some universities or local governments release aggregated energy usage data, which can be used to model energy efficiency or simulate sustainability initiatives within the digital twin.

Demographic and socioeconomic data	
Census data	National census datasets can provide demographic information about the area surrounding the campus, which can be valuable for planning campus services and facilities within your digital twin.
World Bank open data	The World Bank offers global socioeconomic data that can provide context for international campuses or universities engaging in global research initiatives.