GIS for Housing and Urban Development

The U.S. Department of Housing and Urban Development (HUD) serves the most disadvantaged and disenfranchised communities in the United States. Many of the issues HUD addresses are geographic in nature pertaining to: location, e.g., of housing and jobs; spatial relationships, e.g., among a neighborhood, a city, and a region; and the qualities of place, e.g., patterns of crime and environmental quality.

GIS for Housing and Urban Development offers a vision of the future of GIS at HUD. GIS is a computer tool for understanding where things are located on the surface of the Earth. More than simply drawing maps, GIS allows analysts and citizens to answer questions such as: "Where is assisted housing located in my neighborhood?" "Which environmental hazards are within 5 miles of where I live?" "How can I get from where I live to where I can work?" "What is the best location for a day-care facility in my community?"

HUD has a unique ability to introduce local priorities into national dialogs about housing and urban issues and to help ensure that local data meet national standards for inclusion in the national spatial data infrastructure (NSDI). HUD is well-suited to be one of the lead federal agencies in creating an urban spatial data infrastructure (USDI) for the nation.

Core elements of the USDI can include:

- Public and federally-assisted housing data;
- Tenant and housing characteristics;
- Parcel-level data;
- Locally updated Tiger line files (Census); and
- Environmental and socioeconomic data.

CONCLUSIONS AND RECOMMENDATIONS

HUD is responsible for providing data for housing and urban decision making nationwide. Taking the following steps is necessary to carry out this role.

HUD should participate fully in the Federal Geographic Data Committee (FGDC) and other federal initiatives to assure that agency efforts are consistent with the development of the NSDI; and support its program participants' efforts to provide operational data in FGDC standard format and to make these data available on the Internet along with other HUD data, subject to the limits of confidentiality.

To improve data quality, HUD should:

- Create an internal spatial data infrastructure for an agency-wide GIS to support an appropriate urban research agenda and to integrate locally derived data;
- develop mechanisms to accept and integrate relevant locally-derived data and georeference the data for integration in the agency-wide GIS;
- promote the development of a parcel-level data layer and other urban framework layers to create a USDI as a component of the NSDI for housing and urban development. The federal government should make available resources commensurate with this task; and
- encourage and support the development of local, metropolitan, and regional data centers to facilitate local data coordination, use, and training toward the creation of a USDI.

Expand the Knowledge Base for Urban Policy and Practice

HUD's goal is to provide a decent, safe, and sanitary home and equal opportunity for every American. This implies a broad urban research agenda. **HUD should:**

Expand its research portfolio to emphasize:

- The spatial distribution of poverty in the United States;
- The changing demographics of American neighborhoods; and
- Market trends that affect the U.S. housing market.

Monitor and analyze metropolitan housing market conditions and trends by:

- Identifying and adopting means and formats for routine collection of housing-related data relevant to user needs and agency mission goals at regular intervals, along with development and adoption of a standardized method for data analysis.
- Performing research toward the development of spatial analytic tools to address quality-controlled price indices and variations in local context, and for time-series and comparative analyses between and among places.

HUD should prioritize spatial analysis of the following urban issues at the regional and metropolitan-level:

- Housing market conditions and trends;
- Effects of these conditions on HUD program design and implementation;
- HUD program effectiveness and impacts on communities;

- Interactions among communities in metropolitan areas;
- Dynamics of neighborhood change including poverty concentration, racial segregation, and neighborhood effects; and
- Housing and labor market interactions including regional and cross-border analyses.

Disseminate Data and Information to the Public

HUD users range from technically sophisticated urban researchers to local advocacy groups who have little experience with spatial data or technologies. HUD should continue to develop a spectrum of tools to meet users' needs.

To improve dissemination and promote the use of spatial data, HUD should:

- Involve users in design of the web-based GIS;
- Sponsor conferences and workshops about spatial data;
- Support online groups and produce an Internet newsletter devoted to spatial data and analysis.

HUD's Office of Policy, Development, and Research (PD&R) is well-positioned to:

- Work with HUD clients and data users to derive the most appropriate GIS designs and to identify needed data and functions.
- Manage data confidentiality. For some sensitive data, PD&R will need to develop a policy on releasing confidential data as well as algorithms to suppress sensitive data to protect privacy.
- Take the lead in establishing a node for housing and related economic and demographic data in the NSDI's National Geospatial Data Clearinghouse.

- Support the functions of an agency-wide enterprise GIS across all relevant HUD units.

Develop and Use Partnerships

HUD can use GIS to facilitate the agency's efforts to interact with organizations beyond its institutional boundaries to build vertical and horizontal networks to share data, discuss housing and urban issues, and ultimately create public policy to respond to these issues.

To develop and use partnerships, HUD should:

- facilitate the integration of local datasets and the development of mapping applications using the shared data;
- encourage public participation in the development and use of local datasets; and partner to develop local and in-house GIS capability.

To support the agency's efforts, PD&R should:

- build relationships with university and unaffiliated researchers to engender participation of local groups in policy analysis, research, and community building; and to promote the use of advanced spatial analysis in urban housing policy research to address the complexities of modern urban dynamics.
- take the lead within HUD to build interagency relationships with federal data-providing agencies that have responsibilities related to urban and community issues, notably the Department of Transportation, the Department of Health and Human Services, and the Environmental Protection Agency.