Materials For Development Statements to be given at Borough Charter Commission Hearings

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A Call To Action For GIS Professionals and Students

The NYC GIS community has an opportunity to amend the NYC Charter requiring that the City provide for the professional management of its geospatial information systems and the effective use of staff that maintain the City's GIS assets and create new applications. This is important to the work of all professionals and students who utilize GIS whether they work for City government or for other sectors of the City. It is also important to all New Yorkers because GIS is at the heart of almost all major computer applications serving the City as a whole, helping to support lifesaving and service delivery operations.

The time has come for the GIS community in NYC which now numbers more than 3,000 professionals and students, to make its presence known and to inform the public and its leaders about the value of our profession and the power of spatial data and the spatial technologies we employ. It is critical that we fight for our rightful place and are acknowledged and supported for the important work we do.

Over the past forty years NYC government has supported the development and deployment of GIS systems across all agencies, although it often needed to be pushed and prodded to do the right thing. The City has been rewarded with highly effective applications like the 911 and 311 systems, CompStat, property assessment and taxation systems, infrastructure management systems, and disease fighting strategies as in the case of West Nile Fever. As a consequence of the development of enterprise GIS, the City's open data layers, now numbering in the thousands, are interoperable due to the use of common spatial attributes. Finally, the City's enterprise GIS system was invaluable to the response to the 9/11 attack on the World Trade Center through the operation of the Emergency Mapping and Data Center.

Geospatial Information Systems are often mischaracterized as "just a map" that provides a "pretty picture". In fact, it is a technically complex system of interoperable data based on a highly accurate depiction of geography, that is among the most powerful expressions of information technology. Non-spatial information technology systems do not have the ability to perform a wide range of spatial functions including 3D visualizations, calculating area and overlap, tracing traffic and utility networks, measuring distances and tracing efficient routes. Perhaps GIS' most valuable ability is to make thousands of data bases interoperable based on common spatial attributes like address. It is fair to say that GIS contributes billions of dollars of value annually to the City, and will play an increasing role far into the future by enabling a wide range of smart city applications.

Because many high-ranking government officials do not have a good understanding of the value and power of GIS, over the past ten years the City's capacity to properly lead, manage and utilize GIS has eroded. The kinds of management actions that are needed for robust operations have gradually faded since our most influential years immediately following the 9/11 GIS response which was praised across the nation. Rather than let GIS operations continue to deteriorate, GISMO, the City's primary GIS user group, which was founded in 1990, has decided to attempt institutionalize GIS best practices through a

City Charter amendment. The amendment we are seeking looks to incorporate the following elements into the DOITT section of the Charter (Chapter 48):

- **The appointment of a Deputy Commissioner for Geospatial Information Systems**
  (A City Geospatial Information Officer (CGIO) at the Assistant Commissioner level existed from 1999 – 2004, but that position was abolished. Currently, the City does not have a CGIO or anyone else designated as the Citywide GIS leaders. Yet many major cities across the US and Europe, and almost all U.S. States have CGIO's. NYC is now badly lagging in providing GIS leadership.)

- **The formation of a GIS steering committee composed of City agency GIS managers and outside experts.** *(The power of GIS depends upon collaboration and sharing. Agencies need to meet regularly to coordinate activities and develop policy. Agency GIS Directors want a GIS Steering Committee but this has been lacking for more than a decade.)*

- **A requirement for the development and maintenance of a GIS strategic plan**
  (The GIS field is very dynamic with new applications, data types and technologies being rolled out by developers. Without a strategic plan it is impossible to properly plan for best use of these GIS resources. NYC cannot remain a "Smart City" without a strategic plan for GIS as a guide. Washington D.C. has recently completed its GIS Strategic Plan which could serve as a model for NYC)

- **Responsibility for ensuring that spatially enabled open data is interoperable and easy to use**
  (Thousands of open datasets are an enormous resource to City government and to all sectors that comprise our New York. Most of these data sets have a location attribute. Common spatial attributes make it possible for all these datasets to be interoperable, multiplying their value and ease of use.)

- **The formation of an underground utility data interoperability steering committee composed of representatives of public and private utility companies and agencies**
  (Interoperable spatial data exists for almost every feature from the street surface upward. However, data describing the underground including infrastructure networks, basements, foundations and soils is flawed, incomplete and incompatible. Yet the City depends on underground utilities for its survival. The City needs to standardize underground data and enable it to be brought together for proper maintenance, capital planning, and emergency planning and response.)

Bare Essentials Statement Outline

Good evening members of the Charter Commission. Greet the Chair and anyone on the Commission who you may know. Thank them for holding this meeting on Charter Change.

My name is_____ and I live at _____

I am a GIS professional/user/student

I work for _____ and my job involves_____

Or: I am a student at _____ college studying _____ and plan to _____

I am here to speak in favor of a City Charter amendment to provide for improved leadership and management of geospatial information systems in the borough of _____ and in New York City as a whole.

GIS is an essential component of almost all City IT applications including 911 and 311 systems. (others that you are familiar with) However, to be at its most effective in requires rigorous attention to detail, strong leadership, and a culture of collaboration and cooperation. These elements are currently lacking in the City's approach to GIS.

The GIS amendment to the City Charter that has been proposed provides for this by mandating the appointment of a Deputy Commissioner for Geospatial Systems to serve as the City's Chief Geospatial Information Officer. It also provides for the development of a GIS strategic plan and the formation of a GIS steering committee to ensure that the GIS operations of all City agencies are properly coordinated.

Additionally, the amendment requires that a special effort be made to standardize the location elements of the City's open data portals so that data sets are interoperable and easy to access and utilize.

Finally, the Amendment provides for the formation of an underground infrastructure data committee to improve the sharing of information between utilities, which is critical to preventing accidents and responding effectively to emergencies and disasters.

New York City is a world leader in the use of geospatial information systems. This has led to better public services, GIS related jobs and to economic development. This Charter amendment will ensure that NYC maintains and builds upon its leadership role, and continues to realize benefits in the future.

NYC GIS Fact Sheet

1) GISMO has more than 400 members. The NYS GIS Association of which we are a part has about 750 members statewide. GISMO has formed COGITO, the Coalition of Geospatial Information and Technology Organizations including Hunter College, Lehman College, New York University, Pratt Institute, Columbia University, the American Geographical Society (national) and the Open Geospatial Consortium (international) among more than thirty organizations.
2) GIS is a powerful extension of IT and combines the strengths of information technology with the science of geography. GIS is recognized as being a significant contributor to the Smart Cities movement and will play an important role in use of sensor technology and artificial intelligence.
3) GIS has "special spatial powers" that are not available to conventional IT systems. These include:
4) There are a number of NYC Agencies whose use of IT for operations support is dominated by GIS functionality. These "GIS Dominant Agencies" include NYPD, FDNY, OEM, Finance, DEP, DOT, Health, Sanitation, DCP, Buildings and Parks.
5) GIS is at the heart of a number of key City applications including: 311, 911, property assessment and taxation, land management, CompStat, epidemiological studies, infrastructure management, vehicle routing, watershed protection, vision zero, zoning and land management, etc.
6) GIS is an essential tool in collecting at least $15 Billion in annual City revenues.
7) GISMO, through direct contact with DOITT leadership, has advocated for a CGIO, a GIS strategic plan and a GIS Steering Committee for more than five years without results.
8) The Emergency Mapping and Data Center (EMDC) was established on the afternoon following the morning attack on the World Trade Center. Within a few days the EMDC was being operated on a 24X7 basis, employing dozens of GIS technicians. In the six weeks following 9/11 the EMDC along with satellite mapping centers produced more than 3,000 maps and analytical products for the entire response community.
9) West Nile Virus: Spatial analysis employed by the NYC Department of Health and Hunter College's CARSI Lab allowed the City to gain control of West Nile Virus in 2000 by analyzing disease patterns across the City using the newly completed City basemap.
10) A GIS system was developed to monitor water quality across the entire upstate watershed area in the Catskills. This system helped the City to avoid building a $10B+ water treatment plant.
11) Because critical infrastructure facilities including the East 14th Street Con Ed substation were not modelled and analyzed for vulnerability to storm surge, the City lost billions of dollars due to infrastructure damage caused by Hurricane Sandy.
12) Improvements to sensor technology including sensitivity, accuracy and miniaturization are making possible many new applications associated with the smart cities movement. Sensors must be geospatially enabled (location must be given to readings) to provide meaning across a domain.
13) Artificial intelligence applications including those involving machine learning will require the use of advanced spatial technologies and methods such as automated vehicles and the management of highly complex incidents that generate overwhelming amount of data such as disaster events.
14) Sensors, social media, the internet of things, 3D data and underground infrastructure data are all contributing to the huge increase in spatially enabled data that will power new generations of smart cities applications.
15) For cities with enterprise GIS systems, the location elements of spatially enabled data provide the indexing fields which enable the integration and analysis of any combination of data needed to solve a problem or support an operation.

16) It is estimated that there are as many as 7,000 business startups operating in various incubators and accelerators across the City. It is likely that at least 10% of these startups have a spatial component to their developing products.
17) New York City government is responsible for critical GIS foundation and framework layers including imagery (overhead and oblique), LiDAR, building footprints, addresses, street centerlines, parcels and curb lines, in addition to thousands of spatially enabled datasets related to the operations of all City agencies. This data is a huge resource for all other sectors of the City including businesses, non-profit organizations and community groups.
18) When City spatial data sets are accurate, complete and standards based, they become interoperable both within the City but also with surrounding counties, cities and states allowing for improved coordination and collaboration within the greater region.