

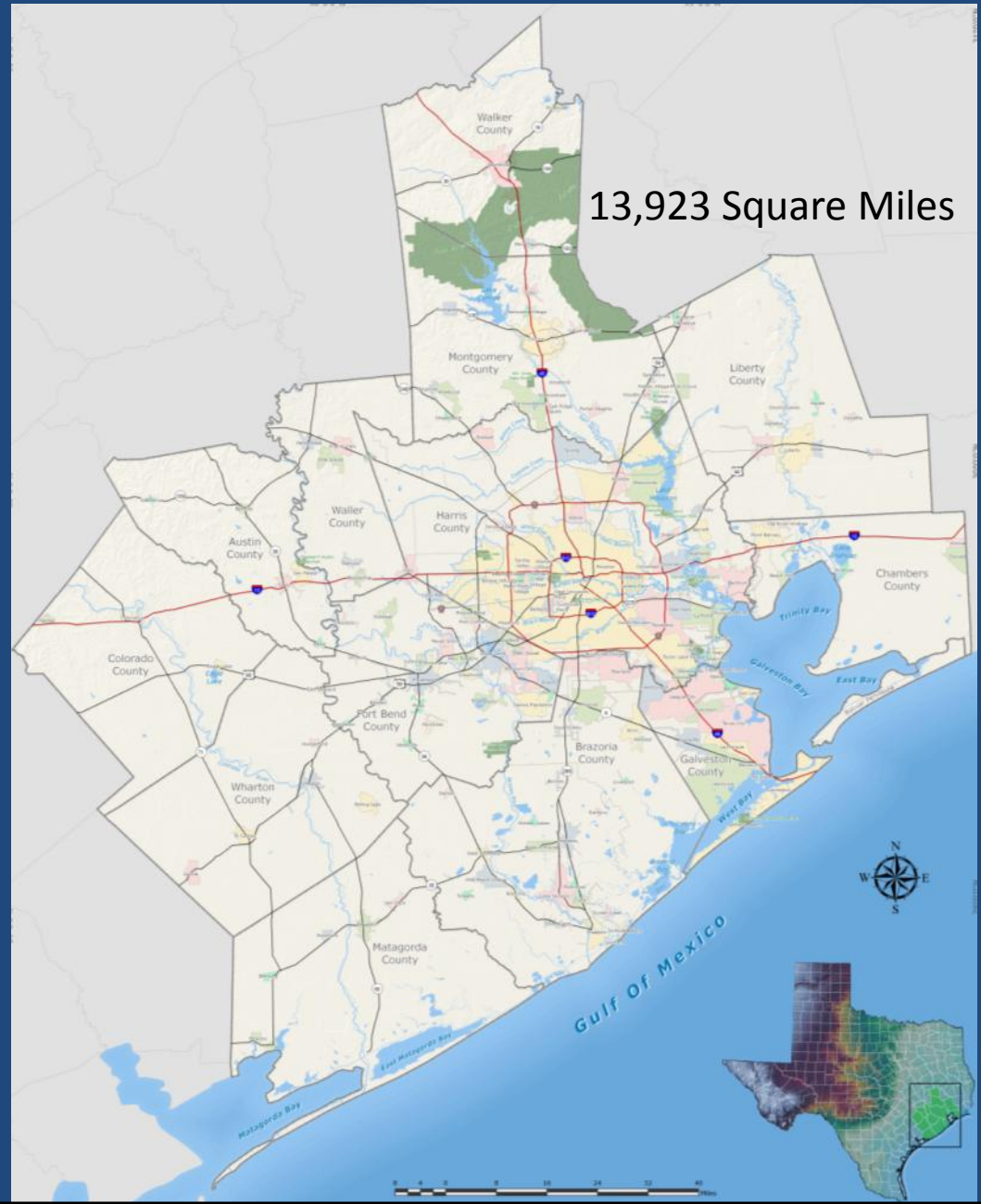
H-GAC Socio-Economic Modeling GIS & Forecast Overview

Dmitry Messen
Bill Bass

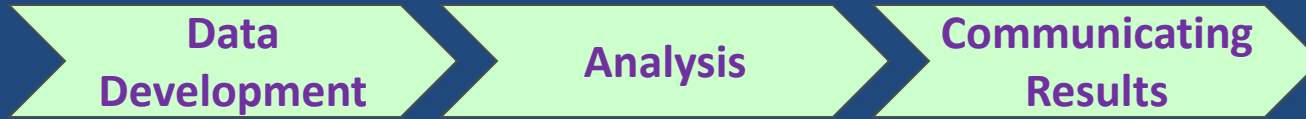
April 20, 2011
Houston-Galveston Area Council
www.h-gac.com/forecast















H-GAC Overview

- Regional Council of Government (COG) for 13 county area
- Socio-Economic Modeling
 - Population, employment forecasting
 - Land use forecasting
 - Environmental analysis
- Larger Than...
 - District of Columbia (70)
 - Rhode Island (1,141)
 - Delaware (2,066)
 - Puerto Rico (3,662)
 - Connecticut (5,219)
 - Hawaii (6,590)
 - New Jersey (7,834)
 - Massachusetts (8,560)
 - New Hampshire (9,902)
 - Vermont (10,313)
 - Maryland (10,674)
 - And over 100 countries including: Belgium, Albania, Singapore, Luxembourg, Qatar and Kuwait

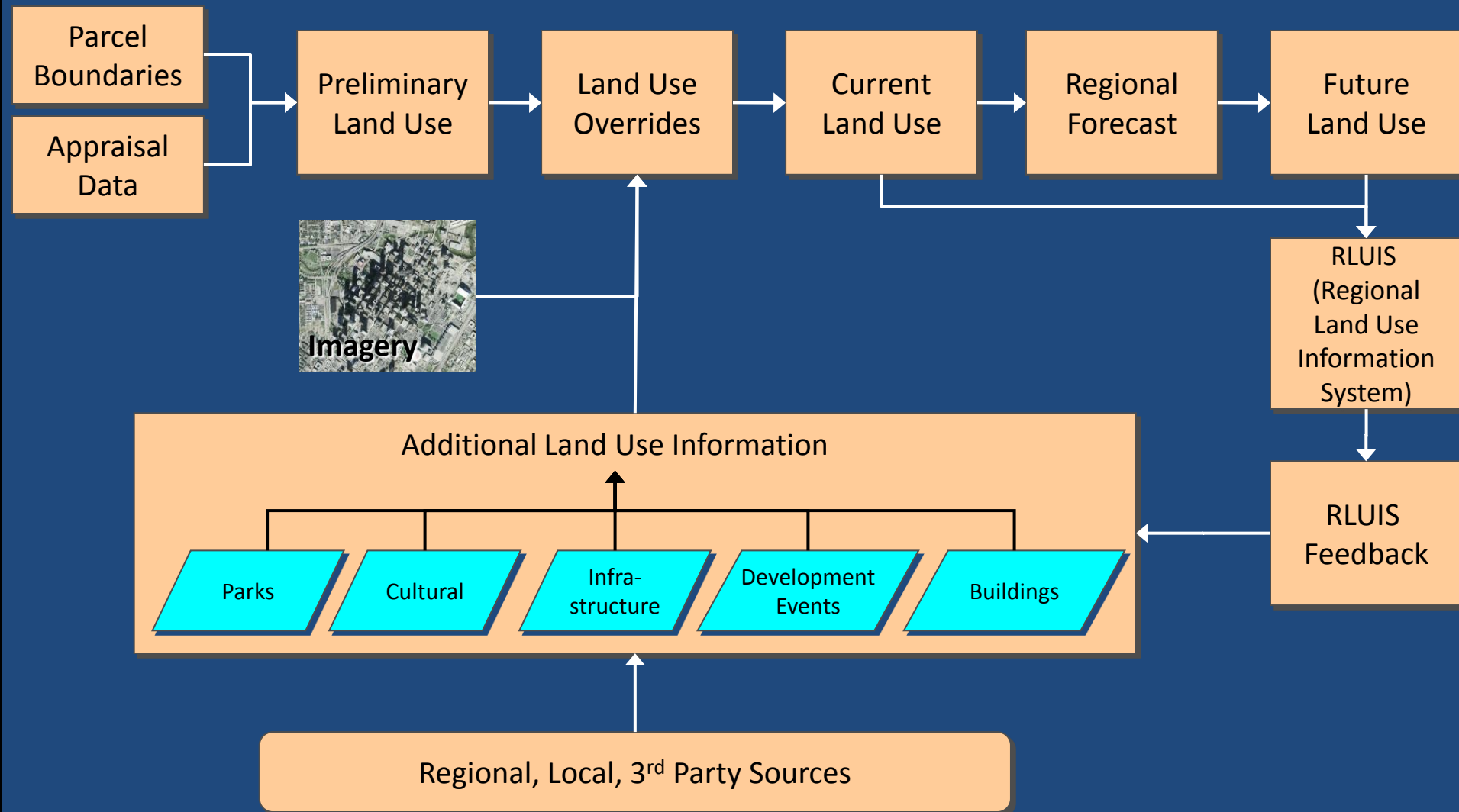


Software Platforms Used

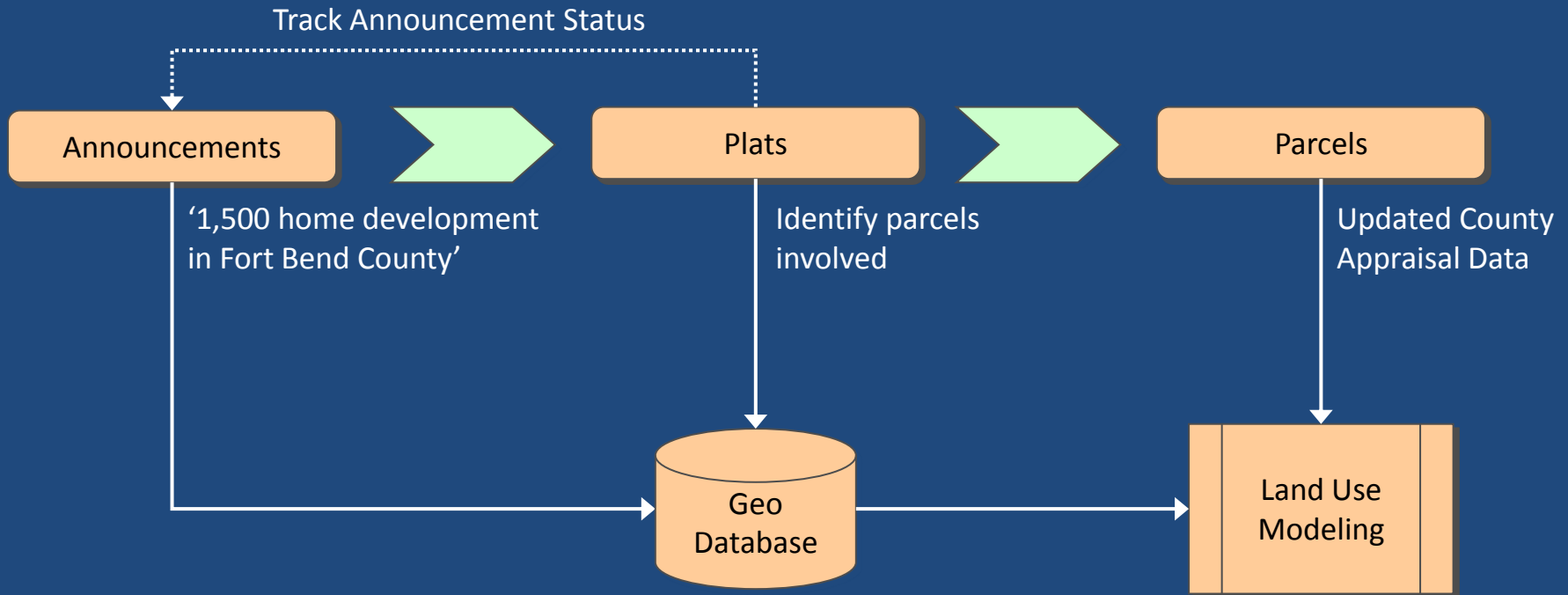


Platform	Data Development	Data Warehousing (Internal)	Spatial Analysis/Mapping	Forecasting/Modeling	Web GIS Applications
ArcGIS Desktop					
SAS					
Python					
ArcSDE					
Adobe Flex					
ArcServer					

Land Use Modeling Process



Development Events



*Announcements and Plats help fill in the gaps,
until appraisal data is current.*

Public Participation GIS (PPGIS)

- NCGIS 1996 (National Center for Geographic Information and Analysis)
- Bring academic practices of GIS to local level to promote production of knowledge
- Empowerment and inclusion of marginalized populations through geographic technology and participation
- Variety of tools and maps produced to gather feedback
- Information gathered was subject to review and QA process
- Pre web-based GIS application era

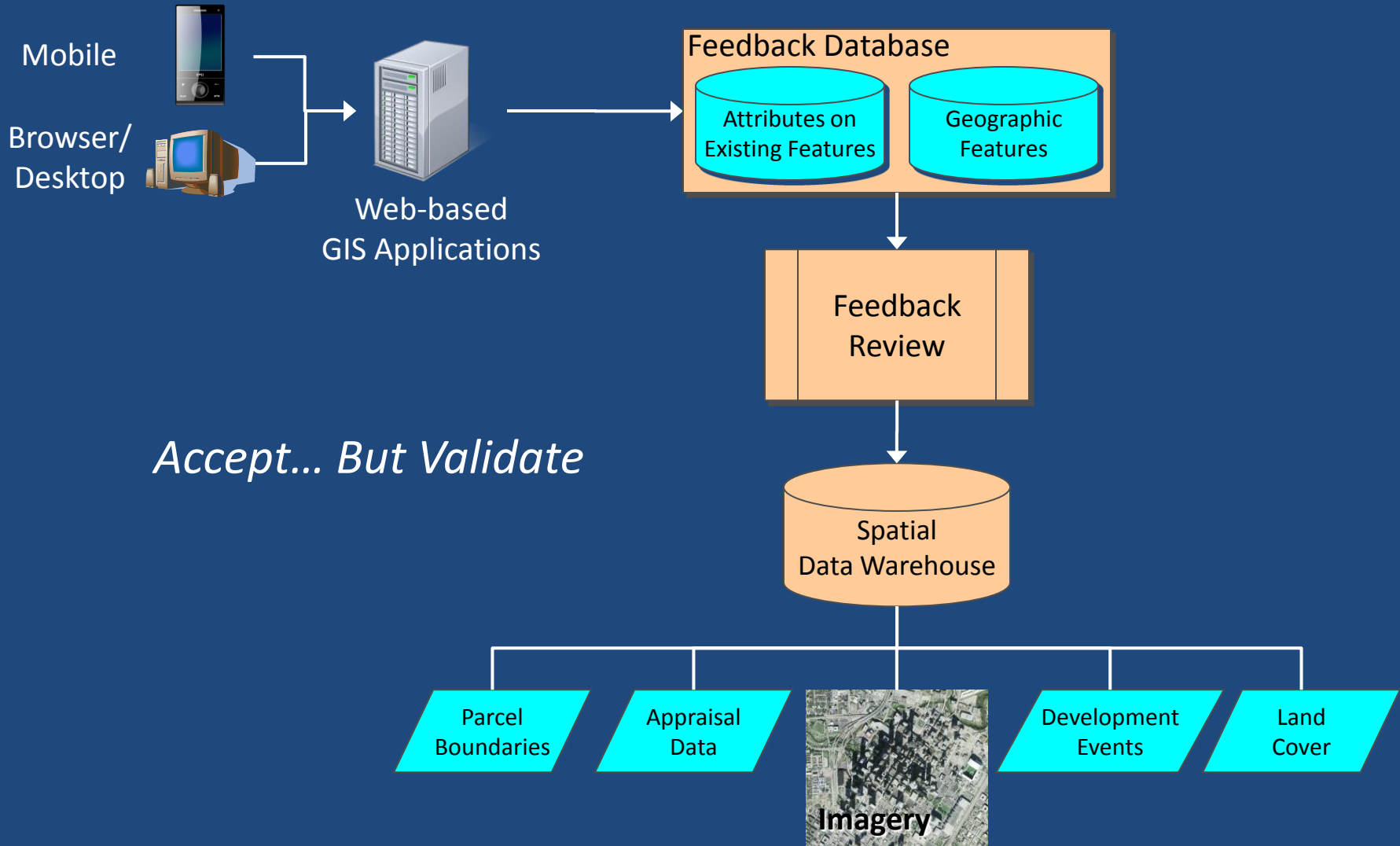
Crowd Sourcing

- Term was first coined by Jeff Howe in 2006 in Wired Magazine
- The argument was that due to technological advances, and the availability of cheap electronics, the gap between professional and amateurs has been diminished.
- Leveraging the public to perform a task previously done in-house to outsourced
- Not necessarily a GIS centric function
- Exist concerns with regards to quality, accuracy, and validity of data gathered

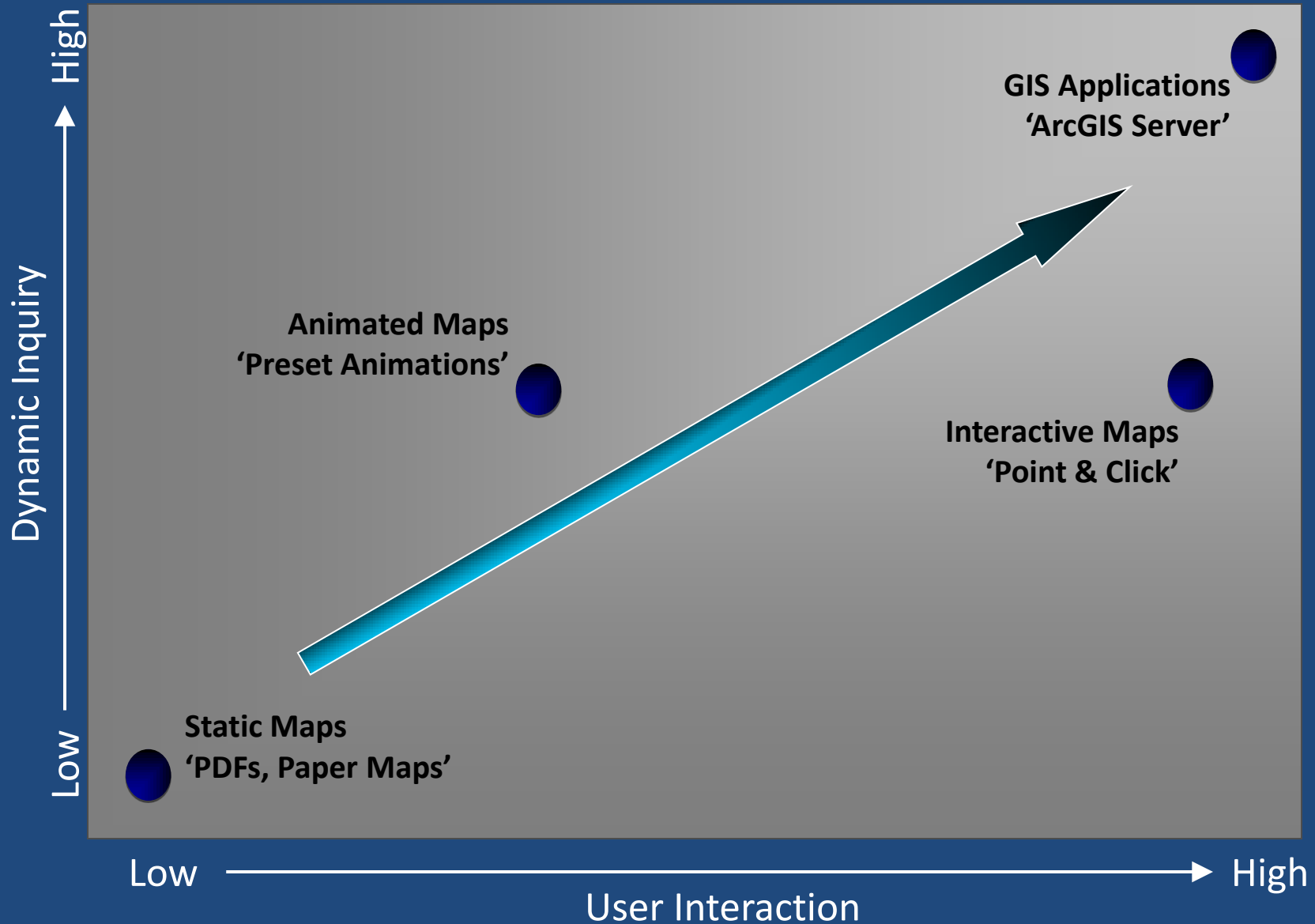
Volunteered Geographic Information (VGI)

- Harnessing of tools to create, assemble, and disseminate geographic data provided voluntarily by individuals (Goodchild, 2007)
- Advances in web-based GIS enabled VGI
 - OpenStreetMap
 - GoogleMyMaps
 - Gulf Oil Spill maps (numerous)
- Typically viewed as an extension of PPGIS
- VGI is Crowd Sourced data, so there are similar concerns with regards to quality, accuracy, and validity of data gathered
- Concerns need to be addressed as part of process

Our Approach to VGI



From Static Maps to Applications



Mapping Applications

Regional Land Use Information System

Click to Launch
RLUIS

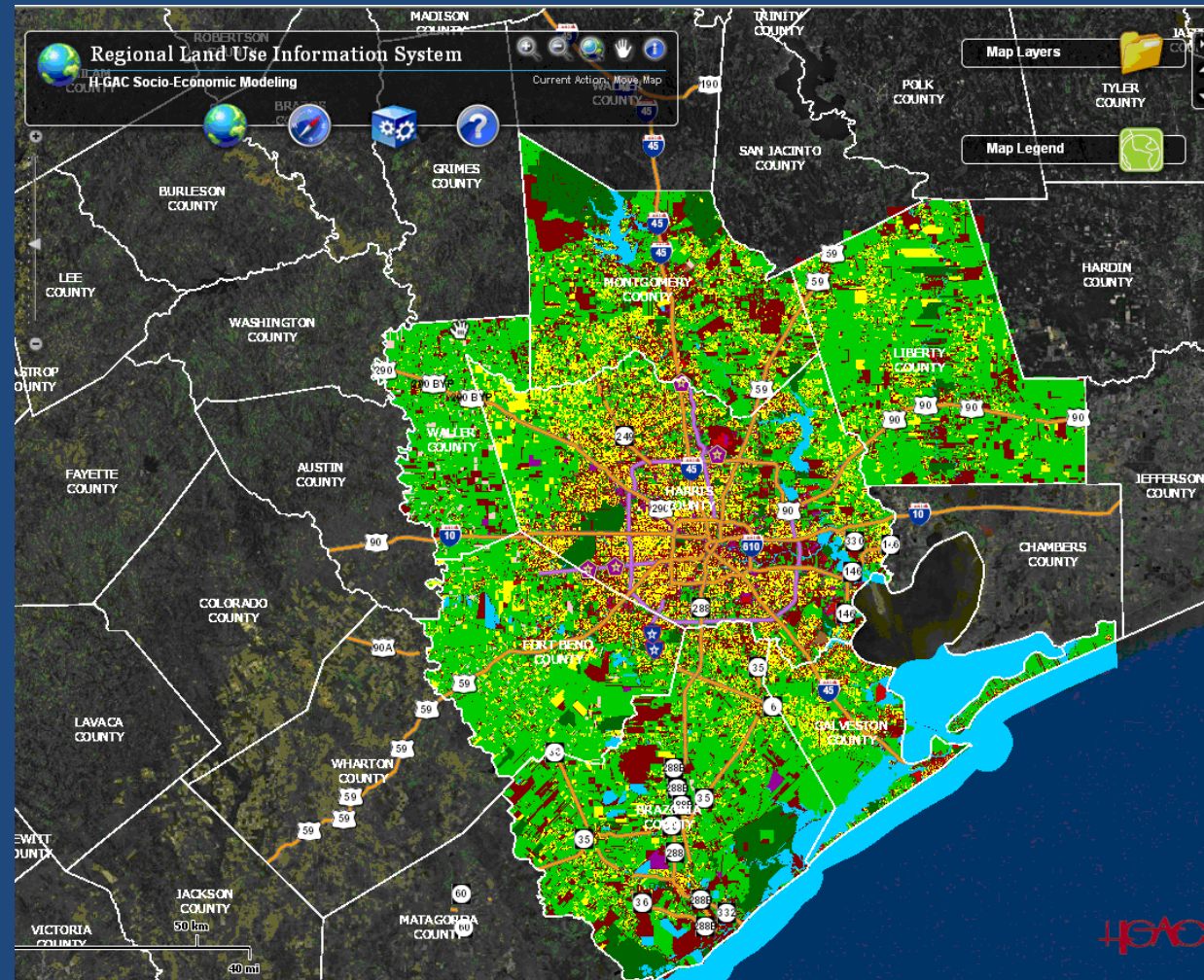


<http://www.h-gac.com/go/rluis>

Click to Watch a
Video Tutorial



- Regional decision support system
- Communication of current & forecasted information
- Public participation feedback loop
- Available for use by both desktop and web-based clients
- Geoprocessing tools and summary statistics



Mapping Applications

Eco-Logical GIS

Click to Launch the
Eco-Logical GIS

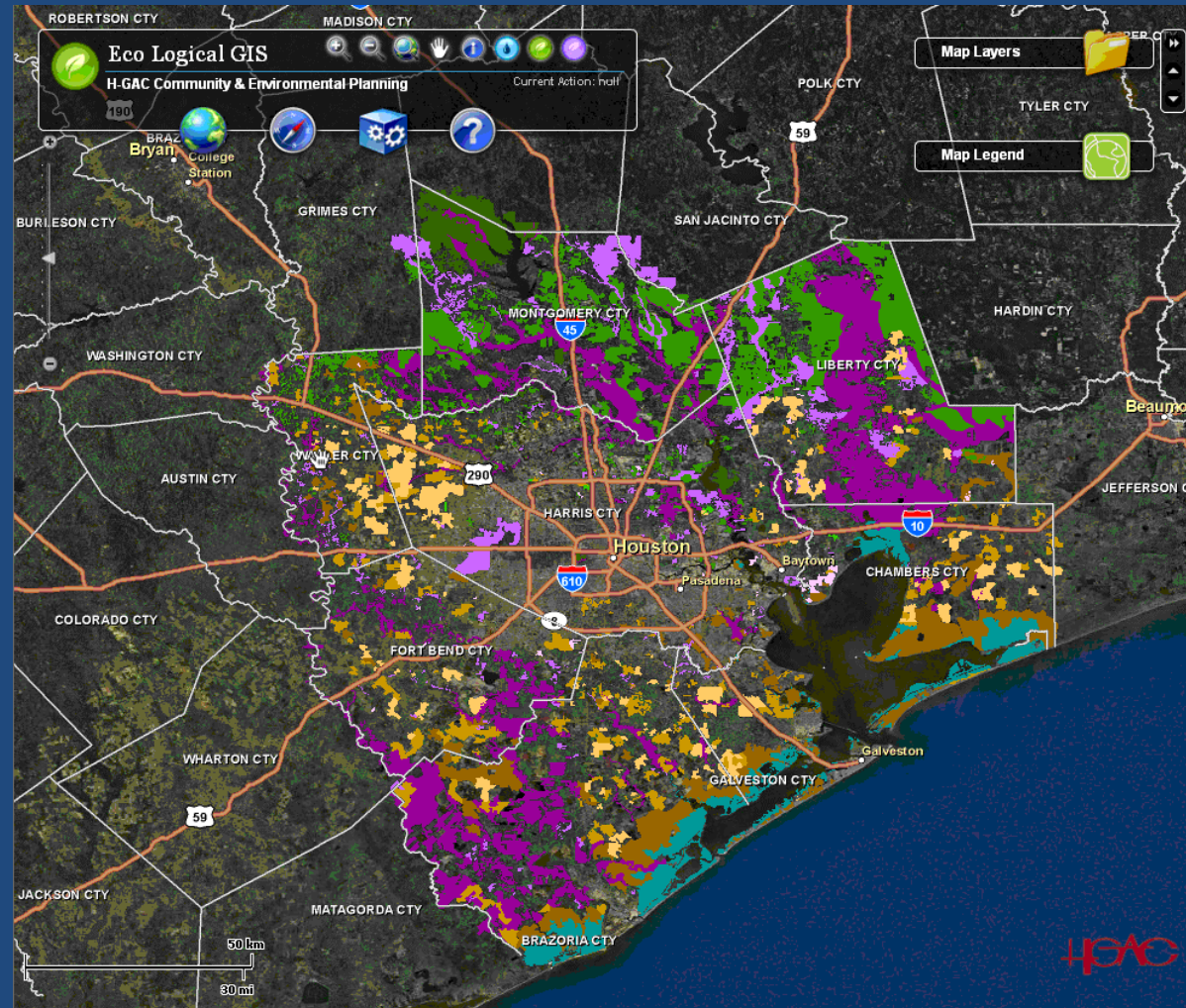


<http://www.h-gac.com/go/ecologicalgis>

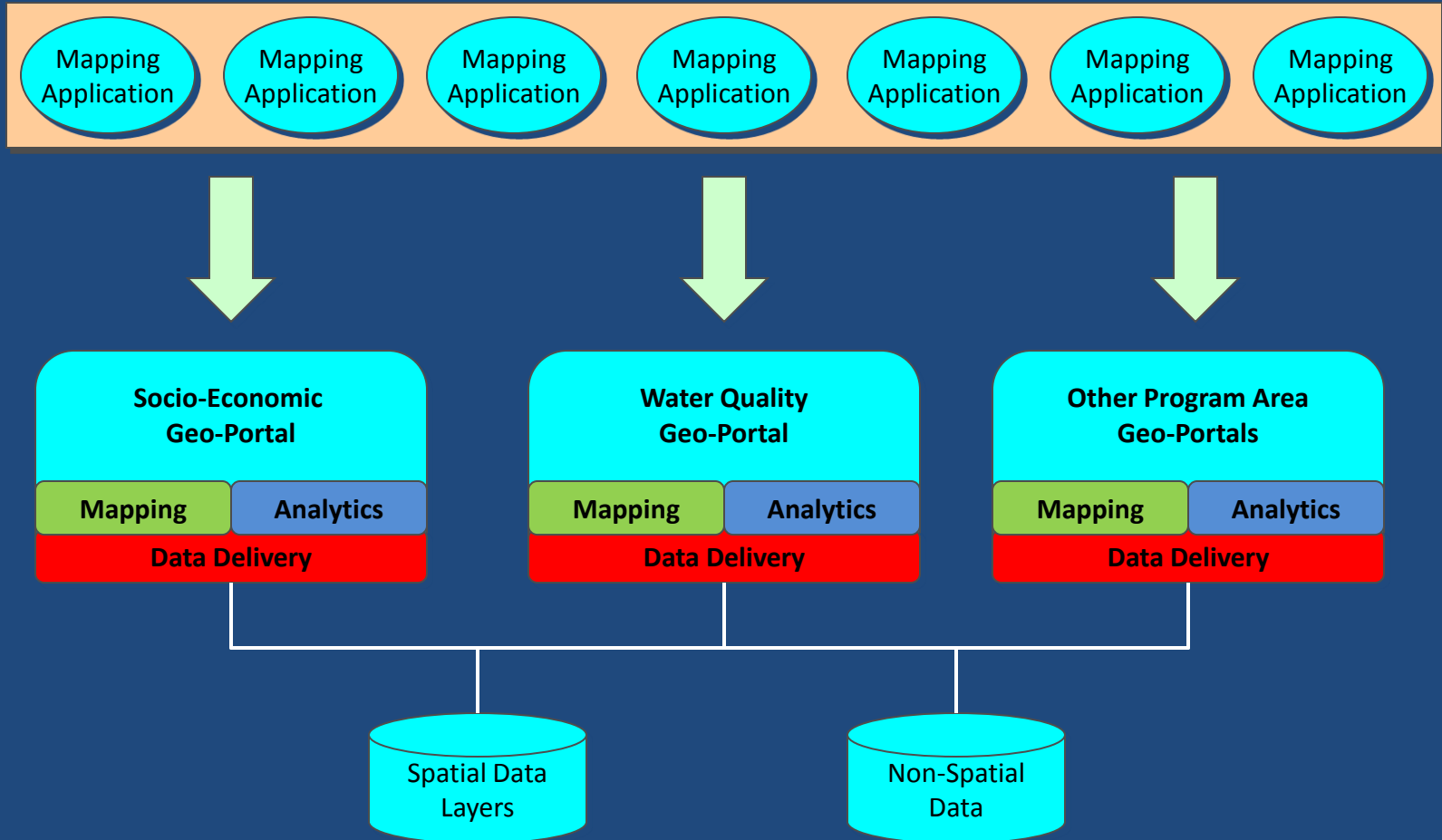
Click to Watch a
Video Tutorial



- Regional decision support system
- Integration of long-range transportation & environmental planning
- Identify & aid in conservation of high value environmental resources
- Available for use by both desktop and web-based clients
- Public participation feedback loop
- Geoprocessing tools and summary statistics



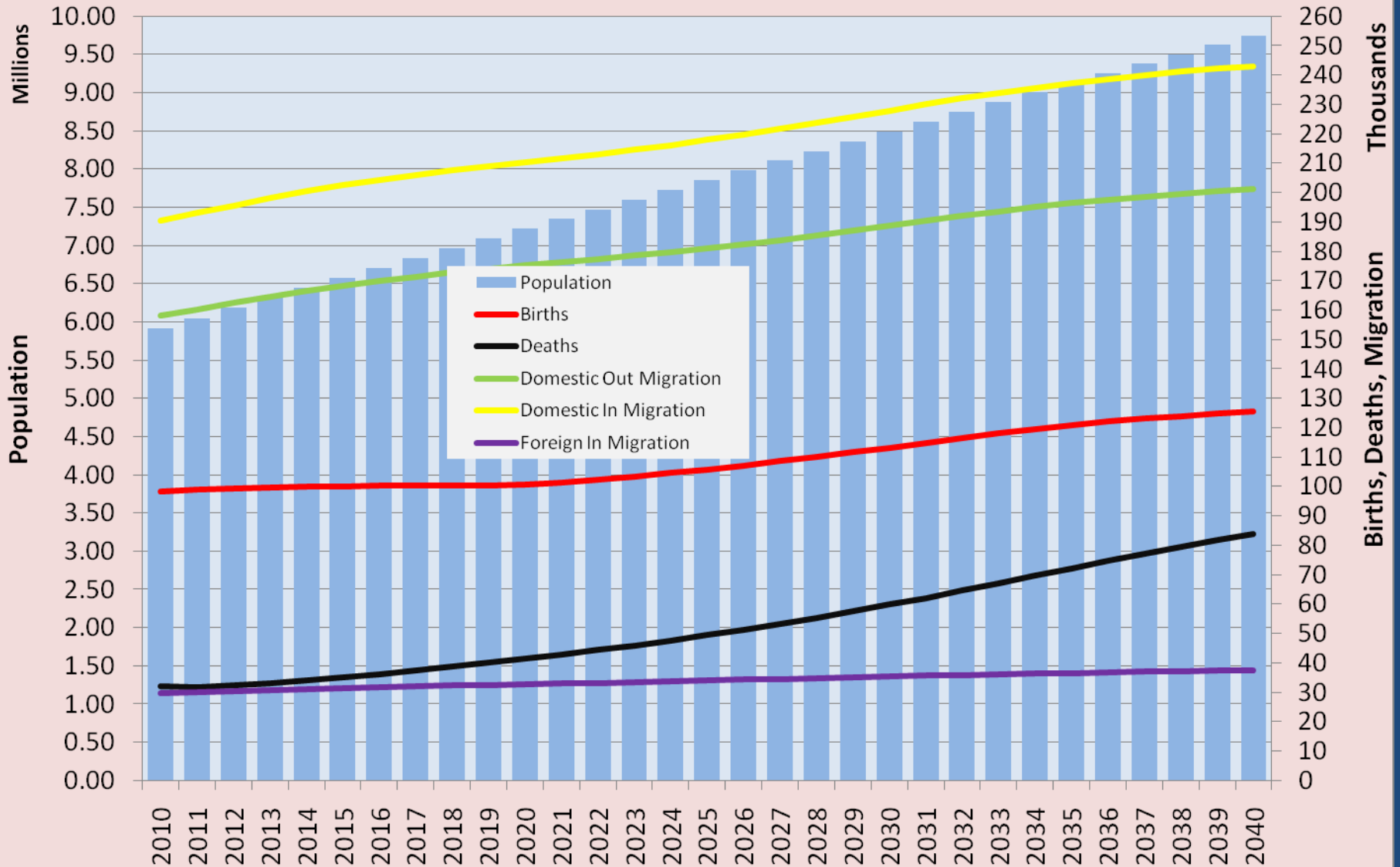
Next Steps in Web GIS Applications



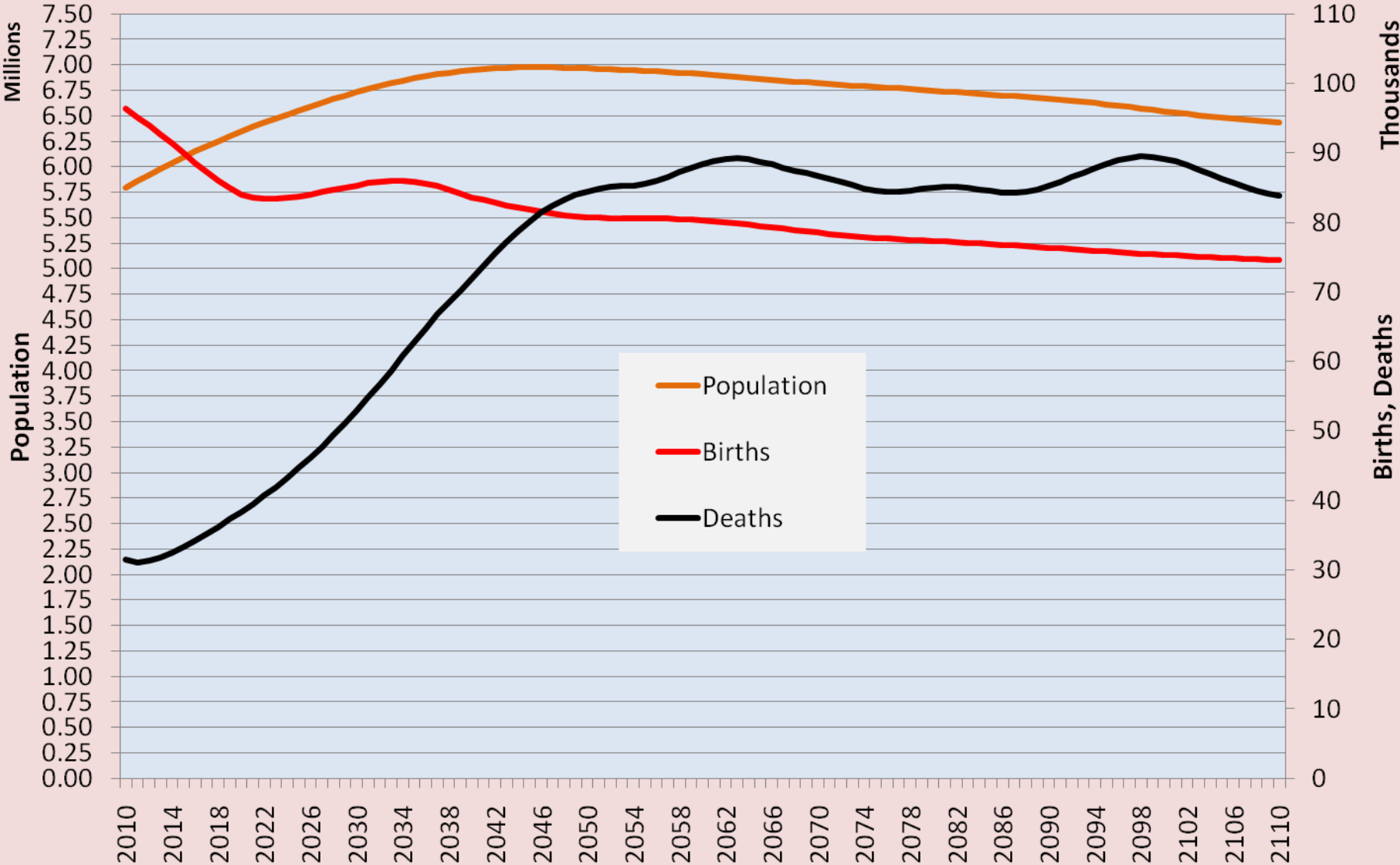
Forecast Process Overview

- Phase I (MACRO): Predict annual change (through 2040) in population, households, and jobs in the REGION as a whole; predict demand for buildings
- Phase II (MICRO): Package buildings into projects; predict which projects will occupy which parcels

Regional Population (Baseline Scenario)



Regional Population (Zero Migration Scenario)



Macro Forecast

- Model Development is completed
- Population-driven
 - Population → Labor Force → Workforce → Jobs → Jobs by sector (2-digit NAICS)
- Migration rates: the most “uncertain” input
- Scenario approach
 - Different migration rates
 - Proxy for economic conditions

Land Use: Base and Forecast

- Parcels and Buildings are elementary units
- 3 “Components”
 - *What’s on the ground now*
 - Sources: appraisal, imagery, real estate databases, research
 - *Planned/Announced*
 - Sources: plats, business press
 - *Future projects* (SF subdivisions, MF complexes, Office, Retail, Industrial/Warehouse Buildings)
 - Source: model predictions

Land Use: Base and Forecast

- Base year 2008
- Will bring up to 2010 this year
 - 2010 appraisal
 - 2009 and 2010 plats and announcements
- Model is operational, *test* (Version 1.0) results available in RLUIS application
- Public Review/Input
 - Errors in the base year land use or planned/announced project
 - Utterly unreasonable predictions (why?)

Tentative Schedule

- Work in progress
- Subsequent versions to be released in spring/summer
- Late summer: new (2010) base to match 2010 Census data
- Fall: inclusion of future transportation networks (to be developed as part of the RTP process)

Community & Environmental Planning GIS Resources

Community & Environmental Planning
<http://www.h-gac.com/community>

Socio-Economic Modeling
<http://www.h-gac.com/forecast>

H-GAC Houston-Galveston Area Council

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COMMUNITY & ENVIRONMENTAL

Section Contents » **SECTION CONTENTS**

Community & Economic Development
 Livable Communities
 PlanSource - Professional Planning Services
 Socioeconomic Modeling
 Solid Waste
 Subregional Planning Initiative
 Sustainable Communities Planning Grant Program
 Water Resources
 Map Book
 GIS Web Mapping Services
 Public Awareness & Involvement

WHAT'S NEW

- Fish Consumption Advisory for Clear Creek
- Hurricane Ike
- Regional Recycling and Conservation Guide
- Sustainable Communities Planning Grant Program
- Vision For Tomorrow: Regional Comprehensive Plan
- GIS Web Mapping Services

RESOURCES

- Our Staff
- A-Z Site Index
- Our Monthly Newsletter
- Our Map Book
- Our Publications
- C & E Committee Roster

EVENTS & MEETINGS

- Effects of Wastewater Effluent Discharge

Community & Economic Development

The Community and Environmental Planning Department improves the quality of life in the H-GAC region by providing for orderly growth, encouraging economic development, and guiding local and regional planning to maintain and enhance the region's natural environment.

Livable Communities

H-GAC supports the development of Livable Communities through projects that promote pedestrian-bicyclist mobility and safety, green schools, parks and natural areas, improved environmental quality and economic development, urban forestry, and Livable Centers - walkable, mixed-use places with multimodal transportation options.

PlanSource - Professional Planning Services

PLANSOURCE professional planning services

With a goal to provide assistance in helping local governments secure qualified planning services in an efficient manner, the Community and Environmental Planning Department has launched a new program

Socioeconomic Modeling

We are an information and research hub in the Department. We develop, analyze, and disseminate information on land use, economy, and population of our region.

C&E GIS Data and Applications
<http://www.h-gac.com/go/cegis>

H-GAC Houston-Galveston Area Council

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COMMUNITY & ENVIRONMENTAL

GIS Web Mapping Services » **GIS WEB MAPPING SERVICES**

Click here to add the GIS page to your favorites!

Access GIS applications developed by the H-GAC Community & Environmental Planning department, such as land use, growth forecast, pedbike, ecological, and landfills.

These GIS applications are intended for general reference and planning purposes only. Mapping may not reflect on the ground conditions. The Houston-Galveston Area Council makes no further claims as to the accuracy or reliability of the data, and neither assumes, nor will accept liability for their use.

H-GAC Census ACS Data Portal **NEW!**

View the region's Census Tracts and link to the Census 2003-2009 ACS data pages for detailed demographic information.

Regional Land Use Information

View and query current and forecasted land use and socioeconomic information for the H-GAC 8-county region.

Eco-Logical GIS

View and query this web based Eco-Logical Decision support system to determine impacts on environmental resources in

Sign Up for GIS News

WHAT'S NEW

2010 Census Maps
 Census 2010 GIS Data

RESOURCES

GeoGIS Services Directory
 Browse our online map layers that can be streamed to your ArcGIS Desktop or applications.

ArcGIS.com
 Visit our group page on ESRI's ArcGIS.com site to see map services, maps, and other resources.

Map Book
 Explore and discover the 13 county H-GAC region through our maps.

GIS Data Downloads
 Visit our FTP site to download our publicly available datasets.
 View Metadata

Thank You.

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