# Overview of
# GIS Best Management Practices (BMP)
# Deliverables by GeoAnalytics, Inc.

An **Executive Summary** of the key points of the BMP Primer for GIS, as well as "scorecards" of the "Status of GIS Best Practices in Palm Beach County" and how the County stands "Relative to Comparative Counties" at this point in time.

**Draft Best Management Practices Primer for GIS in Palm Beach County** – The Primer includes insights from current GIS specific and Information Systems literature review and research. It provides a context by which the County can begin to address, formulate and prioritize its own set of best practices. It includes a **Catalog** of broadly based best practices to support a quick implementation in specific areas of desired improvements.

**Customer Satisfaction Survey** – An online survey was submitted to all Palm Beach County employees, and select employees in the Property Appraiser and the Sheriff's Offices. There were 753 responders to the survey (including 4 elected officials), with only 336 who actually use GIS. Of those who use GIS, 67% stated that it was either critical, or essential to their non-critical work. The customer satisfaction section results represented a bell-shaped curve which was overall neutral; with 23.5% stating that they were Satisfied or Very Satisfied, and only 3.7% stating they were Dissatisfied or Very Dissatisfied. Key comments received from the survey surrounded areas such as training, communication, GeoNav and data. The survey will be used as a baseline for future customer satisfaction surveys.

**Situation Assessment Report** – The Report documents existing circumstances in Palm Beach County, identifying key issues and opportunities. The Assessment included review of existing business management practices (both documented and undocumented), business processes and data, as well as the Countywide GIS technical environment. The preliminary findings from this report were used as a basis for the GIS Project Management Team (PMT) Retreat held in June, 2006. The PMT came up with a list of categories and priorities to focus on as a result of the retreat.

**Comparable County GIS Program Summary** – GIS programs across the nation in comparable government agencies were identified, asked to complete an online survey, and then analyzed, with summary results documented. A Malcolm Baldrige (quality improvement) style online survey was developed consisting of over 80 questions for organization self-assessment. In addition to the organization self-assessment, each agency GIS Coordinator was asked to administer a Customer Satisfaction Survey and participate in an interview process. The following organizations were included in the report: Johnson County, Kansas; Mecklenburg County, North Carolina; Orange County, Florida; and Kern County, California.

# A Best Management Practices Primer for GIS in Palm Beach County, Florida
## Executive Summary
– Draft for Discussion Only –

## A. Introduction

This "Best Management Practice" (BMP) primer is the result of a study of circumstances and performance of GIS in Palm Beach County. The purpose of this primer is two fold. First is to provide a context by which the County can begin to address, formulate and prioritize its own set of best practices. The second purpose is to provide a list or set of possible practices that the County might consider.

## B. Context

### 1. Best Management Defined

Generally speaking, a "Best Management Practice" is a management idea which suggests that there is a technique, method, process, activity, incentive or reward that is more effective at delivering a particular outcome than any other technique, method, process, etc.[1] Certain BMP's may be relatively static over time. These BMP's relate to core values or principles. Other BMP's may be highly dynamic and adaptable to changing circumstances and to engender innovation. It is almost axiomatic that best management organizations engage in continuous improvement and change management as ongoing, never ending exercises.

Contrary to some thinking, BMP's are not applicable across organizations. Rather, BMP's are a function of and must fit the legal, political, cultural, and technical environment of the specific organization seeking to employ it. A practice that works for one organization may not work for others because organizations have their own strategies and culture. Key to success, though, is alignment of the GIS to those strategies and the culture of the organization.

Another key finding is that the applicability of specific BMP was very dependent on the status of the evolution of a particular program. The needs of "start-up" GIS programs are really quite different from more mature systems and programs. Start-up programs focus on organizational structures and data and technology acquisition. Mature programs focus on the delivery of data and applications, optimization of processes, and innovation to deliver new value.

The key point is that BMP's can take many forms and they may not be transferable across time and organizations. Perhaps more appropriately, therefore, a Best Management Practice can be defined as *a high performance way to achieving business goals and objectives that solve problems, create opportunities, and improve business results.* Best Practices should be flexible, adaptable, and responsive to the changing business needs, fiscal circumstances and technology change.

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1 Adapted from *Wikipedia*, 2007.

## 2. Knowledge Management

How an organization manages knowledge is a fairly good predictor of both best practice and organizational success. In a very real sense 'Knowledge Management' is a conscious strategy of getting the right knowledge to the right people at the right time and helping people share and put information into action in ways that strive to improve organizational performance'[2]. More and more, organizations must evolve from "what we think" to "what we know." This is to suggest that organizations need to base decisions on information that is reliable and consistently prepared and analyzed.

While not widely perceived as such, location is an integral part of knowledge management. Knowledge of the existence of events or business transactions and the subsequent quantification of performance or of impact is of little value without knowing "where" events occur. This is especially true in government where decisions and policies affect large numbers of citizens and communities. GIS can, therefore, be an indispensable tool for knowledge management and decision support. This is especially true in Palm Beach County because of investments, successes, and its staff and leadership.

While the value of spatial data and analysis is accepted in a majority of organizations today, a major challenge for geographic information coordinators and executive managers is integrating geographic technology and practices with the long term business planning and operations of the enterprise organization. With the application of spatially enabled business intelligence, leaders can move from just having data, to using information to garner knowledge to create understanding, to application of intelligence for decision making.

## 3. Performance Management

Knowledge management and performance management go hand in hand. Increasingly in both private and public organizations, performance management has become prominent trend. For example, transcending the last two gubernatorial administrations, state government in Florida has embraced performance management with an emphasis on strategy, performance metrics, and gauging and monitoring results.

Performance management regimes seek to not only make organizations efficient, but also to make them effective and innovative to deliver the best outcomes. This trend focuses on outcomes, not outputs.

Recent research has provided a better understanding of performance management in the public (social) sector. [3]. The premise of this research is that government should not be run "like a business" because most businesses are mediocre. Rather, governments need to be run within the context of the governmental systems, but with the discipline required to be great. This research suggests that greatness in government is determined not by measurement of inputs or processes, but rather by outcomes. That is to say what social goal is advanced; even if the goal defies quantification? In the social sectors qualitative valuation, in addition to quantifiable valuation, is valid.

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2 See, Carla O'Dell, C. Jackson Grayson, *If Only We Knew What We Know: The Transfer of Internal Knowledge and Best Practice,* New York: Free Press, c1998

3 Jim Collins, et al., *Good to Great and the Social Sectors* (2005).

Performance management cannot exist without some level of knowledge management. This is because performance management is built on the integration of data from many sources across the organization: operations, human resource, financial, etc.

The coordination process is intended to accomplish two things. First is to facilitate the business processes and outcomes of those agencies and business units that participate in the enterprise. Second is to advance the interest of the enterprise overall through the broad concept of performance management, and/or by providing data publication or brokerage services.

# C. Palm Beach County Best Practice Assessment

Palm Beach County is a leader in GIS.

This leadership cuts across agencies and staff throughout County government. EGIS is innovative. The use of GIS as an embedded, transparent part of business processes is unique and powerful. The engagement of stakeholders in EGIS vests those agencies in EGIS as a driver for their own success. While the interests of stakeholder agencies and EGIS are not always perfectly aligned, the level of collaboration and, indeed, comity is special. The success of GIS in Palm Beach County is the result of a team effort - from the PMT to the GISPAC to CWGC to users.

Palm Beach has built its Enterprise GIS (EGIS) on the foundation of a strong organizational model and technical innovation. The approach to GIS in the County embraces the human dimension of systems development, management, governance, and operations. When judged against the comparable counties and others, it is clear that Palm Beach employs many innovative and traditional best management practices.

Notwithstanding its many successes, as with any organization though, there are many opportunities to improve. The following summarizes BMP strengths and areas in need of improvement in Palm Beach County. It should be noted that the focus of this review is on EGIS and Countywide GIS Coordination (CWGC).

Figures 1 and 2, on pages 6 and 7 respectfully, provide score cards on the status of best practices in Palm Beach County. Figure 1 illustrates this from an internal perspective. Figure 2 assesses best practices status relative to the comparable counties that were part of this study.

## 1. Business Process

Business processes are those activities undertaken by CWGC in support of EGIS, its constituent agencies and other customers.

**Strengths.** Some key strengths include the following. CWGC is service oriented and helps stakeholders accomplish the business of government. CWGC facilitates that business by providing coordination, systems administration, and data and application services. CWGC involves stakeholders in the governance and operations of CWGC and EGIS, including in leadership roles. Although technically advanced, the approach to systems and application development has been one where risks are minimized. Finally, the separation of the coordination role of CWGC from the Service Bureau functions focuses both activities and reduces potential conflicts.

Areas for Improvement. More regular business planning would focus CWGC strategies and to meet current circumstances such as changing fiscal, policy and technical conditions. For some stakeholders, execution of key initiatives such as addressing has been slow. Adoption of performance management principles, including customer satisfaction polling, would strengthen outcomes for EGIS and CWGC. Success criteria should reflect the strategic goals and objectives of the enterprise and of stakeholders. Finally, evolution of EGIS to provide more decision support will advance the interests of the County and will leverage the considerable value of EGIS in new and beneficial ways.

## 2. Data

Strengths. The number and richness of data sets that are managed and supported in EGIS is an impressive accomplishment. In addition to the volume and variety of data available, the data management protocols are generally first rate. Data are published in ways to make them available and accessible to many organizations and for many purposes. Palm Beach County has adopted a set of data standards that add to the reliability, consistency, and utility of spatial data sets.

Areas for Improvement. Additional data documentation, including a data catalog, is needed to communicate the existing environment, what else is available in other departments, and to outline operational processes and procedures. Similarly, enhancements in metadata management are needed to optimize the usefulness of data and information. At the same time, if constructed appropriately, these actions will contribute to the quality of data through feedback loops for corrections and enhancements.

## 3. Technology and Applications

Strengths. GIS in Palm Beach County has evolved through a history of innovation in technical architectures and approaches. Most of that innovation has been "leading", not "bleeding" edge -- which is a very important balance to achieve. More that just adopting technology, EGIS has leveraged the best of emerging and traditional technical approaches such as services oriented architectures and data warehousing protocols. These approaches leverage the considerable IT infrastructure of the County to meet the needs of its customers and stakeholders. Finally EGIS has become integral to many business systems across the County.

Areas for Improvement. Consideration of how to extend the Innovation Category Lifecycle particular existing technologies is important. Some technologies can be extended, some must be drawn down. By way of example, "Should GeoNav be enhanced and extended or should it be replaced?" EGIS is mission critical to many agencies across the County. Because of these successes, the demand on EGIS is large and technical sustainability requires continuous evaluation.

## 4. Organization

Strengths. The organizational dimension of EGIS and CWGC is exceptional in its structure and longevity. This comes in the form of stakeholder driven governance and operational models, and user involvement. At all levels, it is very significant that leadership comes not just from CWGC but also the stakeholder agencies and, in the case of the Forum, from the broader community. As GIS programs go, Palm Beach County is a recognized leader organizationally.

Areas for Improvement. While EGIS enjoys support from the County Administration and the Board of Commissioners, they are not stakeholders in the sense that they rely on EGIS as they would other aspects of the IT infrastructure. In part this could be because EGIS has not evolved to the point that it could be considered a decision support tool. GIS coupled with other business systems and cast into an intelligence framework has the potential to be a very powerful tool, not only for executive management and Commissioners, but also operational managers. Engagement of this class of stakeholders could have tremendous benefits not only for the GIS program but other participants and stakeholders over time. This leads to two observations.

First, over the years, Countywide GIS sought to "fly under the radar" without any concerted effort to market EGIS to decision makers, potential customers, or the public. Raising the visibility and building the "brand" of EGIS will be important to advance the program and to support migration of EGIS to a more formal decision support role.

Second, one observation from the mature comparable counties was that EGIS has been separated into its own organization. To facilitate the broader objective of true decision support, consideration of CWGC and EGIS as an independent agency merits discussion and consideration.

Sustainability is always an issue for organizations. Regardless of structure or reporting lines, it would behoove the County to develop a succession plan that would cover personnel management, cross training, and crisis management. Because EGIS is mission critical to so many processes in the County, it is essential that the system does not become dependent on specific individuals. It has been often and aptly said, that people, not data or technology, are what drive system success. To that end, effort should be given so that positions and pay grades are aligned so that agencies across the County can recruit, promote, and retain qualified staff. There is a dearth of competent GIS talent across the country. Accordingly, should be given to staff augmentation and other forms of contract staff to meet short term needs. Further training for existing staff will allow for "growing" GIS expertise and providing staff with possible career paths.

## D. Best Management Practices Catalog

The final section of the primer is a Best management Practices Catalog. This primer and the Catalog are intended to be a practical guide to policies, procedures, and approaches that will improve CWGC performance, as well as performance and knowledge management. The Catalog provides an outline and template for implementing best practices and procedures for specific areas such as: Communication, Data, New Technologies and Personnel.

Figure 1

## Status of Best Practices in Palm Beach County

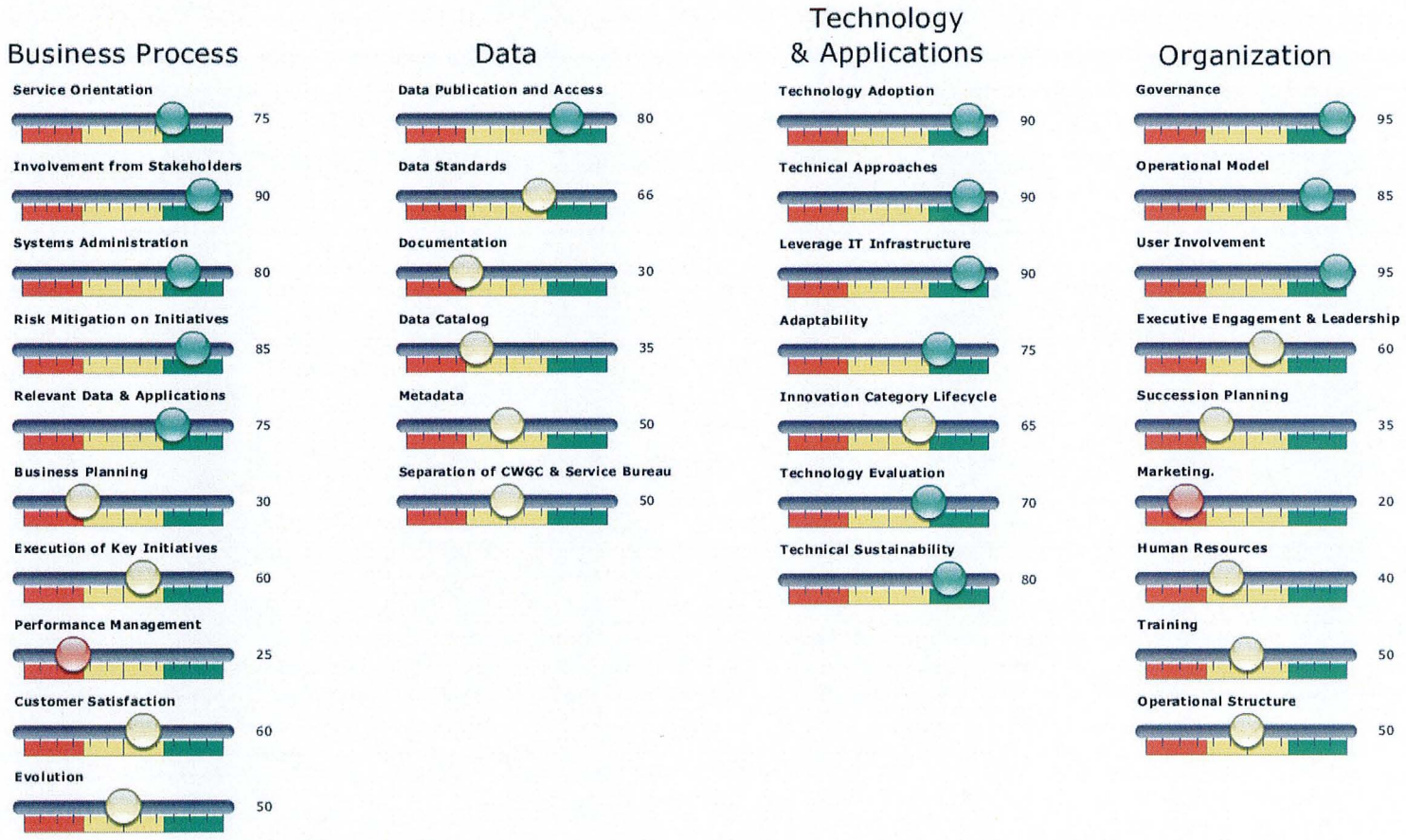

Figure 2

# Status of Best Practices in Palm Beach County Relative to Comparative Counties

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**Situation Assessment Report** (41 Pages) – The Report documents existing circumstances in Palm Beach County, identifying key issues and opportunities. The Assessment included review of existing business management practices (both documented and undocumented), business processes and data, as well as the Countywide GIS technical environment.

On September 20, 2006 the Situation Assessment Report was distributed to the GIS-PAC Members. At this meeting, the following overview of the report was provided:

- The Situation Assessment Report was designed to document PBC's existing circumstances and to identify key issues and opportunities, particularly from a program sustainability perspective. You will read:

  - PBC adopted GIS technology more than 18 years ago
  - We have established a good organizational structure
  - Good commitment from management and with funding
  - Established effective strategies for data access
  - Good staff and ongoing collaboration within and without
  - Developed reusable code for applications
  - We have reached the "start-up plateau"

- In order to move to the next level and ensure sustainability:

  - Update our Strategic Plan, revisiting previously identified tasks and priorities
  - We need better documentation of our processes
  - We need to formalize the PMT evaluation processes for decision making
  - A threat to sustainability are the staffing issues which have slowed our progress and affected both technical and coordination staff
  - We need to communicate better via websites our GIS Assets such as data and application development
  - We need to update our Business Plan to use for measurement and communication of accomplishments
  - Re-initiate the Addressing Project
  - Look at ways of achieving 2-way data exchange with the cities, perhaps through using wireless technology
  - Ensure that our data accuracy standards are included in procurement contract requirements
  - Have better monitoring of our Metadata – completion, data updates, etc.

The preliminary findings from this report were used as a basis for the GIS Project Management Team (PMT) Retreat held in June, 2006. The PMT came up with a list of Categories and Priorities to focus on as a result of the retreat.

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**Comparable County GIS Program Summary** (Pages 1-22) – GIS programs across the nation from comparable government agencies were identified, asked to complete an online survey, and then analyzed, with summary results documented. A Malcolm Baldrige (quality improvement) style online survey was developed consisting of over 80 questions for organization self-assessment. In addition to the organization self-assessment, each enterprise GIS Coordinator was asked to administer a Customer Satisfaction Survey and participate in an interview process.

The following organizations were included in the report:

1. Johnson County, Kansas
2. Mecklenburg County, North Carolina
3. Orange County, Florida
4. Kern County, California

Oakland County, Michigan did not complete the full BMP process; however, GeoAnalytics included partial information about their enterprise GIS organization in the GIS-PAC presentation on August 14, 2007.