

# GEOGRAPHIC INFORMATION SYSTEM

## EXECUTIVE SUMMARY

FOR

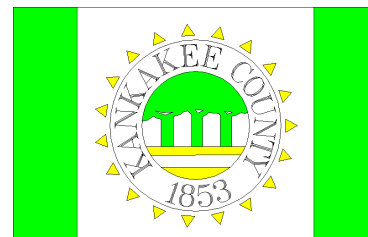
KANKAKEE COUNTY, ILLINOIS

November, 1999



City of Kankakee circa 1869

*"Building on the past to prepare for the future"*



## EXECUTIVE SUMMARY

Kankakee County contracted with the GIS Consulting Team of Klingner & Associates, P.C., and Poepping, Stone, Bach and Associates, Inc., in August 1999 for a Geographic Information System (GIS) Implementation Plan for the County. The objective of this plan was to 1) summarize the current mapping capabilities of the County, 2) help county officials determine the final form of a realistic and achievable system for Kankakee County, and 3) create a plan for achieving that goal.

### 1. GIS TECHNOLOGY

Geographic Information System (GIS) technology involves both digital mapping (the 'G' in GIS) and database management (the 'IS'). Maps play a vital role in the everyday operation of county and city government by containing information such as utility location, property ownership, address location, zoning and land use classifications, census designations, street maintenance history, etc. A major hurdle for local government is to accurately register all these map layers to one another so that intelligent decisions can be made regarding such things as site development, new road construction and zoning changes. GIS technology integrates all these layers into a common reference framework and enables local officials to actually use one layer of information to quickly extract features out of other layers (for example, determining all property owners within 250 feet of a proposed zoning change).

But mapping is only half of what GIS offers: as an *Information System* technology, it also enhances local government's ability to more efficiently manage its existing databases. Estimates are that 80% of local government data contains geographic components that would be better viewed on a digital map than in a database table or spreadsheet. Addresses, street names and route designations, zipcodes, census blocks, tax id numbers, legal descriptions of property, and township/range/section descriptions are all examples of the type of geographic components embedded in most local government data. Typical database management software packages used in courthouses and city halls lack the ability to view this data geographically and thereby inhibit a better understanding of geographic relationships and patterns that help lead to more efficient decisions.

### 2. IMPLEMENTATION PLAN, PART 1: USER SURVEYS

The first step in the Kankakee County Implementation Plan was to contact as many potential participants as possible to determine the current status of the building blocks of a GIS system in the County: maps, databases and computer software and hardware. Over 60 user surveys were mailed out. Individual interviews were conducted with the primary participants (as defined by the GIS task force) on September 9 and 10, 1999 with additional rounds of workshops conducted with secondary participants on September 21 and 22 and October 14.

Based on the information gathered in the user surveys, on-site interviews and workshops, the following summaries of strengths and deficiencies were distilled.

## 2.1 STRENGTHS

***On-going Development.*** The County has taken significant steps in making the Kankakee County GIS a reality by contracting with Ayres Associates of Madison, Wisconsin to fly almost 200 square miles of new urban-scale (1"=100') photography. Having the flight 'in the can' has encouraged the City of Kankakee to work out a cost-sharing agreement with the County to develop 19 square miles of digital orthophotography for the City. The agreement involves the County allowing the City to use their photography to have digital orthophotos developed; in exchange, the County will receive copies of all orthophotos developed for the City at no cost to the County. The first digital products should be available early in 2000.

Also, the County has entered into contract with the Natural Resources Conservation Service (NRCS – formerly know as the SCS or Soil Conservation Service) to update the soil survey for the County. As a result of the update, the County will receive digital soils data and rural-scale (1" = 1000') digital orthophotography for the entire County.

***Computer Infrastructure.*** Kankakee County is currently well along in laying a foundation of solid computer hardware infrastructure for all future computing needs. County buildings are being networked together through Ethernet connections within buildings and microwave links between buildings. A three-year plan of complete computer replacement is underway and the emphasis is on using industry-standard hardware and software throughout. Proprietary, customized software and off-brand hardware is being avoided as much as possible.

***Existing Maps and Datasets.*** The County Planning Department has been using digital mapping for a number of years and an impressive archive of map data has been compiled. Much of this data can be re-used in the countywide GIS so that investments to date are not lost. In addition, the Supervisor of Assessment, County Clerk and Treasurer's Office will soon be working off the same industry-standard database management software platform (Microsoft SQL Server) soon as part of their switch to DevNet as the County's service bureau. SQL Server data is vastly more GIS-friendly than the proprietary data the County was using prior to the change in service bureaus.

***Enhanced 9-1-1.*** The County has also already completed its Enhanced 9-1-1 address conversion and a new dispatch center is in place. A master address file for the rural parts of the County is kept up to date at the 9-1-1 center and other county offices have been able to update their records from this master address file. This cooperation between offices helps to standardize addresses throughout the various County databases will help in geocoding them to a new countywide address map.

## 2.2 DEFICIENCIES

**Mapping.** Many of our recommendations for mapping are based on GIS needs and approaches and are not directly applicable to current CAD mapping efforts. Current mapping efforts have resulted in high quality, effective products suitable for presentation purposes. Despite being a high-quality CAD product, these files are still not ‘GIS ready’ since many were not compiled to a standard coordinate system, will require significant work to make them topologically correct, and will still need to have database links added.

Moreover, a fully functional countywide GIS system requires a framework of 7 primary map layers to be successful. To date, only one layer is fully under contract for development (digital soils), leaving the other six to still be completed. This will be a significant challenge for the County.

**Limited financial resources.** As with most counties in the state, Kankakee County faces the challenge of finding financial resources in addition to what it can apply toward this type of project. This means that the remainder of the project will have to be supplemented with a combination of federal and state grants or new fee programs, monies from other taxing districts in the County, and fees or donations from the private sector. To get this kind of supplemental funding from all these other entities will require a sizeable marketing effort on the part of County officials.

## 3. IMPLEMENTATION PLAN, PART 2: RECOMMENDATIONS

It is apparent from lengthy discussions with the principal officials involved in this project that the County should stick to an aggressive schedule, a schedule that completes the project in 5 years. It is thought that a schedule any longer than that would encourage delays and possibly lead to a loss of purpose and direction. With this philosophy in mind, we make the following recommendations:

### 3.1 DEVELOPMENT OF FRAMEWORK LAYERS

The County is responsible for developing basic ‘framework’ map layers. Due to financial restrictions, we would suggest limiting the framework to the following 7 map layers:

- |                       |                                     |
|-----------------------|-------------------------------------|
| 1) survey control     | 5) addresses                        |
| 2) orthophotography   | 6) soils                            |
| 3) street centerlines | 7) zoning and jurisdictional limits |
| 4) parcel maps        |                                     |

These layers would be built over a 5-year period starting in 2000 with completion in 2004.

### 3.2 *SHORT-TERM OBJECTIVES: YEAR 2000 TASK LIST*

As currently envisioned, funding for the system should be broad-based, meaning it will require participation from many potential users in the County. To garner this type of broad support will require a significant marketing effort on the part of County officials. In year 2000, the County needs to kick off the project with several initiatives:

- 1) Contact other potential participants in the County to secure financial support by way of membership in the Kankakee County GIS Committee.
- 2) Actively lobby for state legislation aimed at funding parcel mapping.
- 3) Submit grant applications for supplemental funding or software.
- 4) Contact Illinois Department of Transportation officials regarding potential funding through the MPO grant program to help develop GIS base map layers.
- 5) Develop a one-square-mile pilot area to market remainder of project to other taxing districts in the County and potential private sector participants.
- 6) Complete county-wide ground control for digital orthophoto images

### 3.3 *LONG-TERM OBJECTIVES*

***Completion of Framework Layers.*** Development of the framework map layers should be done in sequence: survey control and orthophotography completed first, followed by street centerlines, then parcel mapping and addressing. Many zoning and jurisdictional limit coverages can be extracted from the parcel mapping once it is complete; for this reason, zoning and jurisdictional limits will be done last. Because it is being developed by federal agencies, the soil survey will be done independently from all other framework layers and should be completed by 2003. Because it is the single most-expensive layer to develop, anticipate that the parcel mapping be stretched out over the entire five years if agreed to by a parcel mapping vendor.

***Support Services.*** In an effort to keep the GIS project from impacting current staffing levels, the County will have to rely on a confederation of local staff, vendors and consultants to provide the manpower and expertise to complete the project. The consultant's role should be one of providing a database design of the primary map layers, assisting with grant writing for software and funding, and assisting the County with the writing of RFPs for parcel mapping or any additional work needed beyond the primary map layers. Consultants should also be involved to help coordinate the project and provide quality control of the delivered mapping products.

## **4. IMPLEMENTATION PLAN, PART 3: PROJECT COST ESTIMATES, WORK SCHEDULES, AND GIS COMMITTEE MEMBERSHIP**

### *4.1 PROJECT COST ESTIMATES AND WORK SCHEDULE*

The project cost estimates and work schedule are outlined in Table 1. The left seven columns of information contain the items needed to build a countywide GIS along with a breakdown by quantity, unit cost, and totals (the 'Extension' column). We also tried to indicate potential savings resulting from 'In-Kind Services', where applicable. To assist in the planning for this long-term project, we have also provided county officials with two funding options: a 'Basic' option which includes the minimum requirements for constructing an accurate, quality GIS; and an 'Enhanced' option which includes additional items that the County may deem desirable above and beyond the basics. Totals for the Basic and Enhanced approaches are provided in columns 8 and 9.

As stated earlier, County officials have decided to pursue an aggressive 5-year schedule for completing this project. Table 1 includes work schedules for both the Basic and Enhanced cost approaches. The Enhanced work schedule contains everything covered in the Basic approach plus additional enhanced features. Year 2000 is the kickoff year and involves two parallel tracks of development. The first track is aimed at completing the underlying control network and surface model needed for orthophoto production and purchasing the first 1/3 of the countywide digital orthophotos/soil survey update. The second track aims at developing a one-square-mile pilot area that will contain all framework layers envisioned for the County. County officials can then use the pilot as a marketing tool to persuade additional participants to help in sponsoring the project.

The final column in Table 1 indicates the existing costs and future commitments made to date by Kankakee County and the City of Kankakee. To date, the County has paid for photography (item 1) and the implementation plan (item 16) and has contractual commitments for the soil survey update (item 8). The City of Kankakee has contractual agreements for developing 19 sections of digital orthophotography covering most of the City (Item 4) and for doing parcel mapping for the City (Item 7).

### *4.2 KANKAKEE COUNTY GIS COMMITTEE MEMBERSHIP*

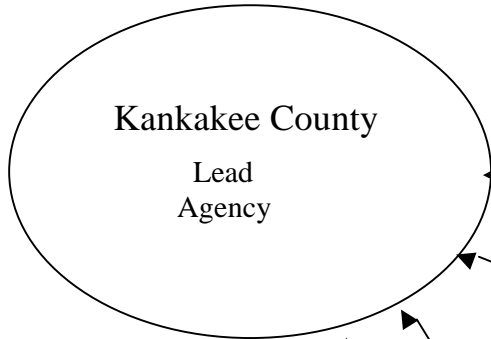
To assist Kankakee County officials in garnering financial support from agencies and groups outside County government, a GIS Committee membership structure has been designed. There are four levels of membership, Class A through Class D, with membership class determined by an entity's contribution as a proportion to its predetermined 'fair share'. 'Fair share' values for public entities such as municipalities are calculated as a combination of population, mapping area needed to cover the municipality, and assessed valuation. Membership level for private entities is a matter of meeting annual lump sum contribution levels. Table 2 contains a detailed description of the associated rights for each level of membership.

## **5. SUMMARY**

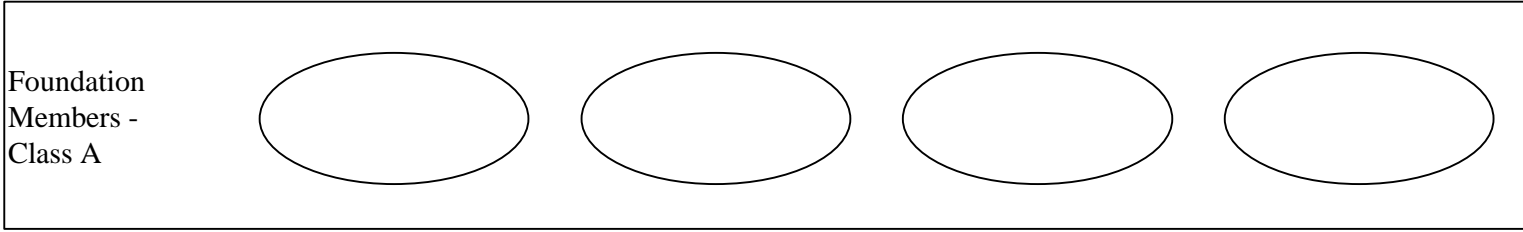
Building the Kankakee County GIS system will be a substantial challenge for County officials. However, one of the strengths we forgot to mention earlier in this summary is the determination of those officials involved to get this project underway and make sure it is successful. This determination has already been demonstrated in several ways: by the fact that monies for the Spring 1999 aerial photography and this implementation plan were sacrificed from existing budgets; by the way County Highway staff were mobilized in just a week or two to get 260 control points painted or paneled countywide prior to the April flight; by the cooperative manner in which the County has worked out a cost-share for digital orthophotos with the City of Kankakee; and in the way Task Force members have energetically researched and lobbied for new sources of potential funding. Based on this level determination, we do not see that the challenges presented will in any way keep Kankakee County from realizing its goal of countywide GIS.



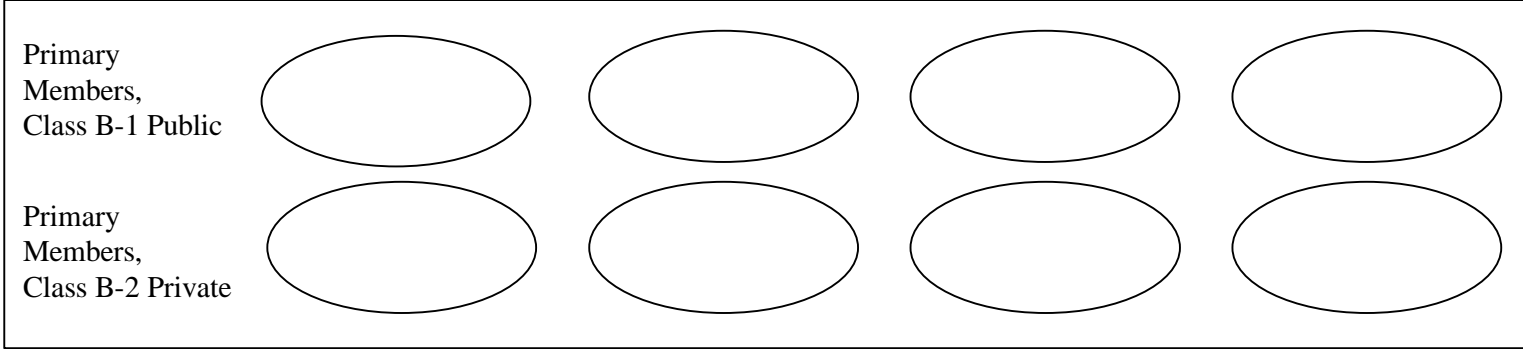
# Contractual Linkages - Kankakee Co. GIS



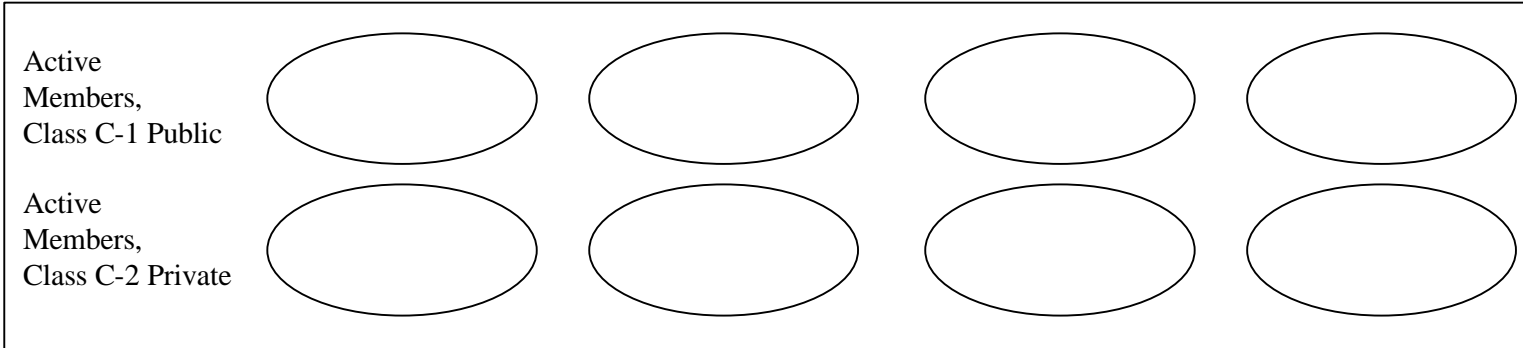
- Framework Data Development
- Digital Orthophoto - NRCS & Ayres Assoc.
  - Cadastral - RFP
  - Addresses - RFP/In-House
  - Soils - NRCS
  - Survey Control - RFP/In-House
  - Street Centerline - RFP/In-House
  - Boundaries - RFP/In-House
  - Planimetrics/Contours - Ayres Assoc



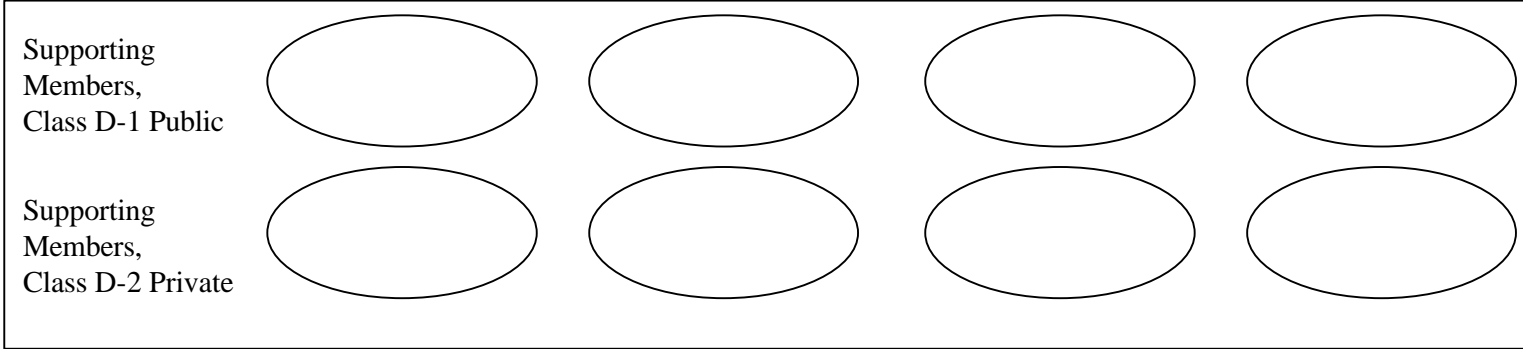
- Full voting rights
- Full access to Approved framework data layers at a dynamic basis (as updated)
- Majority control of Geographic Information System committee
- Expected "Fair Share" participant responsibility is 100% of calculated support level, and a minimum of \$20,000 annualized cost.
- Financial responsibility of class: 50-75% annualized cost



- Eligibility as voting member
  - No-charge use of Foundation (Class A) GPS equipment and technical assistance
  - Full access to approved Framework data layers at a Dynamic Basis (as-updated)
  - Financial responsibility of class 15-30% annualized cost
- B-1: Public**
- Expected "Fair Share" participant responsibility is 80-100% of calculated support level.
- B-2: Private**
- Participant contributions will total \$10,000 or more annualized cost.



- C-1: Public**
- Non-voting, full mailings of minutes/GIS newsletter
  - Limited data sets and Framework data layers on-line, as updated – approximately quarterly updates – digital data transfer and annual cd.
  - Financial responsibility of class: 5-15% annualized cost
  - Expected "Fair Share" participant responsibility is 70-80% of calculated support level
- C-2: Private**



- D-1: Public**
- Non-voting, full mailings of minutes & GIS newsletters
  - Limited data sets and 8 primary data layers off-line, cd Annual Official County GIS update – mailed as a cd each year
  - Expected "Fair Share" participant responsibility is 50-70% of calculated support level
  - Financial responsibility of class: 5-10% annualized costs
- D-2: Private**