



Puerto Rico is a very special island thanks to its vibrant cultural life, the architecture of its towns, the remnants of its past, and its natural marvels: coral reefs, beaches, caves, and tropical forests. With a population just below 4 million living on an area less than 10,000 km², it is a densely populated place.



Puerto Rico faces many of the challenges that are characteristic for small islands: an open and relatively small economy, a rugged landscape with a concentration of people and activities in the coastal zone, fragmentation and loss of high quality land, pressure on the coastal wetlands, deforestation, flooding, pollution, scarcity of drinking water, etc.



Furthermore, tropical storm, which are common in the Caribbean seas, can gain hurricane force and cause tremendous damage. Further global warming may increase both their intensity and their frequency.

Xplorah is a planning support system aimed to facilitate a formal and well-informed spatial planning practice. A first prototype became available in March 2002 and a second version was released in March 2003.



In February 2003, the House of Representatives and the Senate unanimously passed a law to support the further development of Xplorah and its use to evaluate mid to long term spatial policies (horizon 2025).

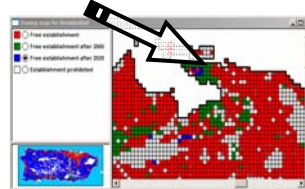


In the next 5 years, Xplorah is to evolve into a spatial decision support system for the integrated assessment of socio-economic and environmental spatial policies. It will enable an exploration of :

- Autonomous developments (dynamics) of the system;
- Effects of current policies now and in the future;
- Effects of alternative and potential future policies now and in the future.

Xplorah addresses practical problems related to spatial planning in an open-ended and integrated manner.

It thus allows a user to explore a problem in all its aspects and helps forming an informed and balanced opinion.

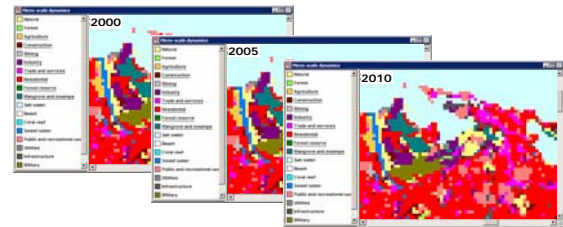


Xplorah features an intuitive point-and-click interface that can be used with little training.

In this fashion the zoning maps may be adjusted, as well as transport networks, scenarios and other model settings.

Once the model is started, land use maps as well as indicator screens are dynamically updated on a yearly basis.

During the course of a run, the user can pause the model and make adjustments to the plans and scenarios.



Xplorah simulates socio-economic processes at three levels of spatial detail. The models at these levels do not operate independently but instead are reciprocally linked, for instance the model at the local level takes the number of people and job positions of the regional model and at the same time the regional model uses aggregated results of the local model to calculate a regional attraction index.

Global and National

National trends driven by climate scenarios, an economic model and a population model.

Regional - Municipalities

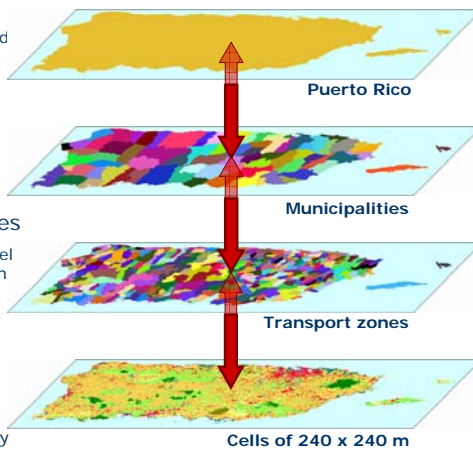
Spatial interaction-based model. Location and relocation of population and jobs is based on relative attraction of the regions.

Regional - Transport zones

A transport model calculates travel times between zones, intensity on the network and congestion.

Local - Cellular units

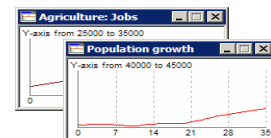
CA based model allocates the population and jobs to individual locations (cells) on the map. It uses detailed GIS information of zoning, suitability and accessibility



Considering that Xplorah is developed as a spatial policy support system, it is most crucial that it does not only perform realistic simulations but that it also expresses the model results in terms relevant to the evaluation of policies. For this reason, Xplorah calculates indicators at the different levels of spatial detail.

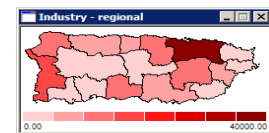
National Indicators

National indicators are presented in the form of time curves. There are national indicators for population, economic activity and jobs.



Regional Indicators

The indicators that are calculated for the whole nation are also calculated per region and presented in region maps.



Local Indicators

The local indicators are most extensive, including a wide range of environmental, economic and social indicators.

