EXPLORING THE BENEFITS OF AN OPEN SYSTEMS PARADIGM FOR BUILDING PERMIT TECHNOLOGIES IN LOCAL GOVERNMENTS OF FLORIDA

By

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This dissertation proposes a new paradigm for Florida's building permit computational technologies based on Open Systems. It hypothesizes that given Florida's uniform building code, steering Florida's local governments towards an Open Systems paradigm for building permit technologies, creates the conditions for transformative improvements in delivery of services, significant cost-savings of public expenditures, and an increase in governmental transparency.

To test this thesis, this dissertation uses qualitative research, built from interpretation of existing information. It evaluates a building permit and inspection computerized system developed with an open paradigm by Alachua County, utilizing data from 2000 to 2009. It then reviews building permit technologies used by local governments of the State of Florida, examining their level of adoption of the open paradigm.

Results for the Alachua County confirm that Open Systems lead to better quality, lower cost, and more transparency.

- The Open System has transformed the process of permitting, inspections, and code enforcement, and it has established a higher standard for data quality, and integrity.
- For an eight year time span, the Open System has introduced a cost saving of $1.43 million.
- The Open System has established a degree of operational transparency where the entire process of permitting and inspection, and its entire data repository created over the years, is publicly available in real time, to anyone, anywhere. This same degree of transparency also applies to the product itself, as the Open System is in the public domain.

Results for the State of Florida show that the extent of use of proprietary systems is pervasive, and that the scale of parallel acquisitions by local governments from the same vendor is high. They prove that improvements in governmental services, and in the democratization of public data and processes, can be obtained by transitioning to contemporary open paradigms, and which also meaningfully include the users.

This study proposes the expansion of the current paradigm of procurement, acquisition, and development for building permit and inspection technologies by local governments of Florida, to formally embrace the Open Systems method as an equal or perhaps better alternative than the proprietary one.

CHAPTER 1
INTRODUCTION

When technology evolves quickly, society can find itself left behind, trying to catch up on ethical, legal, and social implications.

--Tim Berners - Lee, inventor of the web

In Florida, the Building Construction industry is regulated by state law. In March of 2002, a statewide uniform building code known as the Florida Building Code (Florida Department of Community Affairs, 2002), was introduced. Florida Statutes give the authority to adopt and to update this code to the Florida Building Commission,[1] and the authority to implement it to local governments. In general, local governments delegate this authority to their planning departments, who oversee building construction (permitting, inspection, and code enforcement) operations, and who ensure protection of public safety.

Presently, most of the planning departments in Florida, manage their permitting, inspection, and code enforcement operations with costly and proprietary computational technologies (software and databases), despite the wide and successful adoption by governments worldwide of Open Source and Open Technologies in the past decade (Wheeler 2007, Schindler 2008, Ward and Tao 2009). Typically, a local government manages building permit and inspection operations through a software system provided by a contracted vendor with little room for renegotiation of the contract. The vendor maintains full ownership of the technology and has exclusive, absolute control over its

[1] The Florida Legislation. (2011). *Specific Powers of the Commission*. The 2011 Florida Statutes. Retrieved December 24, 2011. From http://www.leg.state.fl.us/Statutes/index.cfm?App_mode=Display_Statute&Search_String=&URL=0500-0599/0553/Sections/0553.77.html.

use, price, and functionality. The local government is not provided access to the inner-workings of the system, or allowed to make any changes to it. By operating under these non-competitive conditions, the vendor has no incentive to improve on the performance of the system, or to enhance its functionality and its cost effectiveness, as the cost to the local government for changing vendors is prohibitively very high.[2]

This model results in the prolonged use of outdated technologies, a stagnant organizational knowledge and culture, and an opaque system purchased with public funds, which is entirely insulated from public scrutiny. In addition, with 478 local governments in the State of Florida,[3] each in potentially independent contracts with vendors, state-wide expenditures for duplicate building and permitting technologies are significant, in spite of a statewide uniform building code. Furthermore, these proprietary systems hinder the power of human cooperation and collaboration, which are the foundation of our time's "emerging new social phenomena" (Benkler, 2005), as "a critical long term shift caused by the internet" (Benkler, 2005), and that Benkler coins "social production" as opposed to "industrial production."

Meanwhile, the world of information technology has been rapidly advancing towards greater openness, utilizing more Open Systems and Open Technologies, which have enabled us to live "in the middle of the largest increase in expressive capability in the history of human race" (Shirky, 2008).

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[2] Upfront costs for Building Permit technologies fluctuate between $250,000 and $1,000,000. These costs are only a fraction of their total lifecycle cost (The Open Planning Project, 2007 & Appendix F).

[3] Florida League of Cities, Inc. (n.d.). *My City: Facts on Florida Cities.* The Florida League of Cities, Inc. Retrieved October 14, 2011. From http://www.flcities.com/membership/my_city_facts.asp.

The internet, which represents the defining moment of the past decade, was developed as an Open Source (Berners-Lee, 2000) and “is open for anyone to create and innovate and share, if they want to, by themselves or with others” (Benkler, 2005). This adoption of Open Systems is also a natural fit for open governments, which in the United States, and especially in Florida, are strongly regulated to provide open records, open meetings, and transparency.

Local Governments in Florida

Local governments are the smallest units in the Florida system of government. They are administratively independent from the State Government or the Federal Government. As of 2011, there are 67 counties and 411 municipalities in the State of Florida (Figure 1-1).

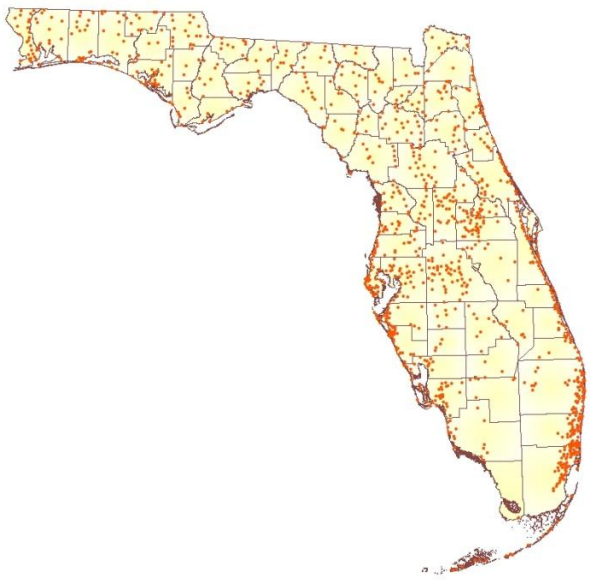

Figure 1-1. Counties and Municipalities in the State of Florida

Municipalities may be called cities, towns, or villages, with no legal distinction across these terms. Cities, towns, or villages, generally cover mutually exclusive areas and counties overlap with them. Typically, municipalities provide essential services for

their own area of jurisdiction, while counties provide essential services to the unincorporated area (Hoch, Dalton, & So, 2000). Some additional services may be provided countywide, including within municipalities, by county governments. Planning and building services, which include the review of construction plans, permitting, inspections, and enforcement of building codes, are considered essential services and are generally provided separately by counties and municipalities. Sometimes, local governments enter into inter-local agreements with each other for the provision of these services.

Open Systems, Open Source, and Open Technologies

Open Systems[4] is a general term used for describing computer systems or products that provide a mixture of interoperability, portability, and open software standards. In a more contemporary context, they are systems that allow for user contribution, manipulation, editing, unlimited use, reuse, and expansion. Their programming language may or may not be proprietary. Open Source or Open-Source Software (OSS) is a model of development and distribution of non-proprietary computer software that promotes access to the product's source material via specific licensing and legal frameworks. This software development model promotes and is based on contributions from a peer review and transparent process. The promise of Open Source, according to the Open Source Initiative (OSI)[5] is "better quality, higher reliability, more flexibility, lower cost, and an end to predatory vendor lock-in practices." Open

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[4] ""Open" means your software works with mine, independent of vendor, like Web browsers and Web servers (McKee, L. (2005) *The Importance of Going "Open"*, (Wayland, MA, Open Geospatial Consortium)."

[5] At present, OSI (www.opensource.org), a non-profit corporation with a global scope based in California, is the primary arbiter of what constitutes Open Source software.

Technology refers to practices for development and implementation of computational technologies in a non-proprietary way that are enabled by the Internet and related technologies. The four key components for Open Technology are: *Open Standards and Interfaces*, *Open Source Software and Designs*, *Online Collaborative and Distributed Tools*, and *Technological Agility (modular design facilitating reuse)*.

Closed Systems, Proprietary Technologies

In contrast with Open Systems, Closed Systems are systems that do not allow users to change or to add on to them. They frequently are not compatible with other products and they are usually proprietary. A Proprietary System, or Proprietary Software, is computer software or a software system which is copyrighted and for which the holder has exclusive legal rights. The licensee (user) is given the right to use the software under restricted conditions, and is prohibited from replication, modification, distribution, or reverse engineering. Vendors typically limit the number of computers on which the software can be used, and price the product based on the number of users. In contrast, most Open Source software does not have associated license fees and the developer's revenue is mostly generated by providing services. The Open Source licenses are not concerned with the mode of use or the scale of the system. In contrast, the proprietary licenses focus on the use of the software in terms of size, scale, or type of permitted use and their license fee increases proportionally with the use of the system. Frequently though, systems are a combination of closed and open.

Problem Statement

Studies about the role of Open Systems within the United States local governments are rare (Cassell, 2010). Most of them are typically concerned with general investigations of Open Source Software as opposed to Open Systems, and they

usually limit their investigations to three areas: (1) backend infrastructure (servers and web servers), (2) operating systems, and (3) generic applications (software and databases). These studies also mostly consider these topics from the perspective of an organization's infrastructural capacity in Information Technology, rather than from the perspective of an end user specific service that is similarly provided by several organizations, and which is similar to how the private sector models its services. Very few studies, if any, have investigated the feasibility of Open Systems in local governments, with a focus on end user applications (software and databases) only, and as they apply to a specific service that is statutorily regulated across many local governments.

This dissertation aims to propose a new paradigm for Florida's building permit operational technologies (software and databases) based on Open Systems and on uniform standards. It hypothesizes that given Florida's uniform building code, steering Florida's local governments towards an Open Systems paradigm for building permit technologies, opens up opportunities for (a) a drastic increase in governmental transparency, (b) transformative improvements in delivery of services, and (c) significant cost-savings of public expenditures.

To test this hypothesis, this dissertation evaluates as a case study, a building permit and inspection computational system[6] developed by the Alachua County GIS

[6] The development of the Alachua County Building Permit system suite was the initiative of this dissertation's author during her tenure as the GIS Manager of Alachua County. She led the process of conceiving, designing, and developing the four components of the system to its full implementation by involving building officials, building inspectors, code inspectors, and the development community (Appendices A , B, C, D, pages 178 - 198).

Division with a Participatory Design, and Open Source and Open Systems approach. It reviews building permit technologies presently used by planning departments in local governments of the State of Florida, and it examines their level of adoption of Open Source and Open Technologies. It analyzes data from the Alachua County Growth Management department from 2000 to 2009, and from Building and Development departments in local governments of the State of Florida for 2012.

Research Purpose

Technology provides value by enabling users to reach their objectives more efficiently. Sometimes these objectives include not just meeting requirements, but also meeting them in a more robust and in a more effective way. Objectives of cost effectiveness, openness and transparency of operations and information, and expansion and improvement of e-services, are part of the fundamental goals of local governance, whose *raison d'être* is to serve its people in the most accountable way.

In 2009, the Code Enforcement component of the Alachua County Building Permit system received two awards from the National Association of Counties: a NACo Achievement Award and a Best Nationwide in the Information Technology Category Award from the (Appendix E, pages 203 & 204).

In 2008, the Permits and Inspections component of the Alachua County Building Permit System received an ICMA Excellence Award from the International City and County Management Association, a NACo Achievement Award from the National Association of Counties, and an Innovation in Communication and Technology Award by the Florida City and County Management Association (Appendix E, pages 205 & 206).

In November of 2008, the Government Technology Magazine featured a component of the Building Permit system in an article titled: *GeoGreen Mapper – an Interactive Green Map for Alachua County, Florida* (Appendix E, page 207).

In November of 2008, the local newspaper of Alachua County published an article about this system, with interviews from key leaders in the local building construction industry, from the private, nonprofit, and governmental sectors (Appendix E, page 208).

To date, all four components of the Alachua County Building Permit system continue to operate successfully. They are also used by students of the University of Florida Building Construction as part of their class curriculum (Appendix F, pages 209 & 211).

Proposing a better model for building permit operational technologies in the State of Florida, that complies more closely with fundamental principles of local governments, and with technological trends of our times, is the purpose of this dissertation. It intends to accomplish this goal by offering a new paradigm for procuring, developing, and maintaining these technologies. The proposed paradigm, would be substantially more cost efficient than the current one; would be based on more contemporary approaches of software procurement, software development, and software use; it would take into account the fairly recent landmark in the building construction industry in Florida, of instituting a statewide standardized building code; and it would present evidence of significant improvements in service delivery and governmental transparency.

This research is concerned with investigating and demonstrating both the *superiority* of the concept of an Open Systems paradigm as it relates to local governance and the *feasibility* of the new paradigm as it relates to its actual implementation and performance.

Research Significance

In essence this study intends to highlight an ancient relationship in human history: new technological capabilities and technological progress versus old and restraining regulatory powers that lag behind.

In the long term, the results of this dissertation can support initiatives for local or statewide policy improvements that would facilitate and encourage the adoption of a more effective and more contemporary paradigm for building permit and inspection technologies in the State of Florida. The need for such policy improvement is amplified by the state's current fiscal restrictions, and by the fact that construction remains one of Florida's major economic pillars.

In the short term, this dissertation's evaluation of Alachua County's model provides for a two-fold contribution towards improvement of practices and policies in local governments of Florida. This contribution applies to method and to product.

Method: This dissertation will show how individual local governments (or a consortium of them), can replicate or adopt the Open Source and Open Technology development and procurement model shaped by Alachua County. It will show how they can mix closed systems with open systems to implement incremental change, and how they can meaningfully engage users in the process of system development.

Product: In Florida, construction activities are uniformly standardized statewide. This makes operations and services of the construction technology very similar across local governments. This dissertation will demonstrate how each of these local governments (or a consortium of them), can draw an immediate benefit from reuse or adaptation of the Alachua County's model, which is a product in the public domain and hence free to all.

Although the focus of this research are the building permit technologies in the State of Florida, the significance of this study is not necessarily limited to the State of Florida[7] or to building permit technologies alone. The findings of this study about the *concept* and the *feasibility* of the open paradigm can be applied to any public organization or type of their operations.

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[7] In April of 2010, Harris County in Texas, the third most populous county in the US with a population of 4.1 million and the county seat of Houston, investigated the possibility of implementing the Alachua County's building permit and inspection model (Appendix G).

In August of 2009, the Millennium Challenge Corporation (a US foreign aid agency created by Congress in 2004) in Tirana, Albania, investigated the possibility of replicating Alachua County's model in its Threshold Program, Stage II, for institutionalizing key reforms in public administration (Appendix G).

Summary and Description of Chapters

This dissertation will evaluate a building permit and inspection system developed by the Alachua County GIS Division with a Participatory Design and Open Systems approach, and it will analyze data and documentation from the Alachua County Growth Management Department from 2000 to 2009. It will review building permit technologies and related procurement practices presently used by planning departments in local governments of the State of Florida, and it will examine their level of adoption of Open Systems. The purpose of this work is to demonstrate that given Florida's uniform building code, shifting to an Open Systems paradigm for building permitting technologies, provides for a drastic increase in governmental transparency, for transformative improvements in delivery of services, and for significant cost-savings in public expenditures in the State of Florida.

This chapter introduced key variables and gave a general description of the scope and purpose of this research. Chapter 2 introduces related theories and research from the literature. Chapter 3 describes the research design, and the methodology used for this exploratory research. Chapter 4 presents discusses and presents the results. Chapter 5 provides conclusions, limitations, and recommendations.

CHAPTER 2
LITERATURE REVIEW

We have seen that great militancy implies predominance of compulsory co-operation, and that great industrialness implies predominance of voluntary co-operation.

--Herbert Spencer, philosopher (1883)

The programmers found that unrestricted cooperation made it easy for everyone to contribute. No price tags kept others away. No stereotypes or biases excluded anyone. The software and the source code were on the Net for anyone to read.

--Peter Wayner, author of *"Free for All"* (2000)

Research and literature related to Local Government Planning Implementation and to the Open Source Paradigm provide the theoretical framework for this study. For Local Government Planning Implementation this research falls under the following topics: Growth Management, Administrative Efficiency, Budgeting and Finance, Service Improvement, Transparency in Urban Governance, and Information Technology. For the Open Source Paradigm this research falls under the following sub-categories: Free and Open Source, Origin of Open Source, Legal Framework of Open Source, Proprietary Software and Vendor Lock-in, Open Source in Government, and State of Open Source in Government.

The following is a broad review of the literature on these topics, aiming to clarify definitions, and to contextualize and position this study.

Local Government Planning Implementation

"The framework within which local government planning occurs is determined by larger political institutions" (Hoch, Dalton, & So, 2000). In the United States, at the federal level, a planning department or a planning office does not exist. Nevertheless, many national programs, agencies, policies, and regulations, include planning

requirements (Hoch, Dalton, & So, 2000), and many programs implemented by local governments (such as neighborhood stabilization or wildlife protection), must comply with federal guidelines.

Similarly, although state governments provide local governments (counties and municipalities) with legal planning authorities, there are certain planning activities over which the states retain control. These planning activities differ largely from one state to another.[1] They could be developments or transportation corridors of a regional scale, or mandated specific features or processes. One of the earliest and strongest examples of state legislation (Foresman, 1998) for statewide planning and growth management was in Florida. While statewide planning legislation was adopted in 1972, Florida's 1985 act directed a strong top-down approach, requiring that development must be concurrent with available infrastructure. Florida is one of the three states in the United States that has a track of strong, state-level control over Growth Management (Nyerges, & Jankowski, 2010), and over standards for building permits, inspections, and code enforcement.

The 1998 Florida Legislature amended Chapter 553, Florida Statutes, Building Construction Standards, to create a single statewide building code that is enforced by local governments and it is called the Florida Building Code. This new top-down approach to the building construction regulatory system followed a series of natural disasters that revealed inconsistencies of local building codes across the state, and whose inadequacy proved costly during emergency response. In March 1 of 2002, the

[1] "'In the United States, 11 states have enacted growth management laws, and others are under consideration (Pope 1999).' Three states – Florida, New Jersey, and Oregon – have been using top-down controls, eight states use bottom-up control, 27 states have a role in growth management, 13 have no mandated state laws, and California uses a combination of both (Nyerges, & Jankowski, 2010)."

"Florida Building Code replaced the Standard Building Code" (Gurley, Masters, 2011), and supersedes all local building codes. The Florida Building Code is updated every three years by the Florida Building Commission, but local governments may amend the code with more stringent requirements, under rigorously defined conditions.

Growth Management

Growth management offers a broad assortment of regulations, incentives, and agreements that integrate planning principles into the process of community building (Nelson, A.C., 2000). Its objective is to direct market-driven development towards outcomes that are environmentally sound, fiscally efficient, and socially just, as opposed to restraining development and creating negative "spillover" effects. Growth management implements its goals by combining a range of regulatory, financial, and land use management tools and techniques, such as long range plans, land development regulations, zoning ordinances, permitting processes, etc. One of its main goals is to provide administrative efficiency while implementing these techniques.

Administrative Efficiency

The key components of a well-developed growth management system are characterized by a level of administrative complexity that if it is not carried out effectively, can hinder the implementation of these processes or of the development itself (Nelson, 2000). Delays in the growth management process can leave developers uncertain, and may prompt them to raise the "risk premium" resulting in higher prices, or may make them move development to less suitable areas,[2] or it may cause them to

[2] "30 percent of all new housing in the United States finds its way into 'exurbia' at very low densities". (Dueker, K. J. (1990) *The Exurbanization of America with Planning Policy Implications*, (Journal of Planning Education and Research 9; 91-100).

abandon development altogether. In either case, market needs may not be fulfilled, and the relationship between supply and demand may be negatively affected.

"Administrative efficiency and other details of growth management policy implementation are critical in determining their effectiveness" (Bengston, Fletcher, Nelson, 2004). Growth management systems that are efficiently administered, in a transparent, timely, and cost-effective manner, make development easier, more predictable, and less time-consuming. Developers accomplish their goals, markets meet their needs, and citizens understand where their taxes go (Nelson, 2000). A well known strategy for providing administrative efficiency is the streamlined permitting procedure, which by itself is composed of many techniques.

Budgeting and Finance

"While many of the goals of smart growth can be achieved through regulation, others require funding for implementation" (Hamin, Steere, & Sweetser, 2006). The techniques (such as streamlining of permits) that carry out the strategies for increase of administrative efficiency, depend on budget and finance decisions, which overall, can help improve the prospects of implementing plans. Thus, budget and finance decisions are not simply ways of raising and spending money; they help shape the future of regions (Lucy, & Fisher, 2000).

Local government revenues come from many sources. According to the October 2011 report published by the Census Bureau,[3] 4.3 percent of local government revenues in 2009 came from federal sources, and a portion of the 31.8 percent revenue

[3] U.S. Census Bureau. (October 2011) *State and Local Government Finances Summary: 2009*. U.S. Census Bureau. Last retrieved December 28, 2011. From http://www2.census.gov/govs/estimate/09_summary_report.pdf.

received by the states from the federal government, was passed through to local governments. Other sources include user charges, intergovernmental grants, tax increment financing, federal and state governments, etc. But the predominant revenue source remains the property tax.

It is both revenues and expenditures that impact the decisions of planners for making improvements to administrative efficiency. Increases and decreases in service quality are set as priorities during budget developments, which are based on revenues and expenditures. Quite often, while balancing declining revenues and increased expenditures, local governments must become inventive in finding ways to fund service improvements.

Service Improvements

Service improvements are broadly categorized in: efficiency, effectiveness, responsiveness, and equity. The following are definitions for each, as provided by Lucy and Fisher (2000).

Efficiency has two separate meanings. Services are efficient economically if the combination of quantity, quality, distribution, and prices matches consumer demand. This definition of efficiency applies to the public sector as well, albeit the absence of a direct pricing system for many services makes it difficult to measure.

Engineering efficiency on the other hand, means that services are being provided at a given quantity and quality for the least cost. This concept allows for a more objective analysis of governmental services, especially since competitive pricing does

not generally apply to these services.[4] Engineering efficiency must include a time dimension for the notion of least cost to be applied rightly. For example, a time dimension for a computer based product could be its lifecycle cost.

Effectiveness measures if the service achieves the intended goal. Effectiveness can be measured with result indicators. For example, the number of building permits issued within the expected time frames regardless of unanticipated complexities is a measure of effectiveness. Adequate planning outcomes (IPART, 1997, p. 98) could be another.

Responsiveness merges economic and political concerns. While efficiency implies responsiveness to consumer demand, responsiveness shows the extent to which a service reflects the preferences of politically active citizens or businesses.

Equity measures the dimension of fairness. Policies based on efficiency, effectiveness, and responsiveness may or may not be considered fair. While not easy to put into operation, three concepts come handy when measuring equity: equality, need, and demand. An equality example could be to provide building permit centers that are equally distributed spatially throughout the community. An example of need could be to provide a more tailored service to a needy neighborhood. In this case, need is addressed by employing an unequal treatment to reach a more equitable result. And demand can be conceived as being, positive, neutral, or negative. An example of demands that would negatively impact the equity measures could be from a group of

[4] "The public sector is not driven by profit to implement a service, but by directive or law, which sometimes places no requirement on quality of the service (Ward & Tao, 2009)."

active citizens who ask for services for their neighborhood that are not provided to others.

In their work titled “Measuring efficiency in local governments’ planning and regulatory function,” Worthington and Dollery (2000), show how to use a nonparametric approach to measure efficiency. They examine technical and scale efficiency for planning and regulatory services in local governments of New South Wales (a state in Australia), and they argue that in conjunction “with the other pressures for greater efficiency and effectiveness in local public service provision, this process can be used for accurate and meaningful measures of local government efficiency for the purposes of comparative performance assessment and process benchmarking.” They argue that the findings can be linked back to policies or services to help with their further improvement. For example, if the measure shows a failure to achieve an optimal scale of operations in the provision of planning services, a greater degree of resource-sharing and regional co-operation could be encouraged, and perhaps even budgetary justified.

Transparency in Urban Governance

Over time, an essential tool for planners has become consensus building. This has come about for a number of reasons. But one that stands out, is “a marked reduction in trust of elected and appointed officials by a public that feels increasingly frustrated, angry, and shut out” (William, 2000). Consequently, citizen advocates and interest groups, ask more and more for meaningful participation in the decision-making process. And one of the important principles of consensus building is to share credible information. Facts and figures play a major role in an honest consensus building process and public participation cannot be effective without easy access to a wide array of data and documentation that is credible, reliable, and understandable (Ames, 1998).

The World Development Report (The World Bank, 2012) emphasizes that "Transparency and strategic communication reduce information asymmetries, promote a more effective public debate, and enable the exploration of public policy issues from multiple perspectives."

In the United States, federal, state and local governments have been forced open by hard-fought victories. This is especially true in Florida, where government-in-the-sunshine laws are some of the strongest *public records* laws in the country (The Florida Senate, 2010). They replace, and are slightly different, from the federal law known as the Freedom of Information Act which protects *request for information* rights (Bowen, 2009). The continuing (and sometime fierce) campaigns for open records and open meetings are intended to make the inner workings of government transparent. "Open government is about who controls access to public records and under what circumstances, and puts a premium on information sharing, transparency, and ultimately, public accountability" (Center for Digital Government, 2004). Furthermore, "access to information where there is a clear public interest" is in fact considered a human right from the International Council on Human Rights Policy[5] (ICHRP, 2002).

Governments are mandated with several responsibilities for the transparent provision of information. As defined by Andrew (2010), the following principles guide those responsibilities:

[5] The International Council on Human Rights Policy is a Switzerland based non-profit foundation that "provides a forum for applied research, reflection and forward thinking," in key areas of global public policy, with a goal to "translate universal human rights principles into policy realities".

- *Access for all* - If sharing documents or interacting with an agency requires a software purchase, the agency effectively discriminates against some of its constituents on economic or technological grounds.
- *Vendor Independence* - To require software from a particular source, whether or not the source charges for it, is a form of unfair favoritism.
- *Archiving* - Agencies must preserve many documents for long periods of time. A vendor, at its own discretion, can stop supporting a non-open format at any time.

But in reality, quite often, partisan politics and questions of who gets "what, when, how" determine many governmental decisions. Although organizations have developed information systems that assist decision-making, important decisions are made based on face-to-face exchanges, as it is considered dangerous to put on record politically-relevant information (Rocheleau, 1997).

"In all too many state and local governments, procurements have become standardized, less transparent, lacking in free and open communication and negotiation, and made tense by lack of trust between parties," according to the technology industry trade group, a merger of the American Electronics Association, the Information Technology Association of America, and two other organizations (Williams, 2009).

Thus, laws and procedures alone, do not guarantee transparency in government. Michael Parenti (1992) defines democracy as "an ongoing process of self-realization that has two dimensions: procedural and substantive. Procedural democracy includes elections, free speech, voting, and access to information. Substantive democracy is, What is the payoff? What is the output of the system?" He further argues that "democracy is a system of governance that both in its form and its content must represent the interests of the governed."

As the society evolves, there is, therefore, a continuing pressing need, for a constant reassessment of transparency in urban governance in order to improve civic engagement, and to enhance the accountability of local government to its citizenry.

Transparency as a principle of good urban governance

The United Nations Development Programme (UNDP) defines “governance” as:

> The exercise of economic, political and administrative authority to manage a country’s affairs at all levels. It comprises the mechanisms, processes and institutions, through which citizens and groups articulate their interests, exercise their legal rights, meet their obligations and mediate their differences.

It is widely recognized that a core principle of good governance is transparency. As UNDP observes, “transparency means ‘sharing information and acting in an open manner,’ allowing stakeholders to gather information that may be critical to uncovering abuses.” Transparency International (IT), a global civil society organization which mission is to measure and evaluate corruption in all sectors of the society, considers transparency in governmental, or corporate operations as one of the strategic means against the “abuse of entrusted power for private gains.”

Transparency and civic engagement

Civic engagement is understood as the active participation of citizens in public life and their contribution to the common good. The level of trust in local government and public agencies is a key factor for the extent and quality of civic engagement. Loss of trust can discourage participation, and lead to disengagement of citizens. But trust, has a direct relationship with transparency, and is affected by it in two ways: *the quality of services* that the public receives; and the degree of *organizational openness* about its records.

Transparency and accountability

By promoting better access to information for all stakeholders, transparency strengthens the accountability of all actors. The World Bank has identified three main types of accountability: *political accountability,* which expresses itself in periodic elections; *administrative accountability,* which is represented through mechanisms within and between agencies; and *social accountability*, which includes mechanisms that hold agencies accountable to their citizenry.

Information Technology

"The collection, interpretation, and dissemination of the information needed to improve public and private decision making have long been among the major justifications for planning" (Closterman, 1985). With today's unprecedented advancements in computer technology, computerized environments enable planners (especially in high income nations), to analyze data almost seamlessly and instantaneously, and to generate meaningful products such as charts, maps, summary statistics, and 3D models; quickly, easily, and collaboratively. This ready availability of data and information has opened up immense opportunities for explaining public policy, and for supporting collective decision making. In addition, planners today, work in an environment when most of the public expects "computing tools to be driven by an architecture of open participation and democracy that encourages users to add value to their tools and applications as they use them" (Forth, Forlano, Satchell, & Gibbs, 2011).

Types of planning data

Planners work with a vast array of types of data, of sources for these data, and of their formats. Planners use demographic data; socio-economic data; housing and economic development data; unemployment and labor force data; transportation data

on traffic, on ridership, on road conditions; environmental data on air, water, noise, pollution, natural resources, endangered species; public health and food systems data; archeological data; and land survey, land ownership, and land development data (Closterman, 2000).

Sources of planning data

Planners use both primary and secondary data. Interview results, survey results, remotely sensed images or aerial photographs, and other similar data created based on direct observation, are all primary data. In addition, by virtue of daily planning operations, planners regularly generate important primary data, which in most cases are also regulatory data and have a legal standing.6 These types of primary data, which are also called transactional data, are related to regular planning functions and to planning services that are routinely provided to individual property owners. They are related to land uses, land zonings and re-zonings, land development, issue of new addresses, issue of building permits, issue of certificates of occupancy for new dwellings, code enforcement violations, etc.

A very recent form for collecting primary data is also the web-based voluntary contribution model that is also known as microvolunteerism. Based on the nature of the project, for which the data is being collected, the method of data collection could fit under crowdsourcing, or citizen science, or participatory urbanism. Paulos, Kim, and Kuznetsov (2011) from the Massachusetts Institute of Technology, provide the following definitions for citizen science and for microvolunteerism respectively:

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[6] The legal environment in which planning data are produced and used is highly uncertain and the legal structures are subjected to numerous interpretations established locally and by state (Nedovic-Budic, 2000)

- CITIZEN SCIENCE. Non-expert citizens collecting scientific data.
- MICROVOLUNTEERISM. Explores the newly emerging design territory for volunteering on the order of seconds– "I have forty-two seconds at this bus stop: how can I volunteer?"

Howe, who coined the term in 2006, provides the following two definitions for crowdsourcing (Howe, 2009):

- THE WHITE PAPER VERSION. The act of taking a job traditionally performed by a designated agent (usually an employee) and outsourcing it to an undefined, generally large group of people in the form of an open call.
- THE SOUNDBYTE VERSION. The application of Open Source principles to fields outside of software.

And, Paulos, Honicky and Hooker (2008), provide this definition for participatory urbanism:

> Inspired directly by citizen science and in the spirit of Urban Computing (Paulos & Jenkins, 2005), participatory urbanism is more directly focused on the potential for emerging ubiquitous urban and personal mobile technologies to enable citizen action by allowing open measuring, sharing, and remixing of elements of urban living marked by, requiring, or involving participation, especially affording the opportunity for individual citizen participation, sharing, and voice.

Planners also use secondary data. Secondary data is data that has been collected by others. These could be a national census which typically collects data on people, housing, transportation zones, and metropolitan areas; data collected by state or regional agencies; or private organizations. And frequently, there is more than one data source, collected by more than one agency, for the same observation type.

Data and information

But what is data? And what is information? The brief definitions provided below are interpretations from frameworks provided by Nyerges and Jankowski (2010). A few examples have been added.

- DATA. Are raw observations (e.g., a measurement) of some reality, whether past,current, or future, in a shared understanding of an organizational context. For example, point locations of newly issued permits for single family residential buildings in a city.

- INFORMATION. Data placed in a context for use that has meaning about a world we share. For example, a statistical chart and a map showing newly issued permits for single family residential buildings in a city, summarized and categorized by their market price range.

- EVIDENCE. Information that makes sense (perhaps corroborated); something we can use to reason about a particular topic. For example, a map and a statistical summary showing the absence of newly issued permits for single family residential buildings in a blighted area that has long been designated to receive tax subsidies for gentrification purposes.

- KNOWLEDGE. An assemblage of synthesizing, enduring, credible, and corroborated evidence that enables us to re-interpret the world based on new data and information.

Information products

Planning links “scientific and technical knowledge to actions in the public domain” (Friedmann 1987:38), and planning agencies are the hubs where many societal problems are undertaken in a direct and tangible way. In fact, planning agencies are the only entities that provide critical planning services, such as development permitting, building permitting, land use designations, enforcement of regulations, etc. “In this context the role and the use of information products is imperative to the success of the planning process” (Nedovic-Budic, 2000).

But what are information products? Tomlinson (2003) defines them most efficiently as the outputs generated by the information systems. Similarly, Chrisman (1999) bases his definition of geographic information systems in the transformation of information into other forms that interact with social structures.

So, what more specifically, are the information products used in planning? And can they be categorized? Due to their vastness and complexity, urban and regional

planning information products can be categorized in many ways. One approach could be to categorize them by the model of the information system that stores the data that is used to generate the products. For example, there are planning information systems that are geographically enabled and store geographic, or geospatial information, or there are planning information systems that are not geographically enabled, and store only tabular information, and there are document management planning information systems that store multimedia information such as text, photos, drawings, videos, documents, reports, etc.

Another way to categorize planning information products could also be by the manner in which they are distributed. For example, paper versus digital, or online versus off line digital media, or interoperable versus non-interoperable, etc. Planning information products could also be categorized by their regulatory power: products that have a regulatory mandate, versus products that do not have a regulatory mandate, and so on.

But for the purpose of this study, let us consider another way for classifying planning information products. This classification is based on the purpose of use of these products. Based on this classification, and broadly defined, planning information products fall under these categories (and sometimes in more than one):

- INFORMATION PRODUCTS FOR ONE TIME USE. For example, a citizen request for a particular special area plan.
- INFORMATION PRODUCTS AS PART OF STRATEGIC DOCUMENTS. For example, the data and analysis portion of the Comprehensive Plan (a community blue print for the future 20 years).
- INFORMATION PRODUCTS AS PART OF LEGAL DOCUMENTS. For example, a map of electoral commissioner districts, or a map and table showing code violations which fines are pending.

- INFORMATION PRODUCTS AS A RESULT OF A SPECIFIC STUDY. For example, maps and statistics generated by a study aiming to rank conservation sensitivity for privately owned lands, or from a study aiming to identify and rank substandard housing.

- INFORMATION PRODUCTS GENERATED BY RULE BASED OR EXPERT SYSTEMS. For example, a landscape ecological model, which outputs are dynamic and are dependent on user input.

- INFORMATION PRODUCTS GENERATED BY INVENTORY DATA. Products generated mostly for dissemination of public information, for example, a geographic data library for a municipality, or a map and table showing all municipality annexation areas.

- INFORMATION PRODUCTS GENERATED BY TRANSACTIONAL OPERATIONAL SYSTEMS. For example, a table and map of the septic tank permits issued during a period of 20 years, or a map with locations of land re-zonings for the last 10 years.

A relatively recent category of information products as services are e-government services. Each of the above categories of information products, if consumed online, can be considered an e-government service. E-government services can be very basic, or they can be highly sophisticated if they employ Web 2.0 features and allow for two way interaction. The following are definitions for e-government,7 e-services, and Web 2.0:

The Center for Technology in Government (2003) defines e-government as "the use of information technology to support government operations, engage citizens, and provide government services." It further expands it with the four government functions reflected in the definition: the electronic delivery of services (e-services), use of information technology to improvement management (e-management), use of the

[7] The E-Government Act of 2002 is a United States statute. Its stated purpose is to improve the management and promotion of electronic government services and processes by establishing a Federal Chief Information Officer within the Office of Management and Budget, and by establishing a framework of measures that require using Internet-based information technology to improve citizen access to government information and services, and for other purposes.

Internet to facilitate citizen participation (e-democracy), and the exchange of money for goods and services over the Internet (e-commerce).

Rowley (2006) defines e-services as “--deeds, efforts or performances whose delivery is mediated by information technology. Such e-service includes the service element of e-tailing, customer support, and service delivery.” This definition includes three components: service provider, service receiver, and the channels of service.

The term Web 2.0 was first coined in the O’Reilly Media Web 2.0 conference in (2004) as: “web applications that facilitate participatory information sharing, interoperability, user-centered design, and collaboration on the World Wide Web. A Web 2.0 site allows users to interact and collaborate with each other as creators (prosumers) of user-generated content in a virtual community, in contrast to websites where users (consumers) are limited to the passive viewing of content that was created for them.” Another way to describe the features of Web 2.0 comes from the World Wide Web inventor Tim Berners-Lee, who uses the term "Read/Write Web" instead of Web 2.0.

The Open Source Paradigm

The goal of this study is to show that an open systems paradigm, which includes the use of open source software, is a better model than the current for developing end user applications of building permit technologies. The distinction between open systems, open source, and open technology, was presented in Chapter 1 (pages 4 & 5). But when generally defined, despite their differences, all three terms represent an open paradigm for developing and implementing computational projects and technologies.

Therefore, as a good way for understanding an open systems paradigm, this study examines the open source8 model. It also uses the term “open source” interchangeably with “open systems” or “open technology” in the context of an “open paradigm”. Much of the literature on the open source looks at its distinctive way of technological development, innovation, and distribution, not just the software per se (Noonan, 2010). As Weber (2000) summarizes it, “The essence of Open Source is to create a process. The software product itself is valuable but is not the key to understanding open source. The process is what matters most.”

The “paradigm of open source” is bigger than open source software. There is more to it than an innovative method of software development. “In addition to organizational, technological, and legal innovations in the computing sphere, there is a distinctive, complex, moral, and political culture that ought to be of interest, and ought to be understood and respected by those seeking to extend the open source techniques and philosophies to other domains” (Smajda, 2010).

Free and Open Source Software Defined

A very brief definition of Open Source (OS) “refers to a set of licenses that require unfettered access to the human-readable source code from which all computer programs are made” (Holmes, Doyle, & Wilson, 2005). Source code is computer programming language. The Open Source term, whose close alternates are Open Source Software (OSS), or Free Open Source Software (FOSS), or Free-Libre Open Source Software (FLOS or FLOSS), is often used as a generic adjective that implies

[8] The term “open source” is pervasively used in literature to mean more than its narrow definition, and to also include the term “free software” when used in a software context. It will similarly be used in this study as well.

"software projects that serve the public interests at large" (Wheeler, 2005). Specifically, the term represents programs whose licenses give users the freedom to use the program with no restrictions, to examine and modify the program, and to redistribute it (in original or modified form) without paying royalties. The word Free, or Libre (French for free) emphasizes freedom from control rather than "free of charge."

Richard Stallman founded the Free Software Foundation in 1985 and launched the free software movement. The Free Software Foundation advocates for software freedom and its creed consists of four core freedoms (Free Software Foundation, 2009):

- The freedom to run the program, for any purpose
- The freedom to study how the program works, and change it to make it do what you wish. Access to the source code is a precondition for this.
- The freedom to redistribute copies so you can help your neighbor.
- The freedom to improve the program, and release your improvements to the public so that the community benefits. Access to source code is a precondition to this.

In the larger FLOSS context, a slightly different movement was shaped, with the founding of the Open Source Initiative (OSI), in 1998. OSI represented an ideology more focused on the superior technological capabilities of open source, rather than its political meaning. "Political concerns are secondary or absent to the technological progress enabled by open source software" (Breindl, 2010).

The software freedom advocates postulate that software constitutes a public good (Williams, 2002 in Rasmussen, 2007), and pursue an inherently political aim: free software as a vehicle to spread the principles of informational freedom and a non-proprietary vision of society (Breindl, 2010).

It is important to note, that FLOSS as a movement, has evolved, and it has become more complex over time. It must be understood as a watercourse fed by two major flows: software freedom and open source. It is also important to note that “FLOSS is foremost a model for software development” (Breindl, 2010), based on transparency, participation, and collaboration.

Origin of Open Source

In the 1960s and 1970s, mainframe computers in university computer science departments and in corporate research facilities were considered tools for research. Distributing source code freely was the same as other research practices. This changed in the late 1960s. An episode that represents in a real sense the emergence of the modern commercial software industry happened in 1969. The US Department of Justice filed a massive antitrust suit against IBM. To pre-empt charges that the company was unfairly leveraging its very strong market position in hardware, IBM decided to unbundle its “solutions” and begin charging separately for software. Microsoft (founded in July 1975) followed with this trend. The arrival of the personal computer (PC) in the early 1980s and its rapid widespread distribution in the business world reinforced this trend. Software that at one time had been traded freely among developers was now an extraordinarily valuable and lucrative product (Weber, 2000).

These changes impacted the community of computer scientists, including those at the Massachusetts Institute of Technology (MIT). MIT began to demand that its employees sign nondisclosure agreements, and the newest mainframes came with operating systems that did not distribute the source code.

It is at this time that Richard Stallman, an MIT researcher, established the Free Software Foundation. In “The GNU Operating System and the Free Software

Movement” (1999), he sums up his reasons as follows: “Sharing of software is as old as computers, just as sharing of recipes is as old as cooking.” And about the proprietary software he continues… “The first step in using a computer was a promise not to help your neighbor. A cooperating community was forbidden. The rule made by the owners of proprietary software was, ‘If you share with your neighbor, you are a pirate. If you want any changes, beg us to make them.’”

When the Open Source Initiative was formalized in 1998, its philosophical core deviated from that of the Free Software Foundation. Eric Raymond, its founder, summarizes it as follows: "It seemed clear to us in retrospect that the term 'free software' had done our movement tremendous damage over the years. Part of this stemmed from the well-known 'free-speech/free-beer' ambiguity. Most of it came from something worse—the strong association of the term 'free software' with hostility to intellectual property rights, communism, and other ideas hardly likely to endear themselves to an MIS manager.’”

Legal Framework of Open Source

Open Source software is not equivalent to “non-commercial” software. There are many private companies (for-profit and non-for-profit) that develop and modify open source software. “In fact, some of the earliest businesses to be created around open source software offered technical support for these tools” (Sullivan, 2010). Nearly all Open Source software is not in the public domain (Wheeler, 2005). Public domain software is software that has no copyright owner.

An open source program must be released under some license giving its users a certain set of rights; the most popular license is the General Public License (GPL), although there are about a dozen types similar to it. All software released under the

GPL is open source, but not all open source software uses GPL (Wheeler, 2005). Instead of protecting the property rights (as if it were individual property) of the software creator, GPL turns it around, protects in perpetuity the rights of the public to the software, and safeguards against the possibility of copyrighting it after modifications. And what users “may not do is add restrictions of their own” Weber, (2000).

GPL (also known as “copyleft”) is considered as a legal cornerstone of free speech (Sullivan, 2010). It is a substitute system for the established copyright software. “The GPL was a major innovation in Stallman’s battle with multinational corporations like AT&T (which owned the rights to the UNIX operating system) since it turned “copyright law against itself, limiting its reach and carving out a legally protected zone to build and protect the public domain” (Bollier, 2008). By creating this legal alternative to copyright, Stallman “provided the rudiments of a rival liberal legal vocabulary of freedom” (Coleman, 2009).

When the Open Source Initiative was founded, it also became the steward of the "Open Source Definition” (OSD)—a new licensing framework model. While the GPL insures that no GPL code can ever be used as part of a proprietary software project, the OSD allows redistribution under the same terms, but does not require it. Some licenses that fall under the OSD entitle a programmer to modify the software and then release it under new terms (including making it proprietary).

Proprietary Software and Vendor Lock-in

Proprietary software is copyrighted software. In the United States, copyright was extended to computer software in the Computer Software Act of 1980. This act defined computer source code as “a form of writing,” thereby subjecting it to intellectual property protections (Sullivan, 2010 in Johnson, 1994). This law created the conditions for the

enclosure of computer programming during the deregulatory period of the 1980s. Writing in his 1981 book Who Knows, critical scholar Herbert Schiller expressed alarm at the enormous sums of taxpayer funds which were poured into research and development, and whose outcomes were immediately transferred to the private sphere (Sullivan, 2010).

The origin of the copyright law is tied to the invention of the printing press in 1444. European monarchs began granting exclusive licenses to printers for specific types of documents, often appropriating as proprietary certain plays, poems, and songs that had been popularly available (Sullivan, 2010 in Bettig, 1992; Eisenstein, 1979). This new model of defining information and intellectual products similar to land property was the foundation of the English copyright law, which in the 1800s was transferred to the American colonies.

Besides their differences in copyright licenses, and in the way they view the issue of property, there are also other differences between the proprietary and the open source models.

These differences start with the way in which the product is developed. Open source is generally developed in a participatory approach. The proprietary model is generally developed in a top down approach. Eric S. Raymond (1999) compares the open source model to the bazaar model, and the proprietary model to the cathedral model. In the bazaar model, the source code is publicly available, and each developer chooses what to work on. In the cathedral model, the source code is controlled by a small group of developers, and the process is organized in a hierarchical manner. Open

source generally adopts the bazaar model, whereas proprietary software the cathedral model.

Another difference between them is in the way in which they are distributed for consumption. The majority of the computer users today work with proprietary software. This omnipresence of proprietary software is largely due to the massive influence exercised by the companies that manufacture software, and to their cooperative arrangements with other market players, to provide for “binding” the software in ready to use packages for consumers.

For example, most of the time, the Windows operating system (proprietary) is the default operating system included on new computers that are routinely sold to consumers. This is the result of well established business relationships between Microsoft and computer hardware manufacturers like Hewlett-Packard and Dell (Sullivan, 2010).

Along with this operating system bundling, Microsoft bundles its own internet browser (Internet Explorer) in the operating system itself, and prioritizes its use as the default browser the first time users start up the computer. This practice is misleading to consumers. It discourages them from considering whether to purchase a specific operating system or software package, and it makes the cost of changing to another software application cumbersome, because of potential incompatibilities that might arise. Moreover, arrangements between companies to bundle materials for the customer can adversely impact market competition. The choice of which product to purchase, is taken out of the hands of the consumer, and it is placed in the hands of the companies that make these cooperative agreements in advance of manufacturing, and

distribution to the market. Since very few of the end users actually modify the default settings of their computers, these actions by technology firms may constitute a de facto form of regulation (Shah & Sandvig, 2008).

A recent example (out of numerous) about the consequences to the consumer interests from this centralized authoritarian controlled model, is the 2009 case of the The Kindle (Amazon.com's e-book reader). Amazon, underhandedly, deleted copies of books that users had already purchased due to a disputed license agreement with the estate of the author. In this case, digital content that users believed that they owned was re-claimed by Amazon. To make matters more suggestive, deleted books were by George Orwell, and included 1984, and Animal Farm.

The proprietary model of bundling applications together for sale to consumers extends far beyond these computer industries and it similarly applies to governmental organizations, which are an "enormous business for software firms and consulting companies" (Casell, 2010). Governmental organizations make extensive use of end user operational computer systems (software and databases) that are tailored to specialized organizational needs and public services that they must provide. These are in general third tier computer systems that are built upon industry standard software or database infrastructures. Most of the time their proprietary licenses, focus on the use of the product. This may be defined in terms of size, scale, and type of permitted uses. Most of them restrict the user in the number of computers (PCs, Servers) on which the software can be installed; in the number of concurrent users that can use the system (for more users, purchase more licenses); prohibit the copying of the software; prohibit

its de-compilation or enhancements; and not un-frequently include clauses that prohibit publication of material that is disparaging to the vendor.

A specific example of how these restrictions apply is a randomly chosen acquisition from the Alachua County government. The Alachua County government signed a contract with Motorola Inc., in 2005, for the provision of a computer system, called Community Inquiry Tracking System. The stated purpose in Alachua County's request for the proposal was for this system to be "a web-based software system that will track interactions with Alachua County government to improve communication and accountability and allow for standard enterprise-wide reporting" and furthermore: "the Tracking System will provide a link for citizens regarding non-emergency services by: providing a prompt, friendly response to their request for service or information as well as computerized tracking of service requests from the initial contact through its referral, investigation and disposition. All requests must issue a request number so that the citizen can track the status of the request."

In reality, for a price of $638,000, spread over the course of four years (2006-2009), Alachua County paid Motorola Inc. for a hosted service. Its source was locked, and the hardware, software, and data were entirely and centrally controlled by Motorola Inc. in its servers. Motorola Inc. was the only entity which could make any changes. Since Alachua County did not own any part of this system (other than its potential content), when in 2009, it did not renew the contract with Motorola Inc. (as the system had been minimally used and had not accomplished many of its goals), Alachua County was left with virtually nothing. In addition, during the time of its use, two other conditions were included in the license of the system:

- The Community Inquiry Tracking System was not open to the public for *inquiry* or view, or data input, and it could not be used outside of the Alachua County's intranet, although it was a web based system, and used internet compatible software and databases (Oracle, ArcIMS). Open internet use would have been possible for a higher price.

- The county staff that used the system within the county intranet to enter data from public phone inquiries was limited to 1-2 concurrent users per department (8 for an organization of about 900). For each additional user, more had to be paid to Motorola Inc.

Regardless of the significance of this story about the management of public funds, or about the implications related to the principles of open government, these license conditions, show that for the same technology, and for the same product, Motorola Inc. increased its profits with the increase of the system's scale and use. Motorola Inc. is in fact selling just the mere right to use its product (and under extremely limited conditions) to Alachua County, not the product per se. Left with no product and much less the rights to make changes during the course of its use, Alachua County cannot build upon its initial investment in the Community Inquiry Tracking System, after its contract with Motorola Inc. ends. While Motorola Inc. may have been chosen via a competitive process (amongst five applicants), when considering the final outcome of that process, one is left to question its very meaning.

Open Source and Open Government

Open government is a governing doctrine whose origin can be traced to the European Enlightenment discourse on the shape of the democratic state. One of its principles is the right of the citizens to access government information.

An open and transparent government (at times called participatory government) is also one of the five indicators of a democratic society. These indicators are: the electoral process; civil liberties; transparent and efficient government; political

participation; and political culture (Democracy Index, 2010). At present, half of the world's population lives in a democracy of some sort, and constitutional provisions or laws that guarantee access to governmental data exist in half of the world's countries[9] (Open Government Partnership, 2011).

In the United States, the Florida Public Records Law guarantees that "every person who has custody of a public record must allow the record to be inspected and examined by any person desiring to, under reasonable conditions." This law requires the governments of Florida to make their information (all types of data and documents, digital or in paper) available to anyone, without delay, and without asking for a reason, or the background and name of the requestor.

Thus, open governments rely and thrive on transparency of data and software that are used to run the public business. And the implementation of this transparency is "also based on the use of technologies that in some cases contribute, and in others not, to an effective protection of citizens' rights (Open Source Initiative, 2002)." In the information flows between the government and the citizens, computerized systems play a role in "what kind, how much, and how easily government information is accessible to citizens" (Graber, 2006).

Because of its open licenses, and of its transparent and participatory ways of development, open source has similar principles with those of the open governments. The culture of open source also shares some notable characteristics with gift

[9] The world's first open government legislation was enacted in Sweden in 1766.

economies10 that “support a concept of property that is more like 'stewardship' than like 'ownership' per se” (Weber, 2000). And Eaves (2008) argues that gift economies share characteristics with public services, which “in theory, could operate like an open source gift economy.”

Therefore, the fundamental reasons for governments in adopting open source should primarily be strategic. They should be tied to core governmental principles and responsibilities rather than limited to economic benefits (Oram, 2010). These principles and responsibilities require governments to provide the basic guarantees: access for all, vendor independence, preservation of public records, security of public interests, and effective public scrutiny. To guarantee access for all, it is indispensable that the computerized information not be tied to a sole provider. To guarantee preservation of public records, it is indispensable that the stewardship of computerized information not be dependent on the graces of the providers, or the monopoly models that they impose. To guarantee public security, it is indispensable that computerized information be devoid of remote control, or the transmission of information to third-parties. To guarantee effective public scrutiny, it is indispensible that the source code of the systems can be viewed and examined by the government or its citizens (Open Source Initiative, 2002). In addition to these strategic reasons for adopting open source, open governments also benefit from open source if it offers features that are better, or not found in proprietary alternatives (Lopez et al., 2010, in Oram 2010).

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[10] Gift economies (prevalent before market economies), circulate and redistribute valuables within the community based on informal *giving* rather than formal *quid pro quos*. Raymond (2000) notes that open source communities don't operate as command hierarchies or even as exchange economies. Instead, they often operate as gift economies.

State of Open Source in Government

Is it possible to estimate the overall level of open source diffusion and penetration in the government sector? Ghosh (2007) points out that a lack of hard data, and limitations in economic evaluations of non explicit economic activities, is hard to measure in a quantifiable sense.

A number of social scientists have observed that inquiries into the prevalence of open source are limited by data constraints facing this research area (Van Wendel de Joode et al. 2006, in Noonan 2010). A contributing factor is also the fact that “the open source community has been international from the start and it remains so. It transcends national boundaries in a profound way because its interests and its product are not tied to or depend upon any government” (Weber, 2010).

It is mostly through the passage of laws and regulations that the adoption of open source by national governments has been examined by scholars (Noonan, 2010). For example, by 2001, Peru, Brazil, Argentina, France, and Mexico all had measures pending that would mandate the use of open source software on government computers (Lewis, 2008). But that is only one way of assessing the issue.

The recent study published by the Spanish National Open Source Software Observatory “Report on the International Status of Open Source Software 2010,” estimates that the extent to which open source has been adopted, and developed, fluctuates significantly across the globe. Countries with strong economies show a high level of open source use. North America, Western Europe, and Australia are in this category. Africa, Latin America, and Eastern Europe are at the bottom. India, China, and Brazil have a higher than expected level of adoption, when proportionally compared with their Information Technology level of adoption.

This same report also notes that in the public sector, a greater prevalence of open source is present in Europe. Germany, France, and Spain are in the forefront. It also argues that government support has been crucial in all three countries, with the German government in the forefront. But these are only broad assessments. What constitutes adoption of open source may be different from country to country. As Noonan (2010) notes, some governments simply procure open source software, others, such as Japan, Korea, and China, have actually directed public funds to large-scale open source development projects (Chae & McHanney, 2006).

The “Report on the International Status of Open Source Software 2010,” also shows that the United States is the world leader in the open source movement, with its universities as birthplaces of many open source projects, and with associations such as the Free Software Foundation and the Open Source Initiative. In the United States the use of open source is extensive in the public sector, and especially at the federal level. Large portions of the US government including the National Security Agency, the Defense Department, and the Department of Energy use open source to some degree (Weber, 2004; Schearer 2008; Wheeler 2007). Several states have also been active to some degree in promoting open source, as is the case of Law 2892 in Oregon, and Law 1579 in Texas, (National Open Source Software Observatory, 2010).

On his first day in office, president Obama (sometimes called open source president) issued a Memorandum on Transparency and Open Government (Obama, 2009), which was followed by a directive that outlined steps toward openness from the Office of Management and Budget (Orszag, 2009).

A recent research study from The Center for Strategic and International Studies (2010), titled “Government open source policies,” highlights several cases of adoption (or call for adoption) of open source from various federal agencies of the United States such as the Department of Defense, the Navy, and the Office of Management and Budget. The Health e-Information Technology Act of 2008 called for the creation of a Federal Open Source Heath Information Technology System. The stimulus bill, the American Recovery and Reinvestment Act of 2009 (ARRA), called for a study on the availability of open source health Information Technology systems. Senator Rockefeller IV proposed legislation for the adoption of a nationwide, open source program for sharing electronic health records, and Congress acknowledges the potential value of open source in the National Defense Authorization Act for fiscal year 2009 (Ward & Tao, 2009).

At a local level, American local governments have been much slower in adopting open source (Cassell, 2010). The study by Ward and Tao (2009) also concludes that the open source adoption rate is still very low in government. Yet the survey by Ward and Tao (2009) reports that 39 percent of small to mid size cities use some form of open source. This survey was based on a sample of 1,206 local governments. A number, that represents 1.3 percent of the United States local governments. lt is also important to note that this survey was not concerned with a mixture of open source and proprietary systems, and that it was primarily concerned with infrastructural rather than end user open source. Cassell (2010) also reports on a recent survey conducted with local governments in northeast Ohio, by Kent State University’s Center for Public

Administration and Policy. He notes that about 15 percent of respondents reported using some form of open source.

At present, there is no accurate or comprehensive survey on the level of diffusion or adoption of open source from local governments in the United States. In addition, studies about the role of open source within local governments are rare (Cassell, 2010). While much work can be found on open source on many topics, the body of research covering municipal adoption is limited (Ward & Tao, 2009).

A report published by the International City and County Managers Association (Repas, 2010), focuses on six local governments as best practice examples of open source systems, and open source approaches. These are: Washington, D.C., Los Angeles, California, San Francisco, California, Portland, Oregon, Largo, Florida, and Northglenn, Colorado. But, there are close to ninety thousand local governments in the United States. They range from the Village of Lazy Lake in the state of Florida (24 residents, Census 2010), to the City of New York in the state of New York (over 8 million residents, Census 2010).

Summary

The review of the literature in the fields of Local Government Planning Implementations and the Open Source paradigm was focused on research outcomes and on practices and applications. This review sought to clarify the vocabulary and the definitions related to the topic of this study, and to also create a contextual map of the research related to its main variables. In order to provide a framework for carrying out this dissertation, this review also tried to highlight relationships between ideas and practices, and to place existing research in a historical context.

The examination of the state of research in the intersection of Local Government Planning Implementations and the Open Source paradigm that coincides with the characteristics of this study revealed little if some indirect research. While work can be found in local government planning information service improvement, no significant research can be found on the back end mechanisms used to implement these service improvements. Significant research is also hard to find that links these back end mechanisms to the philosophy of open-source governance, or that highlights the similarity between the principles of the open-source movement, and the principles of local government planning implementations.

Much less was I able to find any specific scholarly contribution in the narrower overlap between the application of open systems and the construction permitting process technologies. It seems though that this inattention to the construction permitting process is hardly a new phenomenon. In the words of Schneider (1981), “it is unfortunate that so little scholarly attention has been devoted to building inspections from the policy sciences and planning vantage point.”

From the scarcity in this research intersection, and from the outcomes of the literature review on the Open Source paradigm, a deductive argument can be made that in local government planning agencies the very practice of using an Open Systems paradigm as part of the mechanisms for the development of computerized technologies, is similarly very rare.

As the review shows, most of the open source researchers are typically concerned with general investigations of Open Source Software in three areas: (1) backend infrastructure (servers and web servers), (2) operating systems, and (3)

operational applications (software and databases). They consider these topics from the perspective of an organization's infrastructural capacity in Information Technology, rather than from the perspective of an end user specific service (such as building permitting) that is similarly provided by several agencies.

Very few studies, if any, have investigated the feasibility of Open Systems in local governments, with a focus on end user applications (software and databases) only, and as they apply to a specific service that is statutorily regulated across many local governments.

CHAPTER 3
RESEARCH DESIGN AND METHOD

Any innovation, any new trend, was immediately known, and could be freely incorporated into the work of any of the others.

--Peter Hall, in *"Cities in Civilizatio*n" describing the Golden Age in turn-of-the-century Paris.

This chapter presents a conceptual map for guiding this study towards answering its main questions, and towards shaping the evidence for proving its prime hypothesis. The chapter is composed of two sections: Research Design and Research Method. The first section, Research Design, starts with the purpose of the study, is followed by a sub-section arguing the rationale for the selection of the case study, and which includes a sub-section describing the unit of the research analysis, and a sub-section identifying the data, and the evidence used. It continues with a sub-section that synthesizes the permitting process in the state of Florida, and a sub-section that provides a summary definition of web services. The second section, Research Method, is organized in two sub-sections, one for each unit of analysis (Alachua County, and Florida).

Research Design

As introduced in Chapter 1, this dissertation explores the benefits of introducing a new paradigm for Florida's building permit operational computer technologies (software and databases) based on Open Systems and on uniform standards. It hypothesizes that given Florida's uniform building code, steering Florida's local governments towards an Open Systems paradigm for building permit technologies, creates the conditions for (a) a drastic increase in governmental transparency, (b) transformative improvements in delivery of services, and (c) significant cost-savings of public expenditures.

To test this hypothesis, this dissertation uses an exploratory single-case study research method. The author analyzes a building permit and inspection computerized system developed and implemented over the course of three years (2006-2009) by the Alachua County GIS Division, with a Participatory Design, and an Open Source and Open Systems approach. The results and the findings that will be revealed by the evaluation of the Alachua County's case for its three main dependent variables will be applied to a larger unit of analysis. Building permit technologies presently used by planning departments in local governments of the State of Florida will be reviewed, and their current level of adoption of Open Systems will be examined in an attempt to generalize and synthesize, the value of Alachua County's findings to the State of Florida, and hence draw this study's conclusions.

Case Study

The single-case study approach is thought appropriate as this research studies "a contemporary phenomenon in a real-life context" (Yin, 1994), and tries to understand complex social phenomena (Yin, 2003), as it is the case with the adoption of an open paradigm for building permit computational technologies.

The rationale for selecting a case study requires that the case fit in at least one of these three categories: *critical*, *unique*, or *revelatory* (Yin 1994, 2009). The Alachua County case study, in fact, fits in each of these three categories. This case is all at once *critical*, *unique*, and *revelatory*.

The Alachua County case study can be considered *a critical case*, as it implements (albeit in an original and unprecedented way), a broadly formulated theory that Open Source an Open System practices, are superior paradigms for computer system developments, and especially more so in government organizations and in the

contemporary climate of the rapid technological r-evolution (Chapter 1 & Chapter 2). The Alachua County case study can also be considered *a unique case*, as it has taken a very unique approach into implementing a highly successful system (as the study will reveal) amongst other local governments in the state of Florida, and in fact the nation. And finally, the Alachua County case study can be considered *a revelatory case,* given that the development of this system is the brain child of the author of this study who has been intimately involved in directing all of the stages of its development until its full implementation.

Of significant importance for the selection of this case study, is also the fact that for the past decade, the Alachua County government has been acknowledged to be in the forefront of the adoption of some of the most progressive planning policies in the State of Florida.

Unit of Analysis

This case study has an embedded design and contains two units of analysis. The first unit of analysis is the Alachua County local government. It is in this unit of analysis in which the predominant work for this study is conducted. The second unit of analysis is a representative sample of the collection of local governments in the State of Florida. The combination of these two units of analysis enables this study to integrate both quantitative and qualitative methods (Scholz & Tietje, 2002), and to draw its conclusions at a meaningful scale.

For the first unit of analysis, the study considers data from the Alachua County Growth Management department from 2000 to 2009.

Figure 3-1. Alachua County Unit of Analysis

As shown in Figure 3-1 above, the Alachua County government is one of the ten local governments in the county of Alachua. Its jurisdiction is limited within the unincorporated area of the county only. Although Alachua County government has a mandate to provide certain services countywide, building and development services are limited to the unincorporated area. During the period of 2000 – 2009, Alachua County was sporadically contracted (via intergovernmental agreements) by a few of the smaller municipalities to provide building and development services for them.

For the second unit of analysis, the study considers data from planning departments in local governments of the State of Florida for the year 2012. As discussed in Chapter 1, and as shown in Figure 3-1, there are 478 local governments (67 counties and 411 municipalities) in the State of Florida. A stratified representative sample of them constitutes the second unit of analysis. The envisioned method for

compiling a meaningful sample representative of counties and municipalities in the state of Florida is described in the section titled “Research Method.”

Collection of Data and Evidence

Yin (1994, 2009), advises of six categories of primary sources of evidence for research strategies that are based on case studies. These categories are: *documentation*, *archival records*, *interviews*, *direct observations*, *participant-observations*, and *physical artifacts*.

Under the *documentation* category, he includes letters, agendas, memos, emails, reports, studies and evaluations. Under the *archival records* category, he specifies databases, personal records, service records, customer complaint databases, surveys. Under the *interviews* category he specifies three types of interviews (open-ended, focused, and structured questions). Under the *direct observations* category he includes meetings, factory work, work space, classrooms, and conditions of buildings. Under the *participant-observations* category he identifies access to events and data that are otherwise inaccessible, perception of reality from within, and the ability to understand minor events. And lastly, under the *physical artifacts* category, Yin groups technological devices, tools or instruments, and works of art.

Implementing Yin’s first principle of data collection to “use multiple sources of evidence,” for both units of analysis this dissertation uses abundant primary and secondary data collected from all of the above categories.

For the Alachua County case study, which also constitutes the bulk of this study, the author uses data and evidence from agendas, memos, emails, reports, studies, interviews, databases, software applications, web sites, website statistics, personal records, customer service records, customer complaint databases, meetings, work

space and conditions of buildings, contract agreements, budget documents, performance measure documents, county press releases, county newsletters, etc. In addition, the author's prior employment in a leadership role in Alachua County and in its Growth Management department, and the participatory approach by which these computer systems were created, has provided her an in-depth understanding into the subtleties of the internal culture, politics, perceptions, reactions, events (within closed and open doors), observations, and data that would otherwise be almost impossible to capture.

On the other hand, the author has diligently tried to guard herself from letting her role as a "participant-observer" (Ying, 2009) to morph into that of a '"supporter" (Ying, 2009). She has strived to analyze the evidence and the data collected for this unit of analysis in an utmost "outsider-observer" (Ying, 2009) role, which was also eased by her two year employment separation from the Alachua County government.

For the second unit of analysis, the author has developed a geospatial database (Yin, 1994, 2009). This database holds representative information on building permit technologies in the local governments of the State of Florida. This information is composed of variables such as: population served by the local government, budget of the local government, existence of a computerized system for building permit and technologies, manner of system development, manner of system acquisition, provider of the system, last purchased cost of the system, yearly operating cost of the system, length of time of system use, and a few other variables related to the functionality of the system (usability, accessibility, geo-enablement, etc.). Most of these data was obtained from web based documents published by the local governments, the United States

Census Bureau, or the Bureau of Economic and Business Research at the University of Florida. When necessary, individual inquiries were also conducted with the local governments. The public nature of this information facilitated its accessibility.

The Building Permit Process and Public Safety

A building permits technology system (open or closed) that is used to run operations is in fact just an *electronic translation* of the permitting process per se. It is the accuracy with which this *electronic translation* reflects the permitting process proper then that best determines the quality of the building permits technology system. Therefore, in order to be able to evaluate the quality of the translation (i.e. the computational technology) let us try to understand the permitting process itself. And let us focus on how safeguards for the protection of public safety[1] (its fundamental purpose) are sculpted into the permitting process.

As towns and cities evolve through a continuous and gradual process of change and development (Adams, 1994), it could be said that it is development that drives the process of community building. And the implementation of development is conducted via an “assortment of regulations, incentives, and agreements that integrate planning principles” (Nelson, A.C., 2000), while also enforcing “safety standards: for public health and life security, and protection of property” (Title XXXIII, Chapter 553.72, Florida Statutes).

The enforcement of safety standards for public health and life security is in fact the essence of the mission of building departments and building activities, whether in Florida or elsewhere. An example of the official statement of the Alachua County’s

[1] Florida statutes consider public safety to include the safety of life and of property.

building department is as follows: “Our mission is to create and maintain a safe and healthy community by keeping our homes, offices and other buildings *safe for public use* by carefully reviewing and inspecting all construction projects that require building permits.”

But what is the process that implements this mission and that ensures public safety during the development process? Let us describe it in Alachua County and in Florida, while remaining aware that, despite a few differences, they are similarly applied elsewhere.

The process for ensuring public safety and protection, while regulated by state legislation, is conducted at the local level, and on a daily basis. The local building department is responsible for ensuring compliance with the Florida Building Code, with the local Land Development Code, and with local ordinances related to construction sites. In general, at the local level, every development undergoes five stages:

1. PRE-APPLICATION SCREENING. A preliminary review of the project to ensure compliance with zoning, transportation, and environmental issues.
2. PLAN SUBMITTAL AND REVIEW. Review and improvement of construction plans by *licensed* plans examiners.
3. ISSUANCE OF PERMIT. Issue of Notice of Commencement by *licensed* staff, upon final approval of construction plans, and which defines conditions and time frames for the construction process.
4. INSPECTIONS. Several categories of inspections and of performance tests, conducted sequentially at specific milestones in the construction process by inspectors *licensed* in the specific category, such as electrical, fire, and others.

5. ISSUANCE OF CERTIFICATE OF OCCUPANCY. Issue of Certificate of Occupancy (CO), upon final inspection by *licensed* staff. This is the document that authorizes occupancy of a structure by residents or businesses, as a legal assurance that the structure complies with zoning and land use ordinances, and with the Florida Building Code. A CO also puts the structure into the property tax rolls.

And in what manner do these processes safeguard the public safety? The processes and the activities that are administered by the local government during these stages are almost entirely regulated by the Florida Legislature. Within each stage numerous processes and activities occur, which collectively amount to an extensive and extraordinary complexity. They entail “hundreds of decisions and bureaucratic actions,” (Schneider, 1981) and they require coordination with other local departments such as Fire Rescue, Public Works, Health Department, Law Enforcement, etc.

In the Florida Statutes there are several chapters that regulate the building permitting activities. A few of importance are: Title X, Chapter 120 that regulates Administrative Procedures; Title XI, Chapter 125 and Title XII, Chapter 166 that regulate Counties and Municipalities. But in addition, there are also at least two chapters that are specifically dedicated to the safeguard and to the protection of public health, safety, and welfare of Florida residents as they relate to construction activities: the *Building Code Administrators and Inspectors*, and the *Florida Building Codes*. Let us briefly review the role of each.

Building Code Administrators and Inspectors

The Florida Statutes, under Title XXXII, Chapter 468, titled “Miscellaneous Professions and Occupations,” in its part XXII titled “Building Code Administrators and

Inspectors," through sections 468.601- 468.6332, uniformly regulate the professional practice that administers the Florida Building Codes statewide. The legislation's public safety protection intent, is articulated in its stated purpose, under 468.601: "The Legislature finds that, where building code administration and inspection personnel fail to adequately, competently, and professionally administer state or local building codes, physical and economic injury to the citizens of the state may result and, therefore, deems it necessary in the interest of public health and safety to regulate the practice of building code administration and inspection in this state."

This same chapter also regulates and defines the standards of the professional certifications for the inspectors, plans examiners, and the building official (also called code administrator). These standards include the categories of certifications; the training that is required to update and maintain these certifications; responsibilities, duties, and powers of these professionals; prohibitions, penalties, and disciplinary issues; and others. The chapter also regulates the creation of the Florida Building Code Administrators and Inspectors Board (under the Department of Business and Professional Regulation, with members appointed by the Governor), with the authority to oversee "individuals as being qualified under the provisions of this part to be building code administrators, plans examiners, and building code inspectors" (The 2011 Florida Statutes, 468.606).

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[2] http://www.leg.state.fl.us/statutes/index.cfm?App_mode=Display_Statute&Search_String=&URL=0400-0499/0468/Sections/0468.609.html

The utmost concern for the protection of public safety is also expressed by the legislation in the level of discretion, and in the level of protection that it awards the position of the building official and other administering personnel. Section 468.619 defines the “bill of rights” of the building official as: “the building code enforcement officials are employed by local jurisdictions to exercise police powers of the state in the course of their duties and are in that way similar to law enforcement personnel, correctional officers, and firefighters. It is the further finding of the Legislature that building code enforcement officials are thereby sufficiently distinguishable from other professionals regulated by the department so that their circumstances merit additional specific protections in the course of disciplinary investigations and proceedings against their licenses.”

Thus, it seems that due to the public safety protection nature of their practice, building inspectors, plans examiners, and especially building officials are better protected by legislation in the exercise of their profession against potential political influences of their employers or others, than local government planners are. This protection on the other hand, holds them also individually more directly and legally accountable to the public, than the planners.

The Florida Building Codes

The Florida Building Code is based on national standards amended for Florida’s context. The code (including its standards) is consistent with the Florida Fire Prevention Code, which is maintained by the Office of the State Fire Marshal.

The 1998 Florida legislature amended Chapter 553[3], in Title XXXIII, Florida Statutes (FS)[4] titled "Building Construction Standards," to create a single building code for the state that is enforced by local governments.

A brief review of the magnitude of the Florida Building Code reveals the following. The code is composed of nine volumes: *Florida Building Code Building* (36 chapters), *Florida Building Code Residential* (44 chapters), *Florida Building Code Existing Building* (16 chapters), *Florida Building Code Energy Conservation* (6 chapters), *Florida Building Code Fuel Gas* (8 chapters), *Florida Building Code Plumbing* (13 chapters), Florida *Building Code Mechanical* (15 chapters), Florida *Building Code Test Protocols for High Velocity Hurricane Zones* (54 tests), *Florida Building Code Accessibility Code* (10 chapters). An attempt to count and to add up the pages of the nine volumes amounts to at least 2,500 pages. And yet, the volume of the content of this code is still un-comparable to the complexities and to the day to day challenges that are encountered during the process of its implementation.

But let us also very briefly review how the current uniform Florida Building Code was established.

Statewide building codes became mandated in Florida during the 1970s. There were four models that set minimum standards. Local governments were required to choose and to adopt one of the four. In the mid 1990s a series of natural disasters happened in Florida. Even local codes thought to be the strongest were proved

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[3] Chapter 553 is divided into 8 parts, contains 998 articles, each of which is divided into 1 to 30 sections.

[4] http://www.leg.state.fl.us/Statutes/index.cfm?App_mode=Display_Statute&URL=0500-0599/0553/0553ContentsIndex.html

inadequate by major hurricanes, causing devastation to lives and economies statewide. This, and the increase in the complexity of building construction regulation, triggered a review of the state's building code system. The review revealed inconsistencies statewide, both in the code adoption, and in its enforcement.

In response to these occurrences, the current uniformed building code was shaped. As of March 1, 2002, the Florida Building Code, which by authority of the state legislation is developed and maintained by the Florida Building Commission, supersedes all local building codes. The Florida Building Code is updated every three years and may be amended annually to incorporate interpretations and clarifications.

Web Services and GeoWeb Services

One of the dependent variables considered in this study is defined as "quality of service." As Web Services are an important element in defining quality of services, let us briefly define Web Services and GeoWeb Services, in the context of local government planning.

There can be more than one way to define Web Services and GeoWeb Services (or Map Services). Their definition depends on the perspective from which they are considered. Provided below are definitions for Web and GeoWeb Services from the two perspectives that were considered relevant to this study: local government planning, and technical protocols.

Local Government Service Definition. As local government activities in most of their areas of application involve either direct services to the public, or contributions from the public, on a daily basis they are constantly engaged in provision of information to the community. This is no different for local government planning agencies. Providing information to the public, and answering inquiries from the public, takes up most of the

work load in local government planning agencies. These service provisions may include ad-hoc information, preliminary documents, standardized transactional operations, or archival information.

When these types of services are conducted via the web, whether in one direction (from the government to the public), or in two directions (from the government to the public and vice versa) they are ordinarily called Web Services. This is a definition viewed from the point of consumption, and from the point of the problem that the service solves, and not from the point of the technology that enables this service.

When information and services are made available twenty-four hours a day, the part of the public with internet connection can obtain government information, such as documents, audio and video records, databases, GIS databases, ready-made maps, and interactive maps, from anywhere at any time. “Web technology gives people with different viewpoints and objectives an opportunity to contribute to collective decision-making processes” (Klosterman, 2000). In planning, Web Services allow for example for draft documents to be made available for public review and comment in an easy, transparent, and effective way, which also lowers the cost of the operation.

It is in this context that GeoWeb services are understood, and are used as an integral part of the Web Services, or as an extension to them. In fact they are secondary, and complementary to the Web Services. When the type of service, or the type of information products that are made available from the service include mapping products, they would be considered GeoWeb Services. At times these may be in the form of interactive maps, at times these may be in the form of static maps, or these could be in the form of specialized decision support systems. Different planning

processes or planning requirements would prefer one form of service to the other. For example if a citizen whose property value will be affected by a rezoning decision and that has been notified (as per Florida legislation) when a meeting on the subject will occur, wants to view information regarding her case, she would be provided (as per Florida legislation) a static map. And this would in fact be the more effective way to provide this service. In sum, GeoWeb Services as they are consumed by the users are not viewed as a separate service, but rather as an integral part of the Web Service.

In sum, Web Services in the local planning government context are understood interchangeably with e-government or e-services. The Center for Technology in Government (2003) defines *e-government* as "the use of information technology to support government operations, engage citizens, and provide government services." This definition is supported by the federal United States statute "E-Government Act of 2002."

Technical Protocol Definition. The World Wide Web Consortium (W3C), which is a global forum that develops and recommends open standards to ensure the long-term growth of the Web, refers to web services as "programmatic interfaces made available." Another definition from W3C is as follows: "Web services provide a standard means of interoperating between different software applications, running on a variety of platforms and/or frameworks." It is important to note that the W3C makes a slight distinction between Web of Data and Web of Services when it lays out its vision for the future of the web. One defined as linked data while the other as a set of services.

Similar to the W3C, the Open Geospatial Consortium (OGC) is a global forum for the collaboration of developers and users of spatial data products and services, and it is

involved in developing and in setting open standards for geospatial interoperability. This also includes standards for GeoWeb Services (Open Geospatial Consortium, 2012).

The definition of GeoWeb Services from the OGC is “a standard protocol for serving georeferenced map images over the Internet that are generated by a map server using data from a GIS database.” The specification for this standard was developed and first published by the Open Geospatial Consortium in 1999.

Research Method

This section describes the methodology used in this study. Following the outline that was described in the previous sections, this research uses slightly separate methods for each of its two units of analysis.

There are two parts in this section. The first part investigates the Alachua County case study using a case description analytic strategy (Ying, 2009). In this part a multitude of primary data (both qualitative and quantitative) is analyzed, and evaluated for accurate findings in support of the initial hypothesis. Deliberate attempts are made to uncover conflicting data linkages that could challenge the prime hypothesis and or the initial results. A description of the participatory action research elements that were employed to create the Alachua County suite of building permit and inspection systems is also included. The second part is also based on a case description strategy and it includes the compilation of a geospatial database with representative data from local governments in the State of Florida.

Alachua County Government

The method used in this unit of analysis, which constitutes the predominant part of the study, is organized in two parts. The method starts with a summary narrative of the case study, the proprietary system, and the reasons that lead to the need for these

new and open systems. It then follows with a summary of each of the four components of the building permit and inspection suite of products, and it concludes with summaries of comparative analysis of the two systems for the three main variables identified in the research question.

Organizational background

The implementation of Planning and Development Services for the Alachua County are the mission of the department of Growth Management. During the period between the year 2000 to 2009 the department implemented its goals through five divisions: Comprehensive Planning, Development Services, Housing Programs, Building and Code Enforcement, and GIS. These divisions were responsible for preparing, updating, and implementing the Comprehensive Plan, for overseeing development activities, for administering local, state and federal housing programs, and for ensuring adherence to Building Codes. The GIS Division's role was to support all of these planning operations with an integrated cross departmental information system and technology infrastructure. The division's areas of operation included: geospatial decision support in urban and rural planning, asset and record management for land administration, and the web services.

The proprietary system[5]

On May 11, 1999, by Sole Source Certification, the Board of Commissioners of Alachua County (BoCC) approved a contract with Perconti Data Systems Inc., for the upgrade from DOS to Windows of the Community Development Management System

[5] The author would have wished to have had included screen prints of images of the proprietary system as she has done with the Open System throughout this study, but this is not allowed by the vendor.

Software (CD-Plus). CD-Plus included four modules: a Building Permit module, a Codes Enforcement module, a Development Review module, and a Concurrency module. The first two DOS based modules had been purchased by the Department of Growth Management on July 14, 1994. The other two DOS based modules were purchased respectively on April 9, 1996, and on March 11, 1997. While the first two modules: Building Permits and Codes Enforcement were in use in 1999, the other two modules were not in use, and up to the present they have not been in use. Appendix M, includes one page from the sole source certification section in the county's multiple page contract for the upgrade of the CD-Plus.

The Total Cost of Ownership (TCO) for CD-Plus for the time frame between the years 2000 – 2008, stood at no less than $800,000. Additional services (even the edit of a misspelled label) were the exclusive right of the vendor, who charged at a starting rate of $175 per hour. This cost provided for CD-Plus use by 30-40 authorized and office bound users. The licensing agreement price was a function of the number of users.

CD-Plus is not a generic software application. The CD-Plus software was designed as a desktop application, requiring a one-time installation on each user's computer. It appears to have been written in C++, but there is no documentation available to confirm this. C++ code written by developers was compiled into low-level machine code to run the end users' software. The software could not be updated or reverse engineered by the end users. Perconti Data Systems Inc., had the keys to the CD-Plus software, and never gave a copy to Alachua County. CD-Plus is a front-end to an Oracle based database that collects data in a pre-determined, pre-structured way. The data collected from CD-Plus, is stored in a dedicated database, called the CD-Plus

database. The design of this database, which is composed of hundreds of tables, is entirely dependent and fully dictated by the design of the CD-Plus' front-end. Both are installed and configured as part of the installation of the CD-Plus' front-end.

Reports in CD-Plus are designed using Crystal Reports (a separate desktop proprietary software). Reports can only be added, updated, or generated either by the vendor, or by a dedicated county staff with a licensed copy of Crystal Reports on her computer. CD-Plus does not provide for integration with geospatial technologies, such as desktop, server, or web GIS.

CD-Plus also interfaced with an Automated Inspections Telephone system (a separate proprietary software), which was licensed separately to Alachua County by another vendor. This phone system provided for scheduling and for updates of inspections.

A copy of the CD-Plus software needs to be installed in each user computer, and then re-installed every time there is a new release, upgrade of operating system, new hardware, etc. There is no archive of previous versions of the CD-Plus software, and the end users do not have a choice whether or not they want to upgrade the software on their computer. There is no documentation about what changes have been made in each upgrade, and there is no mechanism to allow end users to revert back to a previous version of the software. Its data entry forms which include textboxes, drop down select boxes, checkboxes, date selectors, and note fields, are not standardized. They routinely cause the entry of erroneous and non-standard data.

CD-Plus lacks documentation, and there has not been a response from the vendor to county requests for providing it. There are no configuration files, instructions,

installation guides, proper help files and guides for the user, use case scenarios upon which the software's functions are based, diagrams or schemas of its database tables, of how they inter-relate, no data dictionaries, and other similar standard documentation.

This proprietary software had over the years become an organizational problem. It was well known throughout the organization that this software was poorly built. It was also built with an old technology which did not allow for integration with the GIS system or the Web, and which restricted access to information to only a few licensed and office bound users. It was blighted with routine system problems and with functional errors. It was a common occurrence to discover strange or unintuitive functionality in CD-Plus. Many of the end users had come up with work around solutions to make the software behave the way it is needed by the work processes.

Interviews conducted with the CD-Plus users by The Open Planning Project (TOPP), an educational and non-for-profit organization, show the users complaining that working with CD-Plus "is a matter of constant aggravation, and that system errors are a constant routine of its operations." It appears from their answers that using CD-Plus is more of a task with which the users are required to comply, rather than a utility that facilitates their work and increases the efficiency of their operations, which is the ultimate test for good technology implementations.

A feasibility study, about the geo-enablement of the permitting system, conducted by The Open Planning Project in 2007, compiled a number of issues in its final report to the county after conducting an on-site analysis of its security and workflows, and user interviews. Following is a summary of a few of the issues:

- The permitting process requires several departments to review it, such as the Fire Rescue, or the Health Department, or the Public Works department, or the

Environmental Department. The proprietary software did not track who was currently reviewing the building permit at what point in time. The issues with individual machine installation of this system that these departments had experienced over the years, had been so problematic for them, that the operational norm for extra-departmental review of permits had become for unlicensed clerks at the building department, to enter data into the permitting system, on behalf of licensed inspectors in these other departments. And their communications happened over phone. In the third paragraph of the Appendix J, the Building Official of the Alachua County confirms the findings of this study.

- The same study also found that no history of changes made to a record existed in the closed system. Anyone with write access to the system could overwrite previous records. This means that a non-licensed staff could overwrite a record entered by a licensed staff, and one department could overwrite the entry of another department.
- The system lacked a framework for proper access control. Creating a software user account automatically generated a database (Oracle) user account. The latter was automatically granted permissions at the same role level into the database. This means that the rights to make changes to the database tables, was equal for everyone. “This means that any user had the ability to completely delete important data, since the system provided no refined framework for database access control separate from front end user creation” (The Open Planning Project, 2007).

Another evaluation conducted by Mannion Geosystems (2007), identified several system shortfalls, related to this example that put to risks the integrity of the permitting operations. The Mannion Geosystems (2007) evaluation raises concerns with inadequate back up practices of the vendor (which allowed for a time gap of lost permitting records), and with a non-existent installation and configuration package necessary for a system recovery, or for a system migration.

While these flaws were built into the design of the system, there were also routine system errors, or malfunctions which additionally compromised the integrity of the system. Examples of these errors, identified by the users over the years, were related to: (a) the system not recognizing that a permit had expired, or (b) not recognizing that the license of a contractor had expired, or (c) that the insurance of a

contractor had expired, or (d) that a code violation record number was identical to a permit number, and so on. Staff would only find out about these flaws, by chance. In Appendix N, a snapshot is shown of email exchanges pointing out some of these issues. This snapshot is part of hundreds of emails exchanged between the vendor and the CD-Plus administrator in Alachua County that were included in the "Report on the Evaluation of Perconti Data Systems Inc. CD-PLUS software application" prepared at the Department of Growth Management, in August of 2007.

As the software was proprietary, the choices for its improvement were locked to its vendor. The users had endured this for years, but no formal effort had ever been made to evaluate its replacement. If this vendor went out of business, or decided not to support this product, in a 30 day notice[6] Alachua County would have been left to budget for another product, seek another vendor, go through a Request for Proposals process, wait for the product to get ready, go through the process of its acceptance, implementation, etc. This is a process that takes from one to two years, and during which operations would be interrupted. In addition, and most importantly, Alachua County would have been left with data structured tailored to CD-Plus, which would not fit the design of another out of the box software, and which re-utilization without extra investment, would not be possible.

The open system suite

The need for the new projects was not identified by formal organizational venues. These projects were an initiative of the GIS Division which foresaw the opportunities that would arise for the organization and the public by a better solution. The GIS

[6] See Appendix I, for a copy of the 2008 Maintenance and Support Agreement for CD – Plus.

Division in conceiving, designing, developing, and implementing these four projects operated outside of the standard acquisition and development practices of the organization and it entwined this work with its daily duties and operations. It is important to recognize that the framework which inspired this culture and which nourished its existence had been shaped at the top levels of the organization. In the year 2000, the County Commission had approved the following transformation strategies as part of its mission: *Empower employees and citizens*, *Implement technology that serves the organization*, and *Improve systems of management and accountability*.

These new projects: a “GeoWeb Building Permit Tracker,” a “GeoWeb Code Enforcement Tracker,” a “GeoWeb Impact Fee Calculator,” and a “GeoGreen Mapper,” are four separate but integrated end-user applications with the GeoWeb Building Permit Tracker at the heart. Each of them is composed of several modules. The central and the larger one is the Building Permits and Inspections application.

The four were implemented incrementally over the course of three years to cautiously transition out of the proprietary system. They integrated land administration records and building and permitting operations with GIS for the first time. They also for the first time made available in real time, by location and by transactional tracking, twenty five years of records on building permits, code enforcement, impact fees, and green data in Alachua County.

In Figures 3-2 to 3-6 their portals are shown. More interfaces are provided in Appendices A, B, C, & D.

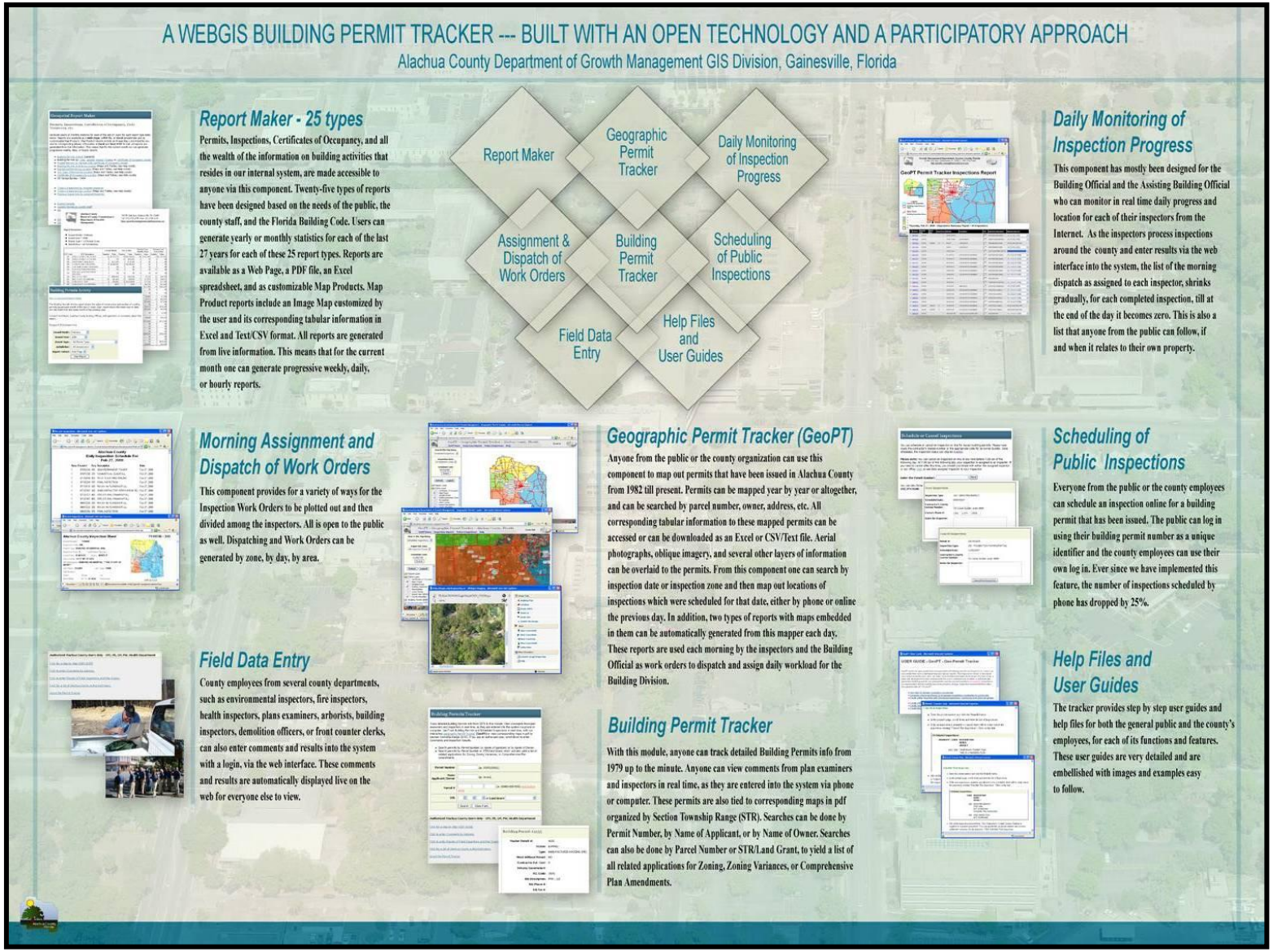

Figure 3-2. GeoWeb Building Permit Tracker – functionality poster

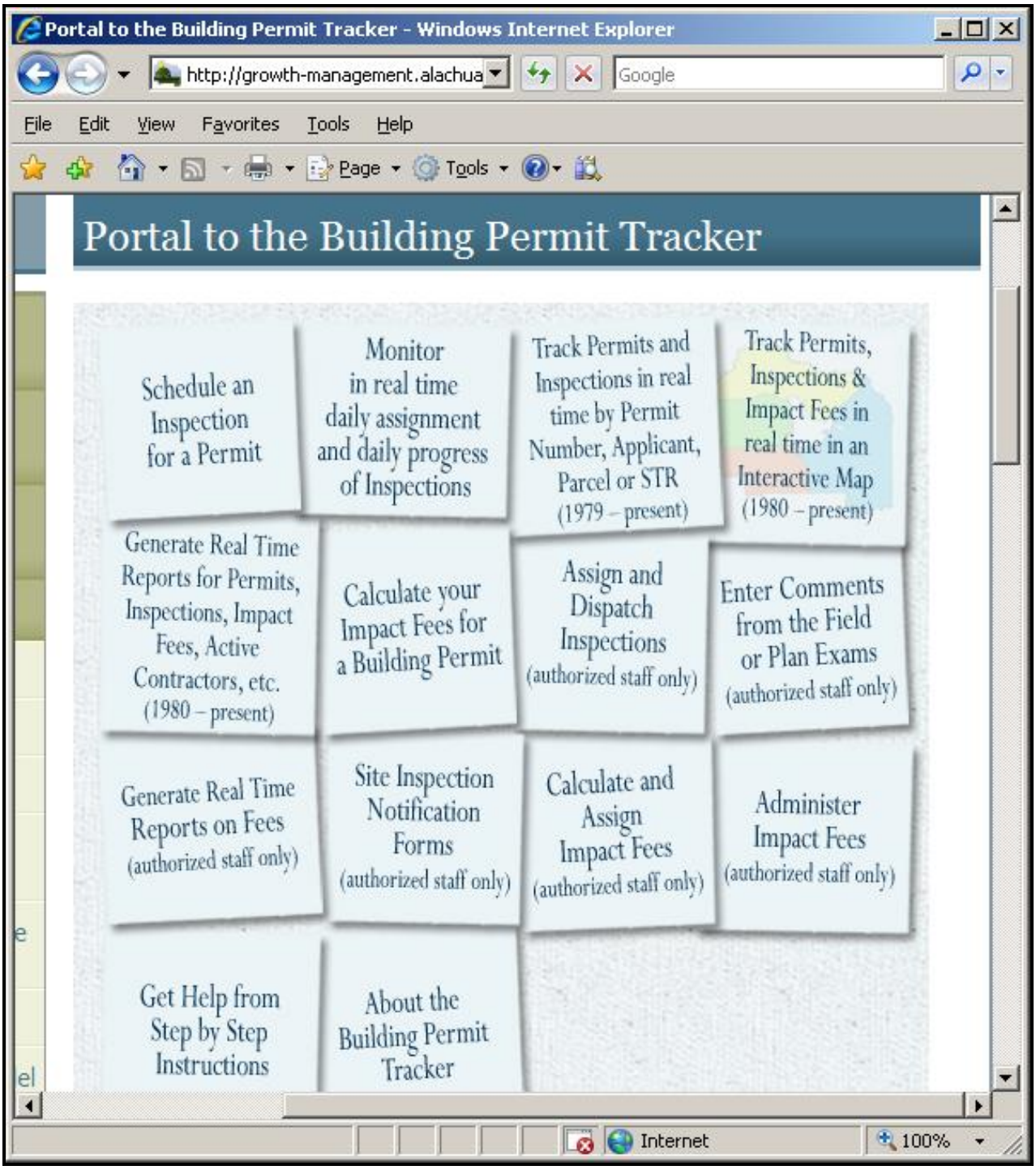

Figure 3-3. GeoWeb Building Permit Tracker – portal

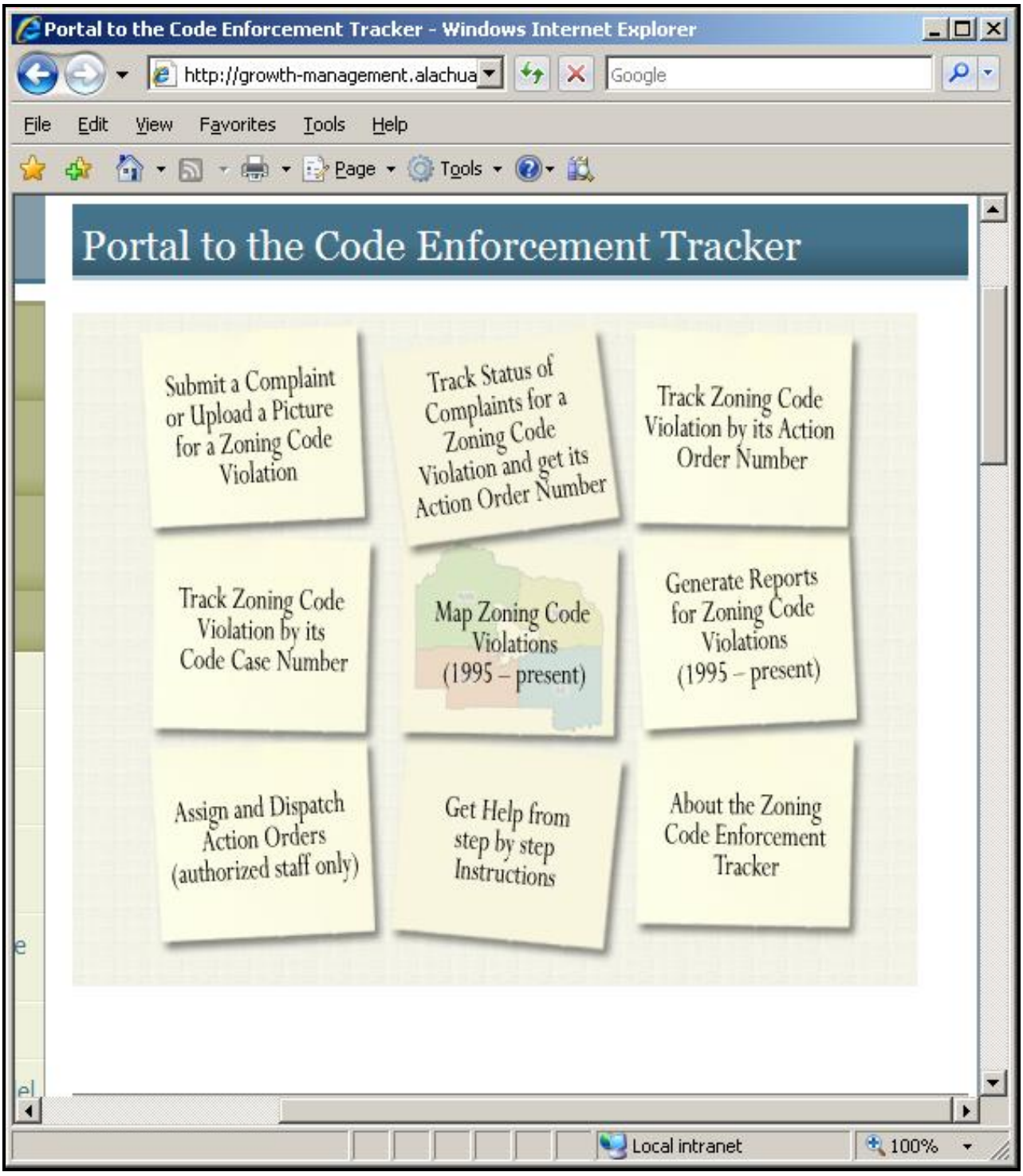

Figure 3-4. GeoWeb Code Enforcement Tracker – portal

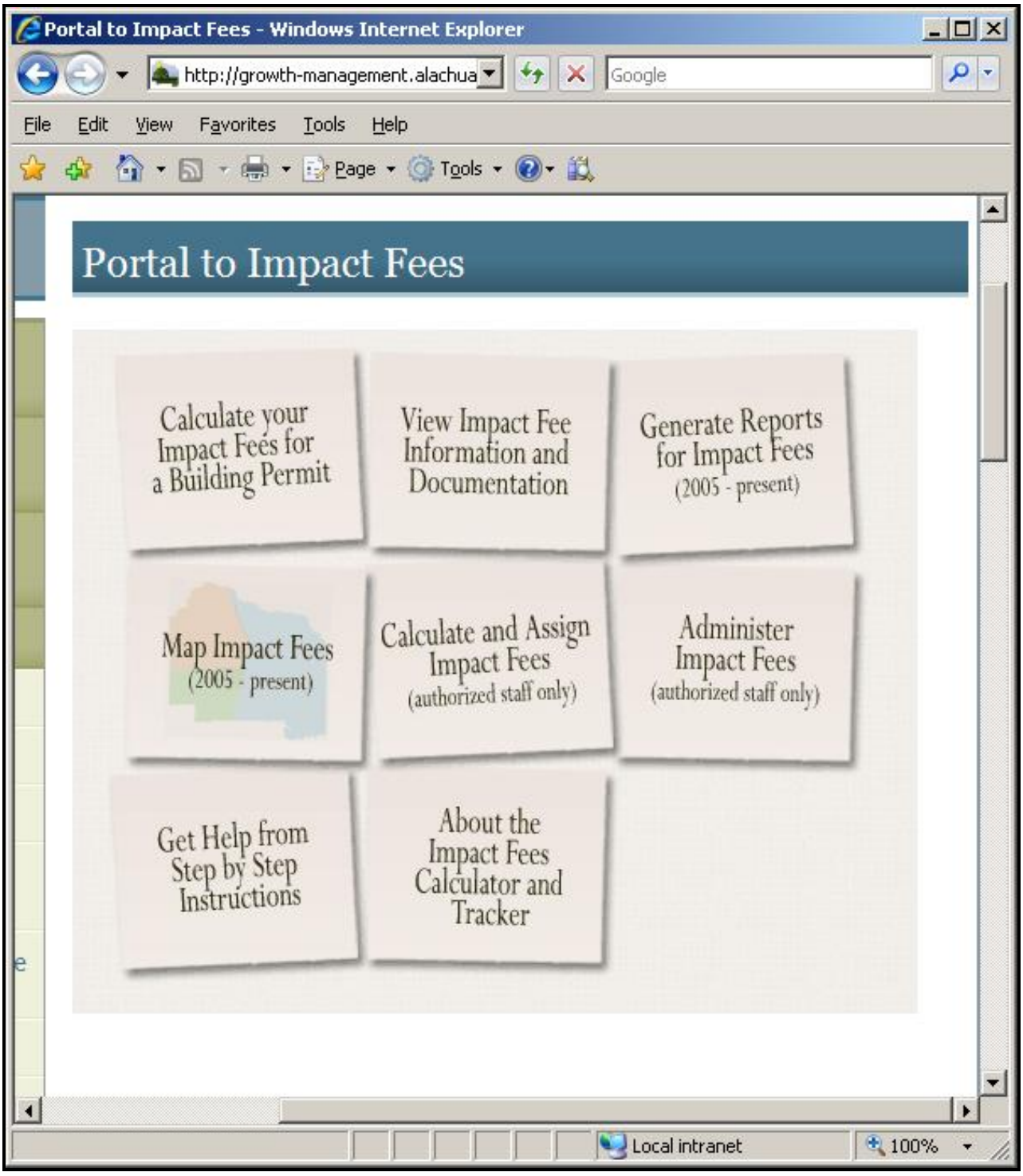

Figure 3-5. GeoWeb Impact Fee Calculator - portal

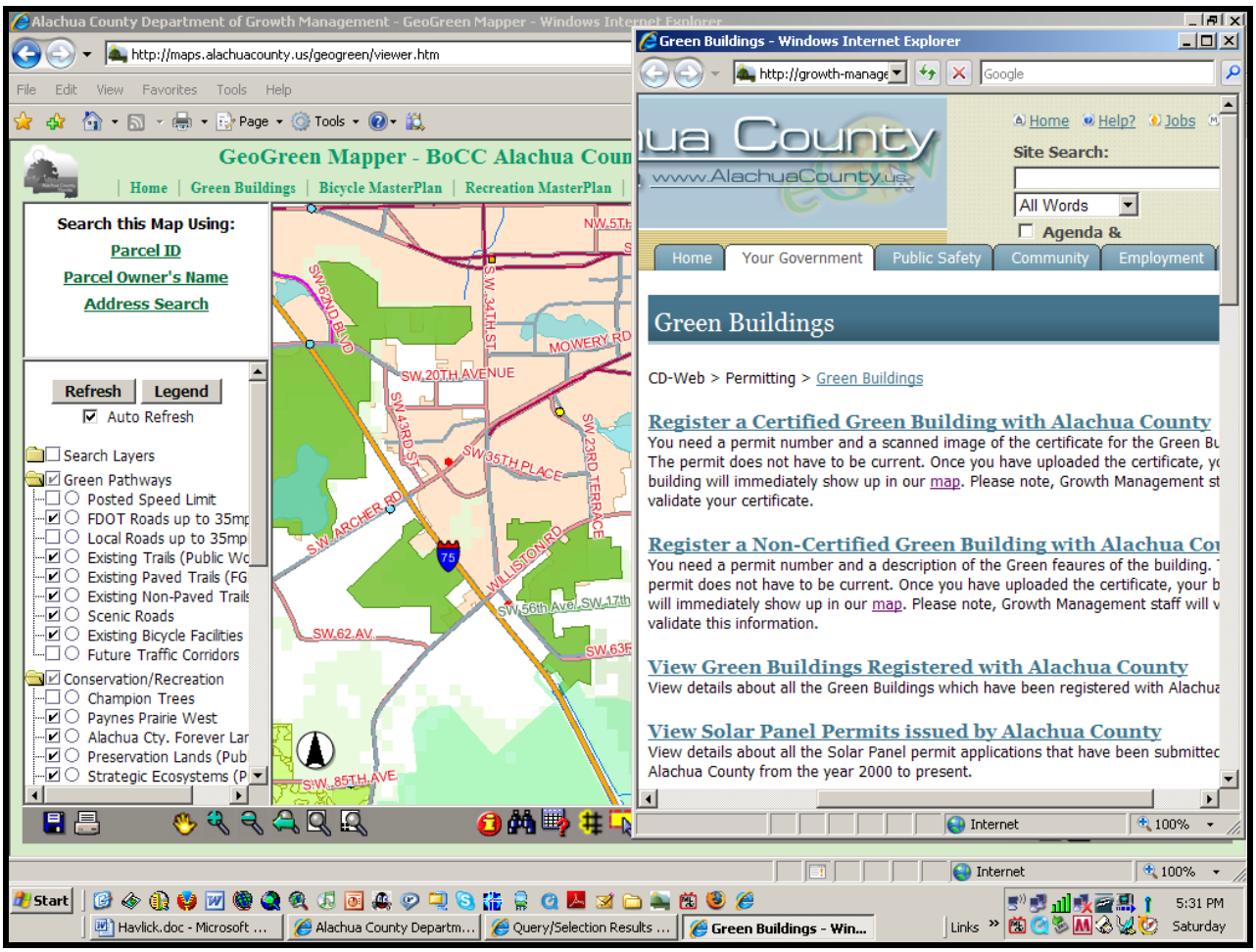

Figure 3-6. GeoGreen Mapper - portal

In contrast with the traditional procurement standards of local governments, these software applications were developed entirely in-house. They were developed with a Participatory Design approach and with an Open Technology. A Participatory Design approach is an approach to the assessment, design, and development of technological and organizational systems that places a premium on the active role of workplace practitioners, who are the users of these systems. During the entire process, the GIS Division engaged building and zoning clerks, building inspectors, code inspectors, planners, local builders, contractors, advocates of green living, the Codes Supervisor, the Impact Fee Administrator, the Building Official, the Builders Association

of North Central Florida, and various advisory boards. The *Open Technology* refers to practices for development and implementation of software in a nonproprietary way. Its key elements are: Open Standards and Interfaces, Open Source Software and Designs, Online collaborative and distributed tools, and Technological Agility.

By employing an Open Technology approach, the GIS Division relied on Free and Open Source Software (FOSS), which is available free to all, and which does not require license payments. This approach placed these products under the full ownership of Alachua County, saved significant upfront acquisition costs, eliminated yearly license and maintenance fees, and it made possible the development of nonproprietary products, which can be enhanced and changed in competitive ways, and which can be reutilized by other organizations. Following are functional summaries for each of them.

GeoWeb building permits tracker

The Building Permit Tracker is composed of eight modules. In real time, they integrate into a geospatial web framework the field activities of the building inspectors, the activities of the office staff, and the Automatic Inspections Telephone system. With the exception of functionalities used for data entry from certified staff, the whole permitting process from start to end, and the entire building construction historical archive for Alachua County for the past quarter century is publicly available via the web.

Builders, contractors, homeowners, and homebuyers can monitor the process of construction in real time. They can view the results of plan examinations, the daily inspector dispatch allocations, inspector notes, inspector locations during the day, payments, holds, charges, and fines. They can also schedule and cancel inspections, identify staff assigned to their construction site, etc. For each of the last 20-30 years and up to the minute, anyone can create maps that are dynamically linked to the full history

of building permits and inspections in Alachua County. For each of the last 20-30 years and up to the minute, anyone can create a rich variety of reports in XLS, PDF, HTML, or Text format for all types of building activities. The following is a description of its modules.

Geographic Permit Tracker (GeoPT). Anyone from the public or the county organization can use this component to map out permits that have been issued in Alachua County from 1982 till present. Permits can be mapped year by year or altogether, can be searched by parcel number, owner, address, etc. All corresponding tabular information to these mapped permits can be accessed or can be downloaded as an XLS or CSV/Text file. Aerial photographs and several other layers of information can be overlaid to the permits. From this component one can search by inspection date or inspection zone and then map out locations of inspections which were scheduled for that date, either by phone or online the previous day. In addition, two types of reports with maps embedded in them can be automatically generated from this mapper each day. These reports are used each morning by the inspectors and the Building Official as work orders to dispatch and assign daily workload for the Building Division.

Building Permit Tracker. With this module, anyone can track detailed Building Permits info from 1979 up to the minute. Anyone can view comments from plan examiners and inspectors in real time, as they are entered into the system via phone or computer. These permits are also tied to corresponding maps in PDF organized by Section Township Range (STR). Searches can be made by Permit Number, by Name of Applicant, or by Name of Owner. Searches can also be made by Parcel Number or

Section Township Range/Land Grant, to yield a list of related applications for Zoning, Zoning Variances, or Comprehensive Plan Amendments.

Report Maker. Permits, Inspections, Certificates of Occupancy, and all the wealth of the historical archive of building activities that resides in the internal system, are made accessible to anyone via this module. Twenty-five types of reports have been designed based on the needs of the public, the county staff, and the Florida Building Code. Users can generate yearly or monthly statistics for each of the last 20-30 years for each of these 25 report types. Reports are available as a Web Page, a PDF file, a spreadsheet, and as customizable Map Products. Map Product reports include an Image Map customized by the user and its corresponding tabular information in XLS and Text/CSV format. All reports are generated from live information. This means that for the current month one can generate progressive weekly, daily, or hourly reports.

Morning Assignment and Dispatch of Inspection Work Orders. This component provides for a variety of ways for the Inspection Work Orders to be plotted out and then divided among the inspectors. All is open to the public as well. Dispatching and Work Orders can be generated by zone, by day, by area, and so on.

Field Data Entry. County employees from several county departments, such as environmental inspectors, fire inspectors, health inspectors, plans examiners, arborists, building inspectors, demolition officers, or front counter clerks, with a login, via the web interface, can also enter comments and results into the system. These comments and results are automatically displayed live on the web for everyone else to view.

Daily Monitoring of Inspection Progress. This component has mostly been designed for the Building Official and the Assisting Building Official who can monitor in real time daily progress and location for each of their inspectors from the Internet. As the inspectors process inspections around the county and they enter results via the web interface into the system, the list of the morning dispatch as assigned to each of them, shrinks gradually, for each completed inspection, till at the end of the day it becomes zero. This is also a list that anyone from the public can follow, if and when it relates to their own property.

Public Scheduling of Inspections. Everyone from the public or the county employees can schedule an inspection online for a building permit that has been issued. The public can log in using their building permit number as a unique identifier and the county employees can use their own log in. The implementation of this feature which also works with iPhones has made obsolete the Automatic Inspections Phone system.

Help Files and User Guides. The tracker provides step by step user guides and help for both the general public and the county's employees, for each of its functions and features. These user guides are very detailed and are embellished with images and examples easy to follow.

GeoWeb code enforcement tracker

The GeoWeb Code Enforcement Tracker supports the Code Enforcement operations. It integrates on the web, in real time, public complaints, office activities of staff, and field activities of Code Officers. It also translates this information into interactive maps which are served on the web integrated with other public safety map layers.

Concerned residents, neighborhood coalitions, homeowners and homebuyers, the Zoning Administrator, the County's Code Enforcement Board, Code Officers, etc., can all monitor the entire process of code complaint and of code compliance from start to finish from their homes or offices. Anyone can submit complaints for violations, can upload pictures of the violation, can track the status of complaints and of action orders, can identify code officers assigned to a case, etc. Anyone can view, download, or create maps which are dynamically linked to the full history of code violations in Alachua County from 1995 to date. Violation Reports from 1995 to date can also be created and downloaded in XLS, PDF, HTML, or Text format.

The Code Enforcement Tracker is available to all via the Internet and it allows for unlimited access and for input from the public. A few of its features in support of data input are available to authorized Alachua County employees only, with a login via the web. The tracker is composed of six modules as described below:

Public Submission of Code Violations. Anyone from the public can submit a complaint for what they believe to be a zoning code violation. Anyone from the public can also upload a picture of the violation they have observed. They have an option to remain anonymous, or to provide their name and address if they want to be contacted. An automatic email triggered by this submission is simultaneously sent to Code Enforcement staff.

Complaint Assignment and Dispatch of Action Orders. This component provides for recording of information received from the public from the web and from the telephone; provides for screening and verification of the validity of a complaint and for dispatch and Action Order assignment to appropriate Code Officer; it also allows for

assignment of Code Cases when an Action Order becomes one. Dispatching and assignments can only be done by a county authorized user and can be generated by zone, by officer, and so on. All information is open to the public for view in real time.

Complaints, Action Orders, and Code Cases Tracker. With this module, anyone can track violation complaints, related Action Orders if the complaint has been judged valid, or Code Cases when the Action Order becomes one. Anyone can view comments from officers or the complainer in real time, as they are entered into the system. Searches can be done by Action Order number or by Code Case number.

Geographic Permit Tracker (GeoCE). Anyone from the public or the county organization can use this component to map out violations that have been issued in Alachua County from 1995 till present. Violations can be mapped year by year or altogether, can be searched by parcel number, owner, address, violation type, open or closed case, etc. All corresponding tabular information to these maps can also be viewed or downloaded as an XLS or CSV/Text file. Aerial Photographs, FEMA flood zones, and several other map layers can be overlaid to the violations.

Report Maker. Code violations and all related information on Code Enforcement activities that resides in our internal systems, are all made accessible to anyone via this component. Users can generate yearly or monthly statistics for each of the last 13 years for each violation type. Reports are available as a Web Page, a PDF file, an XLS spreadsheet, and as customizable Map Products. Map Product reports include an Image Map customized by the user and its corresponding tabular information in XLS and Text/CSV format. All reports are generated from live information. This means that for the current month one can generate progressive weekly, daily, or hourly reports.

Help Files and User Guides. The tracker provides step by step user guides and help for both the general public and the county's employees, for each of its functions and features. These user guides are very detailed and are embellished with images and examples easy to follow.

GeoWeb impact fee calculator

The GeoWeb Impact Fee Calculator application supports the operations of the locally adopted impact fees. Impact fees are fees charged to a developer, to recover a portion of the public cost that is needed to service the new development. Adopted impact fees in Alachua County are for parks, fire protection, and transportation. The county is divided into three districts. In each district different impact fees are applied. Generally impact fees are assessed preliminarily, and are re-evaluated and paid at the end of the building permit process (before the development enters the tax roll). The impact fees are proportionate to the development, and they are calculated based on a combination of many variables. These fees are substantial. For example, the total annual fees for the year 2009 amounted to over $2 million.

Prior to the implementation of the open systems application, this entire process was handled mostly by one planner, the impact fee administrator. He handled this process via a spreadsheet which was under his sole custody. This spreadsheet was a floating table that was not integrated with the CD-Plus application, or it's Permits Module which collects and stores financial information. At the end of a development the planner would make the final calculation in a spreadsheet, and then he would enter the due fee data into the building permitting system manually.

This not only created delays and redundancy in work flows, but at the same time allowed for human error and opaqueness, as staff ventured back and forth between CD-

Plus and the floating spreadsheet table. In addition, as this spreedsheet was limited to one staff use, building permit clerks and the impact fee administrator received an average of 75-100 public inquiries per month asking for assistance with the calculation of impact fees.

The GeoWeb Impact Fees Calculator application transferred this entire process in the open and on the web. The developers and the planners (including the impact fee administrator), could now see where the fees were being charged, and how much was being paid, in real time. In addition, this application brought about an unanticipated improvement to this process. When impact fee data of collected fees prior to the implementation of the open application was mapped, it showed that 10%-20% of this data was not in the proper district for which rates the development had been charged.

The GeoWeb Impact Fee Calculator serves three groups of users: building clerks and the impact fee administrator, the development community, and individual citizens. The calculator allows builders, realtors, developers, and home owners to estimate impact fees by themselves as part of the budgeting process for a new development. They can select any number of existing and proposed land uses and define intensity. They can search the interactive maps to determine district number and residency in Urban Cluster. They can enter all other information as it relates to their project. The result is a summary of the impact fees for Transportation, Park, and Fire - presented in a cross-tabulated format and customized to user's input. This summary can also be converted into a formal report, with a date stamp, etc. The report is downloadable in HTML and Adobe PDF. The GeoWeb Impact Fee Calculator consists of three modules:

- A public facing Impact Fee Calculator – for unlimited public use
- An internal Impact Fee Calculator – for authorized Alachua County staff use

- An internal Administrative Console – for authorized Alachua County staff use

It is important to note that the GeoWeb Impact Fee Calculator, unlike the other three applications, was partially contracted out to a vendor that provides open source services. The portion of the application that was developed by the vendor was thus not licensed to Alachua County, and its code was made entirely available to the county.

GeoGreen mapper

An Energy Conservation Strategies Commission (ECSC) was created in Alachua County following resolution 07-18, on March 27, 2007, of the Alachua County Commission. The task of ECSC was: “To draft a comprehensive report on energy use, its relationship to climate change and local socio-economic impacts, including actions that can be implemented by the Board of County Commissioners and the community at large.”

The Geogreen Mapper[1] application was developed in support of policy decisions related to these activities by pulling community data in an open and centralized location via an interactive map. For example, one of the recommendations of the final report of the Energy Conservation Strategies Commission was about creating connected districts with low speed roads that would accommodate neighborhood electric cars. Others involved the designation of green districts and green neighborhoods, and so on.

The GeoGreen Mapper provided access to over forty map layers of green infrastructure and green living and to important related countywide studies. Users could interactively create their own maps on the web by choosing what layers to use. Pictures, web sites, and descriptive information were all integrated with each map layer. Some of

[1] Green Maps are local maps which chart natural, cultural, and civic community resources in green living.

the map layers were regulatory, such as the preservation lands, others could be created in real time by the users. A few map layers were updated in real time on the web as part of the county's daily operations. Map layers were grouped into three categories:

- Green pathways, such as scenic roads, trails, bicycle paths, bicycle facilities, low speed roads, etc.
- Conservation and recreation, such as preservation lands, strategic ecosystems, priority ecological areas, champion trees, etc.
- Cultural preservation living, such as farmer markets, plant nurseries, recycle centers, thrift stores, libraries, historic structures, historic markers, bike stores, parks and gardens, natural food stores, etc.

The GeoGreen Mapper displayed for the first time in Alachua County, the historical archive of map locations for solar panels and for septic tank permits that had been issued over the years. As new building permits were issued, it updated their map locations in real time.

The GeoGreen Mapper was also a database driven participatory web mapper. It provided for public input in registering and mapping of Green Buildings, connecting live to the Alachua County's building permits database. Anyone from the public could enter a permit number and then either upload an image of their Green Building Certificate or enter other information that shows green features used in their building. After the upload of this information, they could immediately view their Green Building location plotted live on GeoGreen. Upon the validation of this information by county staff, the location of this Green Building becomes part of the countywide Green Buildings map layer, and of the county's historical archive. This process provided for the collection of information which has never existed in Alachua County with almost no county resources.

A number of countywide studies relevant to Green Living, were also integrated with the GeoGreen Mapper, such as a Bicycle Master Plan, a Recreation Master Plan, a Waterways Master Plan, etc. Unfortunately, the Geogreen Mapper has not been online since June 2012.

The open system architecture

A diagram of the overall architecture system for these applications is shown in Figure 3-7. Land administration data and geographic data are stored on a separate server. Land administration data is stored in an Oracle database (proprietary software). Geographic data is file based and in an interoperable format. On the web server, data used by the web applications is stored in a MySQL database (Open Source). Web pages were written in the PHP language (Open Source). They were coded by hand using Arachnophilia (Open Source software). The geographic components of the web applications were initially based on ArcIMS (proprietary software). A conversion of the geographic components from ArcIMS to GeoServer (Open Source software) was initiated following careful planning and a special study. While at the peak of its progress, in fall of 2009, the implementation of this conversion was interrupted. The design of the applications adheres to approaches of technological agility, and maintains separate layers of implementations for data, business logic, and interface. Each of these layers can be upgraded or migrated independently, providing for freedom of choice as opposed to vendor lock in. All tools were written with W3C web standards (XHTML and CSS). Data outputs are made available in several standard formats (HTML, PDF, CSV, and TXT). Their updates are displayed in real-time on the web.

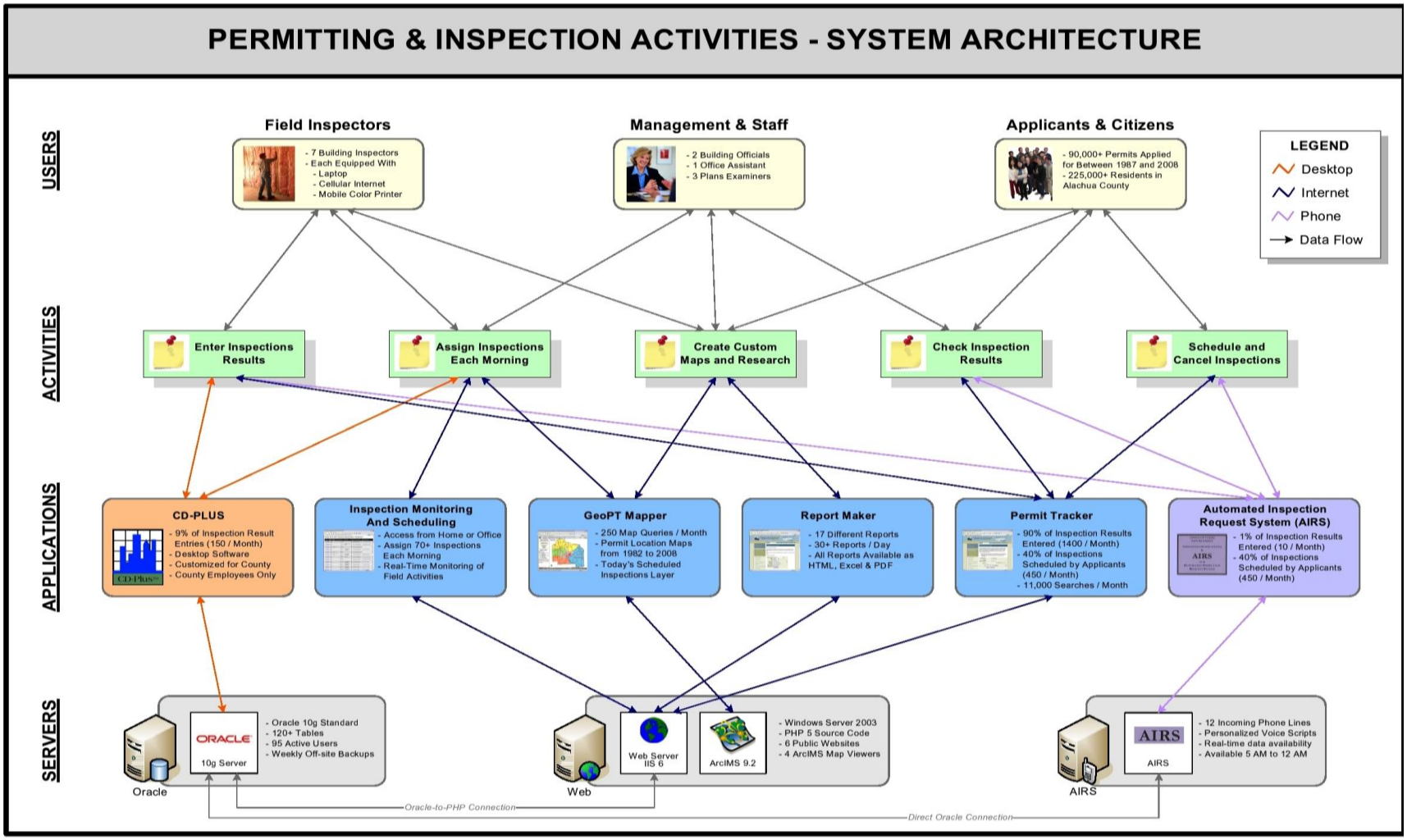

Figure 3-7. Systems Architecture

This model shows a peaceful coexistence between an open system and a closed system. Most leading open source softwares are compatible with proprietary solutions. In fact this case demonstrates just that. Its system architecture remains a hybrid of open source and proprietary software. Some new modules are integrated with the existing database that was created from the proprietary software, others were based on new but integrated databases, one module (a part of the Impact Fee application) was contracted to a vendor who was required to deliver the product open, another module (contractor licensing), from the old proprietary system still remains in operation, as a full migration was abruptly interrupted in 2009. In addition the Alachua County model was also integrated with its existing and open Geographic Information System, and an existing and open planning document management system that supports zoning, and zoning variances applications.

The open system process of development

It is also relevant to understand the process of development of the new system. While its development was highly supported by organizational leadership, it was not part of any plan, or budget cycle, or of any upper level direction. The new system was developed incrementally and outside of required daily responsibilities. It was primarily driven by the initiative of the GIS division, and actively supported by it users. It was exclusively guided by the GIS Division's will, self discipline, and search for improvement. Therefore, there were no organizational expectations for a roadmap, or for a strategic plan for the implementation of these four projects. Nevertheless, their implementation went through a strict structure of well-defined stages, carefully crafted incrementally, as to not disturb the daily operations and the division's other responsibilities. These stages were mostly driven by technological rationale, which were

carefully entwined with organizational needs. Although not in a traditional form, these efforts were rigorously documented. Overall, over the course of approximately three years this effort underwent through *six* major phases.

The *first phase* was the *proto phase*. During this time GIS staff experimented with isolated web solutions to problems that the users were encountering. It was a time for trials and errors with the goal of integrating the web and GIS with the proprietary legacy system. The results that were obtained created the confidence of staff and of the users in the internal abilities to try and solve an old problem. During this period many incremental quantitative changes occurred which became significant enough to trigger the qualitative changes that followed. This phase lasted for close to six months.

During the *second phase* a rigorous evaluation of the proprietary legacy system and of the Automatic Telephone Inspections Request system was conducted. This evaluation which was documented in various reports, solicited extensive user input, and conducted extensive review of the documentation related to the legacy system. A meticulous user survey was conducted afterwards to help staff understand the depth and the extent of the current use of the system. Its results were used to plan for a way out of the legacy system by focusing on users rather than the system. This strategy is documented, too. This phase lasted for approximately three months.

During the *third phas*e the “GeoWeb Building Permits Tracker” was developed. There are eight modules in this product, each of which was created in a separate sub-phase. This phase lasted for more than one year.

During the *fourth phase* the “GeoWeb Code Enforcement Tracker” was developed. It was built in full integration with the “GeoWeb Building Permits Tracker.”

There are five modules in this product, each of which was created in a separate sub-phase. This phase lasted for more than months.

During the *fifth phase* the “GeoWeb Impact Fee Calculator” and the “GeoGreen Mapper” were developed almost concurrently. Both were fully integrated with the previous two. Each of them went through sub-phases as they relate to their several modules and components. This phase lasted for about one year. A portion of the “GeoWeb Impact Fee Calculator” was contracted out to a vendor that provides open source and open systems solutions, and it was then integrated with the rest.

The *sixth phase* was the user testing stage. During this stage, enhancements, reported glitches, minor adaptations, and general improvements were implemented. This stage has in fact never ended. This is a fine testimony to the value of Open Systems and Open Technologies. Enhancements continue. Some of the suggestions come from the users others come from staff monitoring of user patterns.

The typical approach in developing these projects was to iteratively go through a cycle of a first deployment of a quick prototype, reception of a first round of user feedback, a return to the prototype and improvement based on feedback, accompany staff in the field to better understand processes, repeat this cycle several times till the users were fully content. This means that this process did not start in the traditional way of defining formal software requirements at the beginning of the project, of designing diagrams of use cases and how they integrate with each other, etc. They were developed along the way.

Comparing the two systems

This part of the method identifies measures used for comparing the previous proprietary system with the new open system. As introduced in Chapter 1, in the section

“Problem Statement,” this study propositions that an Open Systems paradigm for the development of building permit and inspection technologies in the State of Florida is superior to the current proprietary one.

This proposition is based on the fact that the primary difference between a closed and an open system (the cause variable in this proposition) stands with the conditions of system use. The Open System allows for four basic freedoms that are not allowed in the closed system. These are: freedom to run the system with no constraints; freedom to view the method used in its development, and to change it; freedom to share it with neighboring municipalities, or the public; and freedom to similarly share ones changes, enhancements, and contributions.

It is these freedoms that lay the ground for (a) transformative improvements in delivery of services, (b) significant cost-savings of public expenditures, and (c) a drastic increase in governmental transparency, this study argues. The following three sections present research questions for each of these three dependent variables. These questions guide the identification and measurement of the indicators that provide for a general comparison of the two systems in Alachua County.

Quality of services

Let us start with a brief background on the importance of the quality of services as it applies to planning, and to Growth Management.

The permitting processes are considered as one of the essential components of a well-developed growth management system, along with long-range planning, capital improvement projects, etc. Largely defined, growth management has six broad goals. One of them is to “provide administrative efficiency” (Nelson, 2000). As time is costly, growth management can cost developers and in return consumers, “should an inspector

hand out a ‘stop work’ order instead any number of sub-contractors and laborers may be thrown out of work, not to mention the general contractor or ancillary professional associates. To the developers, builders, contractors, and property owners, the result can be disastrous. Since the margin of profit per project is often slim and since lending institutions often compute their interest daily, delay can mean the difference between financial life and death to these entrepreneurs. A frequent complaint of the unsuccessful developer-builder is that arbitrary, unduly complicated, incompetent or outright discriminatory code administration end enforcement systems are to blame, partially, or in total, for their failure” (Schneider, 1981).

When delays caused by inefficiencies in the growth management process place uncertainties upon developers, they may raise their “risk premium” which results in higher prices, and affect the lower end of the market, which in return negatively impacts planning programs for low income housing. Administration inefficiencies may also negatively impact economic development and cause loss of opportunities to the community. An effective administrative system provides a reliable platform to help developers or home builder to make decisions about when, where, and what to build or improve. An effective administrative system also helps growth management to respond to market needs in a timely and cost effective manner. The cost of construction for the year 2009 (a very slow year) in Alachua County which was handled by this building permit was at $120 million. This is a significant impact in the local economy.

The essential differences between the two systems in relation to their quality of service can be summarized as follows.

The old system was composed of *four* modules. Of these*, two* modules had never been accepted by the users. Each module provided very limited services, had no geographic component, no web component, it was not integrated with other organizational information systems, it could only be used in the office, it could only be used by 30-40 authorized staff, it did not provide for ready access to the permitting process, and it did not provide for ready access to the historical archive of land administration records. It is not owned by Alachua County, or the public. Within thirty days notice its sustenance could be taken away from Alachua County.

The new system is composed of *eighteen* to *twenty* modules. Each module offers a significantly broader number of services than either of the old two modules. They include real time integrated mapping, have a web component, have several Web 2.0 features, are integrated with other organizational systems, provide for unlimited number of users from anywhere, provide for full and ready access to the entire permitting system, and make publicly available in real time the entire historical archive for building permits, code enforcement, etc. for the last 20-30 years in a customizable way. It is fully owned by Alachua County, and the public.

The following are a few research questions and derivate indicators tabulated in Table 3-1.

1. What new services were made possible for implementation by the introduction of the new open source system in Alachua County? Why was the prior implementation of these services not possible within the old proprietary system?
2. Has the extent of system use increased by the introduction of the new open system? If yes, in what respects (such as increase in number of users, increase in operating hours, improvement in usability, empowerment and engagement of users, etc.) has that happened?

3. How has the new open system been embraced compared to the old, by the building community, the county staff, the county management, and the public at large?
4. Has the new open system introduced a better level of efficiency? If yes, how so?

Table 3-1. Quality of service comparison indicators

Nr	Quality Service Indicator	Measure
1	Amount of services.	Bulk nr
2	Type of service – Web 2.0 (read/write).	Yes/No/Degree
3	Type of service – Geo-enablement.	Yes/No/Degree
4	Integration with other existing organizational systems.	Yes/No/Degree
5	Data quality and integrity.	Degree
6	Ability to correct, adjust, and improve.	Yes/No
7	Ability to reuse.	Yes/No
8	Extent of system use (number of users, operating hours, user engagement).	Bulk Nr

It must be noted that quality of services also includes other indicators, which are less directly measurable across systems, and which measurement exceed the purpose of this study. Such examples that were presented in more detail in the preceding sections are related to the old system's shortcomings which include the areas of *integrity in data entry, in authentication of data, and in system performance* as it relates to strict adherence with Florida Statutes.

As mentioned earlier, these shortcomings are documented in a number of sources. They include the feasibility study from The Open Planning Project, the evaluation report from Mannion Geosystems, the assessment report from the GIS Division, and numerous email exchanges between the CD-Plus administrator and its proprietor.

These shortcomings are important as they capture a deterioration in operational integrity which shows a disconnect between the stringent guidelines of the Florida Legislation that take great caution to regulate the building profession, and the permitting

process for the protection of public safety. They also raise flags about the trustworthiness of the historical archive of the building permits, an issue which is directly related to public safety. Public records must be trustworthy[1] so that justice is realized, and the past is understood. And the way this trustworthiness is ensured and protected, is through procedural controls exercised over recordkeeping (MacNeil, 2000).

The open system in Alachua County, which was built incrementally and with an active user participatory approach, has corrected these flaws.

Cost

Let us start with a brief background on cost, and its importance to the development of these systems. The Florida Legislation in its statement of intent about the administration of the Florida Building Code states that the code: "will allow effective and reasonable protection for public safety, health, and general welfare for all the people of Florida at the most reasonable cost to the consumer" and further "shall provide for flexibility to be exercised in a manner that meets minimum requirements, is affordable, does not inhibit competition, and promotes innovation and new technology."

But how is the cost to the consumer defined? In Alachua County the building permitting process is funded through an Enterprise fund[2]. The Enterprise fund is a substantial fund. In the year 2010 (a very slow year for development), it accounted for twenty nine percent of the budget of the department of the Growth Management, or for approximately $1.3 million (Alachua County Annual Report, 2010).

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[1] Record trustworthiness has two qualitative dimensions: *reliability* and *authenticity*. Reliability means that the record is capable of standing for the facts to which it attests, while authenticity means that the record is what it claims to be (NacNeil, 2000).

[2] Enterprise funds, Alachua County, Florida, http://www.alachuaclerk.org/forms/enterprise.pdf.

Unlike other types of funds, such as the funds that come from property taxes (i.e. General fund), the Enterprise fund is generated directly by services that are provided by the county to the public. These services include issuance of licenses, permits, fines, and other fees. While the Florida Legislature regulates uses of this fund and sets some of the base fees, other fees to the public are set by county ordinance and can be changed at any time[3]. It seems, from readily available documentation, that there is currently no required audit for the Enterprise fund. The audit would provide for inquiry on how and where these funds are spent. It also seems, from readily available documentation, that a proposal[4] was made through the Alachua County Charter Amendment Commission in 2009 to allow citizens to understand how and where their fees are spent.

These facts and numbers show that savings in the management of building information systems could contribute towards lowering the county fees charged to the public (fees for a service are calculated based on resources needed to provide the service), or could create the conditions for implementing new services and programs, that would bring qualitative improvements to overall Growth Management operations. Therefore, as per Florida's Legislature stated intent, savings in the development of building systems can lower and can make more affordable to the consumer the cost of securing public safety.

The following are research questions related to cost comparison, and indicators derived from them as shown in Table 3-2.

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[3] Building permit fees, Alachua County, Florida, http://growth-management.alachuacounty.us/formsdocs/BLD_Fees_i.pdf

[4] Yearly audit of enterprise fund, Alachua County, Florida, http://govconnect.alachuacounty.us/crc/Proposals/CRC-09-15.pdf

1. What is the total cost of ownership (TCO[5]) to Alachua County for the purchase and the operation of the old proprietary system during the years 2000 - 2008?
2. What is the general TCO to Alachua County for the purchase and the operation of the new system for the same product life cycle?
3. Was there a cost saving with the open system, and can it be quantified?
4. Can future cost saving for Alachua County be identified and quantified, in the hypothetical scenario that an open model is adopted statewide?

Table 3-2. Cost comparison indicators

Nr	Cost Indicator	Measure
1	Upfront cost of system acquisition and license.	$
2	Cost for yearly maintenance and service.	$/Year
3	Cost for ad-hoc services not included in yearly agreement.	$/Year
4	Cost of dedicated system administrative staff.	$/Year
5	TCO for life cycle.	$
6	Cost per user.	$/Year
7	Cost per permit.	$/Permit
8	Cost gain from quality of service increase (efficiency).	$/Year (FTE)

It must be noted that true cost encompasses other indicators which are less directly measurable, and which were not considered in this study.

One such example would be a replacement cost indicator. As shown in Appendix I, the contract agreement between Alachua County and its vendor, states that either party can terminate the contract within 30 days of written notice to the other. So, if something happens to this vendor Alachua County is left with no system, as opposed to the Open System which remains with Alachua County in perpetuity.

An important related issue to this indicator is the data. In the Contract Agreement[6] between the county and the vendor, data ownership is separate from

[5] TCO includes cost of acquisition and license payments, cost for yearly maintenance and service, cost for one time services, and cost of dedicated staff that is indispensable for sustaining a closed system.

[6] **4.1 Ownership.** As between County and Consultant, except as set forth below in this Section 4, all right title and interest, including trademarks, copyright interests, and other forms of intellectual property, in and to the programming and materials produced or provided by Consultant, alone or in combination with

software ownership. In the eventuality of a contract termination, the agreement provides for the software to remain with the vendor, and for the data to remain with the county. But what value does raw data by itself have without the appropriate software interface that allows entry, viewing, querying, understanding, report making, and manipulation of it? It is the software that translates its coded values into meaningful information that anyone can understand. This becomes more important especially in an intense operational process such as the building and development permitting, where several transactions happen concurrently every few minutes by a number of people[7]. The ownership of the data is rather symbolic, and it does not have much practical value. While owning the data may have some strategic value, in reality it represents little value without the software interface that was used to create it. To replace the software interface, an investment of substantial cost and time from the local government would be indispensible. This would include the time to budget, to seek out another product and another vendor, to undergo a Request for Proposal process, to wait for product completion and customization, and to undergo the process of implementation, user training and acceptance, while separately starting the process of migration of the old database into the new. Typically in local governments this process takes at the very

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County and/or its employees (collectively, the "Software") in the performance of the service called for in this Agreement shall be the property of the Consultant. County agrees that, except as otherwise provided in Section 4.3 hereof, and contribution by County or its employees to the creation of the Software, including all copyright interests therein, shall be considered works made for hire by County for Consultant and that, except as otherwise provided in Section 4.2 hereof, such works shall, upon their creation, be owned exclusively by Consultant.

4.3 County Data. All right, title, and interest in and to any data relating to County's business are and shall remain the property of County, whether or not supplied to Consultant."

[7] In the year 2010 (a slow development year), 4,251 permits and 11,076 inspections were issued. Several transactions by several people are needed for each of them.

least 2 to 3 years. Thus a termination of the contract from the vendor not only would be paralyzing to the operations of the building and development department, but it would also trigger a costly replacement.

Transparency

Let us start by emphasizing that the words *transparent* and *open* will be used interchangeably in this context.

The positive impact of open and interoperable systems has already been recognized and has been widely tested. The Open Geospatial Consortium (OGC), a global standard setting forum which promotes openness and interoperability, provides ample research, and case studies on this topic.

Open systems and open standards are increasingly becoming important especially as the society is rapidly changing. The “rise of participatory networks” which has become a defining hallmark of our “exhilarating age,” is rapidly migrating user generated content from the fringe to the mainstream (Howe, 2009). This new model of user-generated information plays especially an increasing role in emergency and disaster management, which is an area directly related to building permits and inspections. The PeacebuildingData group, a program established between UC Berkley and Harvard University that develops applications for on the ground humanitarian crisis management is known for having created a number of successful open systems in support of ground emergencies.

If an information technology system is based on open systems, the likelihood for making it interoperable with other systems increases exponentially. Therefore if we considered transparency interchangeably with openness, and defined it as a way to

freely access and integrate with the software, we can safely argue that the Alachua County open system is superior to the closed one from the transparency perspective.

But that is one side of transparency. Transparency can also be defined as transparency of content, or the ability to have ready access to information at the very time when one needs it. This other side of transparency relates more to data rather than to technology (software and databases).

Transparency of content, which includes transparency of operations, is defined as the ability to access the entire system from anywhere, at any time, and from everyone. This is what the open system implemented in Alachua County provides. This transparent system can also help with accountability, which can be defined in three types: *administrative or customer service accountability* (for example response time by support staff), *professional accountability* (for example accuracy, authenticity, and appropriateness of interpreting the code by the certified staff), and *political accountability* (for example favoring an entity, or bowing to political pressure).

But let us expand on the components of the operational transparency from the perspective of whom it benefits. Operational transparency is about transparency in the content of the information (what), about transparency in the sequence of the operations (when), about transparency in revealing the staff responsible for the specific task (who), and about transparency in revealing location of development and/or inspection staff in the field (where).

And who are its beneficiaries?

- The building inspectors and their management, who can follow live on each other's comments and view each other's input, who can dispatch and coordinate the entire process by location, and who can dynamically change their work according to need.

- The building industry for which time is big money, and which now can follow live on each of the steps of the process and prepare or change plans accordingly but which at the same time is also a participant in that process by entering its own input when needed (such as scheduling an inspection).
- The publishers and analysts of building and construction data and the real estate profession that follow closely on the pace and types of development, or the economists and the researchers who seek to understand the community.
- The public at large can also monitor and observe the process, and this notion alone, if not its application, raises the bar of responsibility and accountability for this highly regulated and often disputed process.

In addition, the ability to have real time access to structural information (i.e. permitting administrative records) for building inspectors, volunteers, and decision makers during emergency response times is also very important. Accurate information about pre-disaster conditions on the ground is indispensible for proper decision making during post-disaster operations. One example could be the need to identify where mobile homes of a certain age or substandard structures of a certain age are located when preparing for a natural emergency. The local government building department is the legal custodian of this type of information.

And there is yet another group for whom this transparency matters significantly. The planners. The minute by minute transactions related to building construction, which at the end of the process conclude with the issue of a certificate of occupancy (CO) for the dwelling, incrementally create a data historical archive in the community. Day by day these transactions are collecting valuable primary data. These data are needed by the planners in order to be able to evaluate and appraise past plans, and to formulate new ones.

Examples could include the need to identify where the septic tanks of a certain age are located in a community, or where solar panel permits have been issued, and so on.

The following are a few research questions and derivate indicators about the transparency variable shown in Table 3-3.

1. OPEN DECISION MAKING. Did the replacement of the proprietary system with the open system increase the level of transparency of the building and inspection operations in Alachua County?

2. OPEN ACCESS TO PUBLIC DATA. Did the replacement of the proprietary system with the open system increase the level of transparency of the historical archive of land administration records in Alachua County?

3. OPEN ACCESS TO PUBLICLY OWNED SYSTEM. Did the replacement of the proprietary system with the open system bring a benefit to the public and to organizational resources?

4. ORGANIZATIONAL RESOURCES. Does increase in the level of transparency increase organizational efficiency?

Table 3-3. Transparency comparison indicators

Nr	Transparency Comparison Indicator	Measure
1	Transparency of operations for the building industry.	Yes/No/Degree
2	Transparency of operations for the public at large.	Yes/No/Degree
3	Transparency of operations for the organization's management.	Yes/No/Degree
4	Transparency of operations for permitting staff.	Yes/No/Degree
5	Transparency of operations for planners.	Yes/No/Degree
6	Transparency of the data as a public record.	Yes/No/Degree
7	Openness of the system as an inter-operable product.	Yes/No/Degree
8	Transparency as availability of use and re-use, and as a public asset.	Yes/No/Degree

It is important to note that in indicator 8, we capture the issue of ownership and copyright of the system (software and database). One of the most important aspects of transparency, or openness of the product (software and database) in a governmental setting, is also the issue of its copyright and license. The Alachua County open system is fully owned by the public, it is not copyrighted, and therefore it is not licensed. It is a

product in the public domain. According to the Florida public record law (Chapter 119, F.S.), “Every person who has custody of a public record must allow the record to be inspected and examined by any person,” and “The custodian must furnish a copy of the record…” The statute goes on to define “data processing software” as a “public record,” and to also explain the exceptions to this process, which include licensed data and software, as is the case with the proprietary system in Alachua County.

Florida Local Governments

As previously discussed in the section titled “Research Design,” a geospatial database was developed for the second unit of analysis with data from a stratified representative sample of local governments in the State of Florida. It must be noted that this study uses the term “local government” in the context of counties and municipalities only, excluding for obvious reasons, School Districts or Special Districts.

The data used to build this database was collected with the purpose of understanding the pattern of development, or acquisition (the cause variable), of the building permit and inspection computational technologies by local governments in the state of Florida. Understanding this pattern of development will help answer the following research questions: What is the extent of use of the proprietary systems by local governments for building permit and inspections? What is the range and distribution pattern of these proprietary systems across local governments? What is the scale of parallel acquisitions from the same vendor by local governments?

For the process of sampling, it was deemed necessary to ensure a balance of local government representation from three perspectives: the *type of government* (county vs. municipality), its *population size,* and its *population density* (urban vs. rural).

Population distribution in Florida

For a better understanding of the state of Florida from these three perspectives, Census 2010 Data was synthesized in a geographic information system. There are 478 local governments in the state of Florida. Of these, 67 are counties, and 411 are municipalities. County population varies from 2,496,435 in Miami-Dade County, to 8,365 in Liberty County (US Census 2010). A general overview of the distribution of the population by political jurisdiction is provided in the following maps. Figure 3-8 categorizes Florida counties by population size in three major groups, and Figure 3-9 categorizes Florida counties by population density in two major groups.

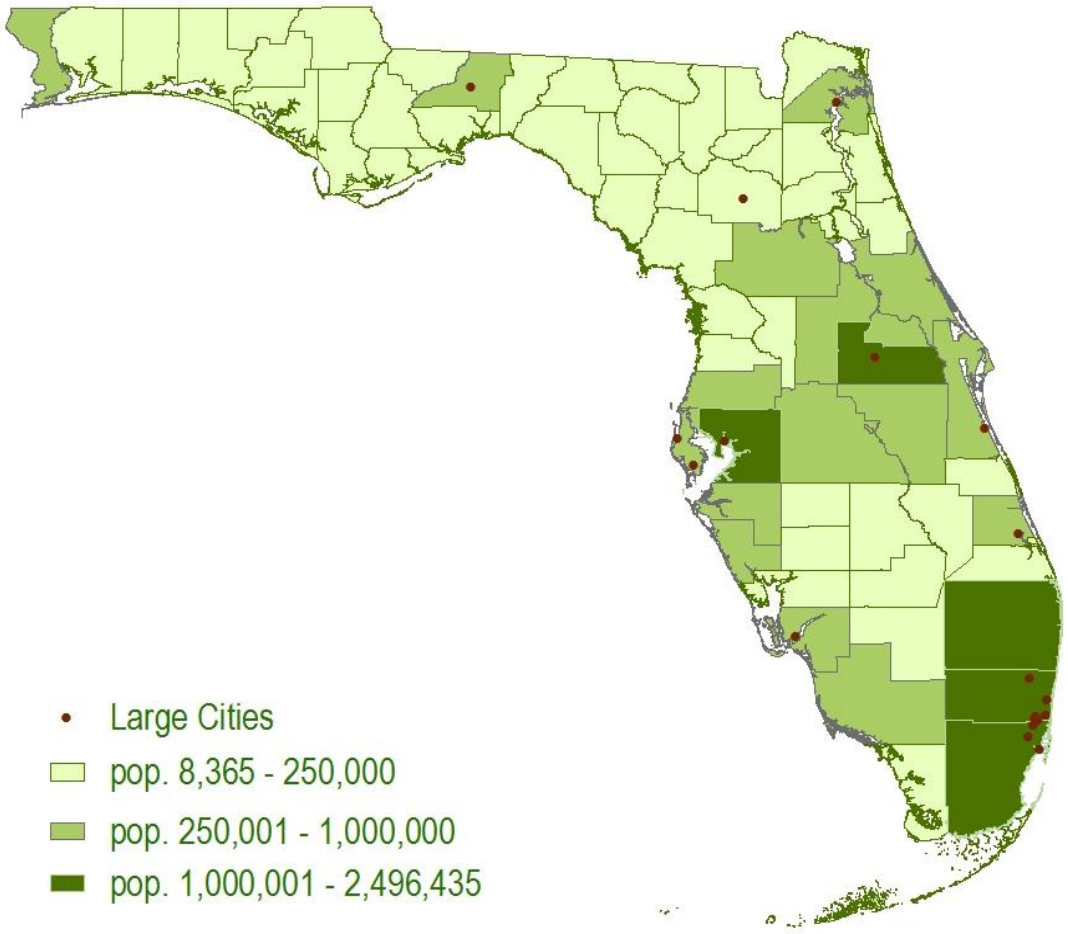

Figure 3-8. Florida counties by population size.

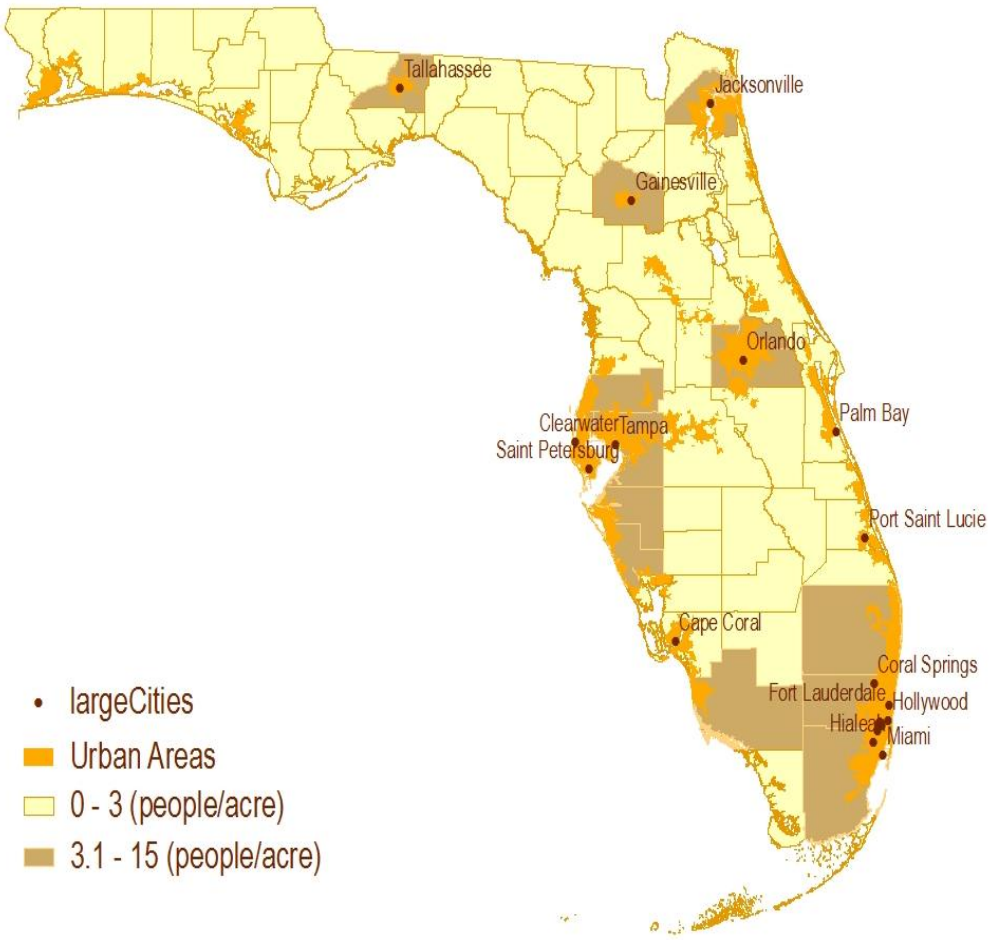

Figure 3-9. Florida counties by population density.

Of the 411 municipalities in the state of Florida, eighteen have a population of more than 100,000 and are considered large cities (United States Census Bureau, 2009). Together, these large cities represent approximately 20 percent of the state's population. These eighteen cities are: Jacksonville, Miami, Tampa, St. Petersburg, Orlando, Hialeah, Tallahassee, Fort Lauderdale, Port Saint Lucie, Pembroke Pines, Cape Coral, Hollywood, Gainesville, Miramar, Coral Springs, Clearwater, Miami Gardens, and Palm Bay. Figure 3-10 below, shows their location.

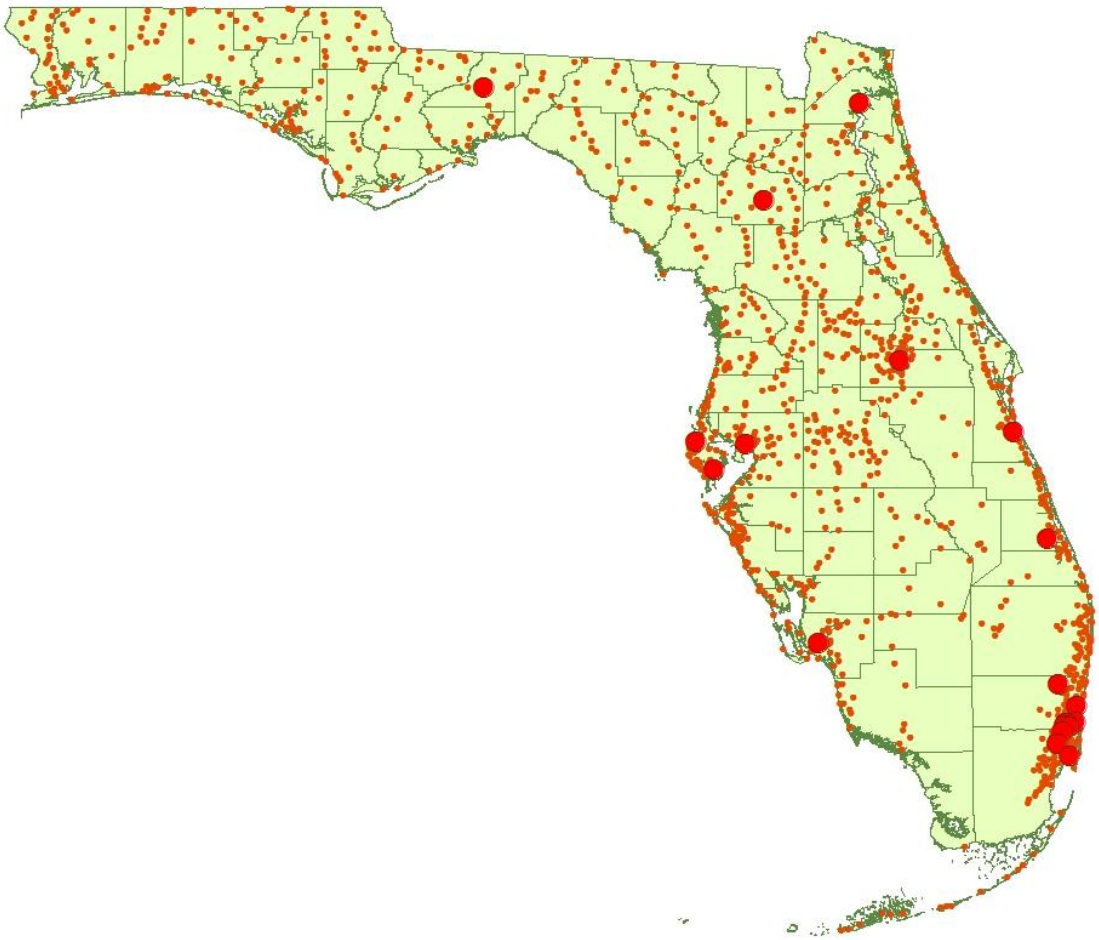

Figure 3-10. Florida counties, cities, and large cities.

The goal was to create a probabilistic stratified sample for representing these local governments as a “method for obtaining a greater degree of representativeness (Babbie, 1998).” The intention was to maximize the variation in the degree of the cause variable that is the pattern in building permit technology development (or acquisition) in these local governments.

Local governments with Alachua County’s closed system

To support the decision of the sample selection, it was also considered to be of importance the identification of other counties and municipalities in Florida that are

using the same closed computational building permit technology as the one that was in use in Alachua County. As this information could not be found in the web site of the vendor of the product, this data was collected by searching through Florida local government web sites and documents, and by cross referencing the results with public documents collected for the Alachua County case study.

As shown in Table 3-4 below, the results indicate that the Alachua County proprietary system vendor provides for seven counties and nine cities in Florida.

Table 3-4. Florida local governments with the same closed system as Alachua County

Seven Counties	Alachua, Charlotte, Flagler, Indian River, Lake, Marion, Monroe
Nine Cities	Clermont, Doral, Holmes Beach, Largo, Medley, Mount Dora, Oakland Park, Palm Coast, Parkland

This data was then entered into a geospatial database. The resulting map shows that most of the towns and cities that are using the same closed product from the same vendor as the Alachua County are spread throughout Florida. As shown in Figure 3-11 below, two cities (Clermont, and Mount Dora) located in Lake County have acquired the same system as Lake County; one city (Palm Coast) located in Flagler County has acquired the same system as Flagler County; two cities (Oakland Park, and Parkland) are located in the same county (Broward), and two cities (Doral, and Medley) are also located in the same county (Miami-Dade).

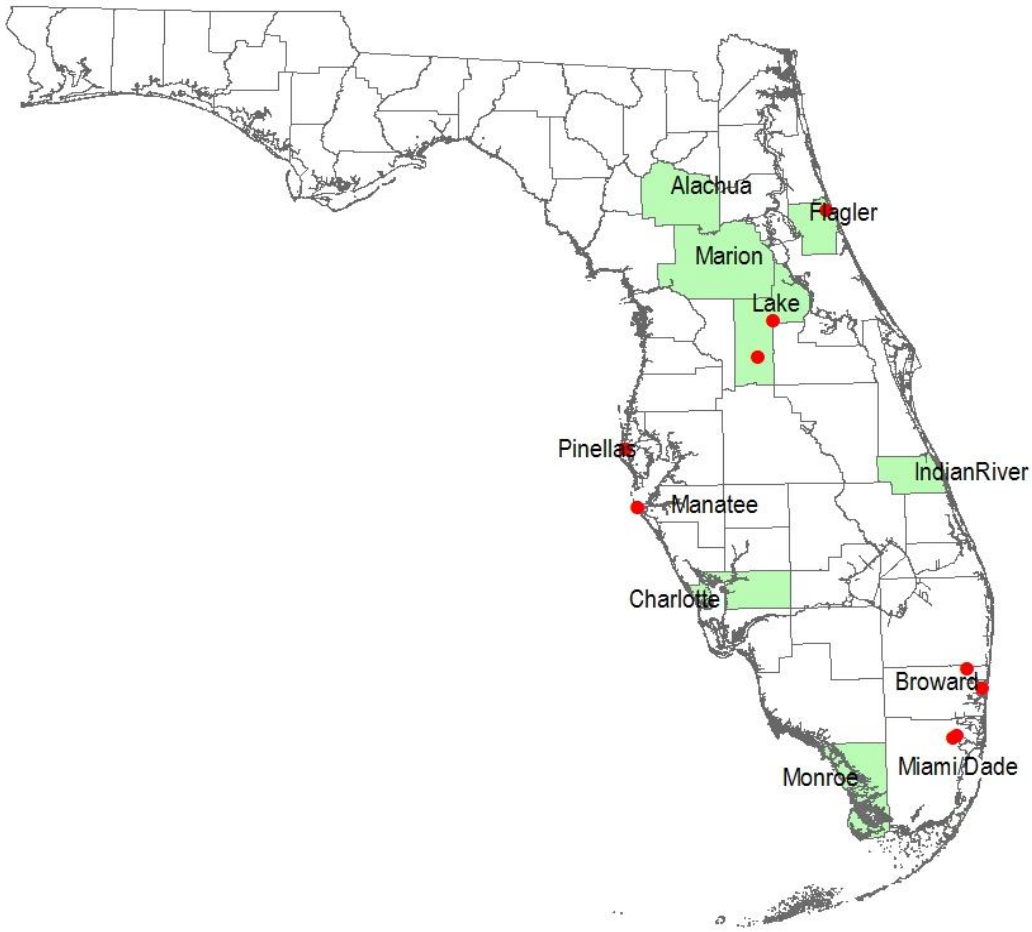

Figure 3-11. Florida local governments with the same closed system as Alachua County.

Results of an inquiry into the population size of these nine cities are shown in Table 3-5 below. The inquiry reveals that none of these cities is a large city. Their population fluctuates between 1,500 in Medley, to 72,000 in Largo.

Table 3-5. Population of cities with the same closed system as Alachua County.

Clermont (10,00), Doral (40,000), Holmes Beach (5,000), Largo (72,000), Medley (1,500), Mount Dora (12,000), Oakland Park (45,000), Palm Coast (50,000), Parkland (25,000)

Figure 3-12 below, shows the location of these cities in relation to large cities, and to rural and urban counties in Florida.

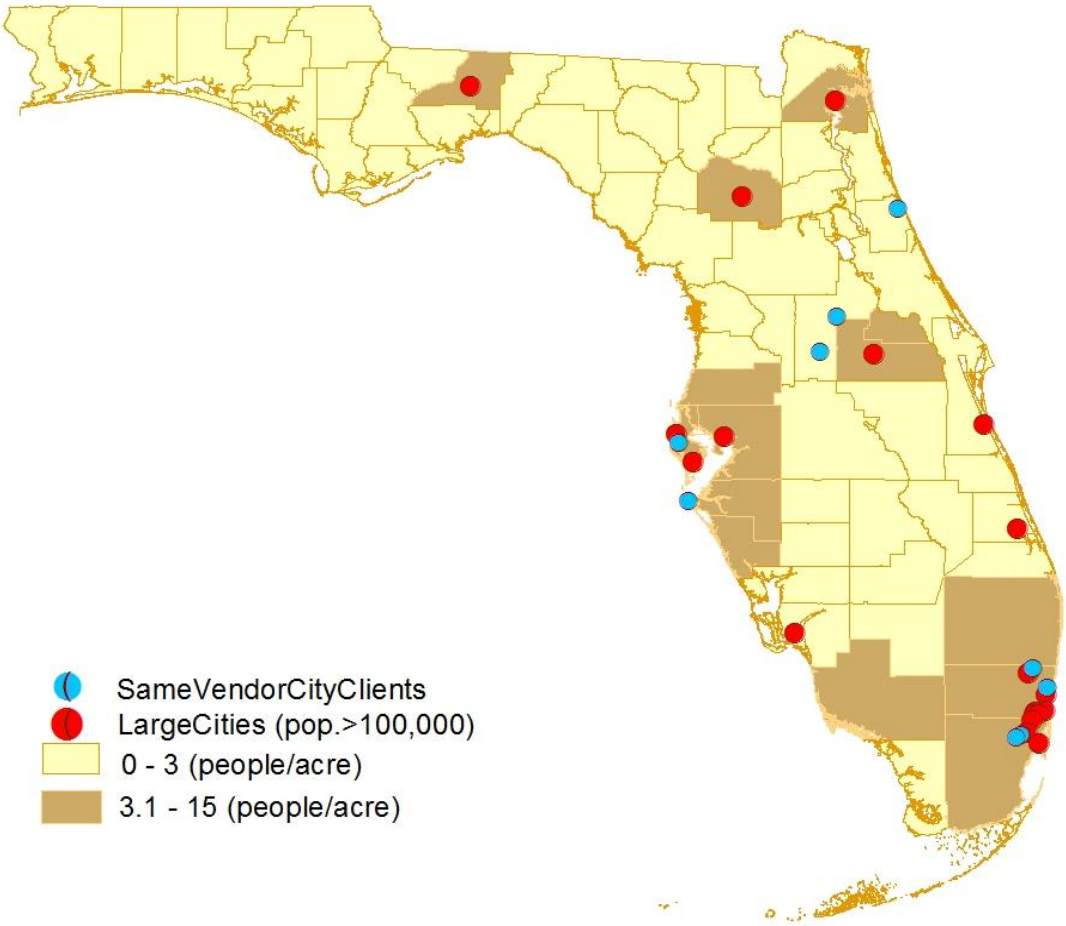

Figure 3-12. Florida counties by population density, large cities, and cities with the same closed system as Alachua County.

Another similar inquiry was made into the population size, and population density of the seven counties, overlaid with Florida's population distribution and density as shown in Figure 3-13, and in Figure 3-14 below. These overlays reveal that the seven counties with a similar proprietary product as Alachua County are counties with a rural character.

In sum, we have identified a fair representation of rural counties, and of small cities in Florida whose pattern of development (acquisition) of building permit technologies we know. These seven rural counties, and these nine small to medium

cities, use a closed and proprietary system for their building permit computational technologies that more or less has the same characteristics of quality of service, cost, and transparency as the one previously used in Alachua County.

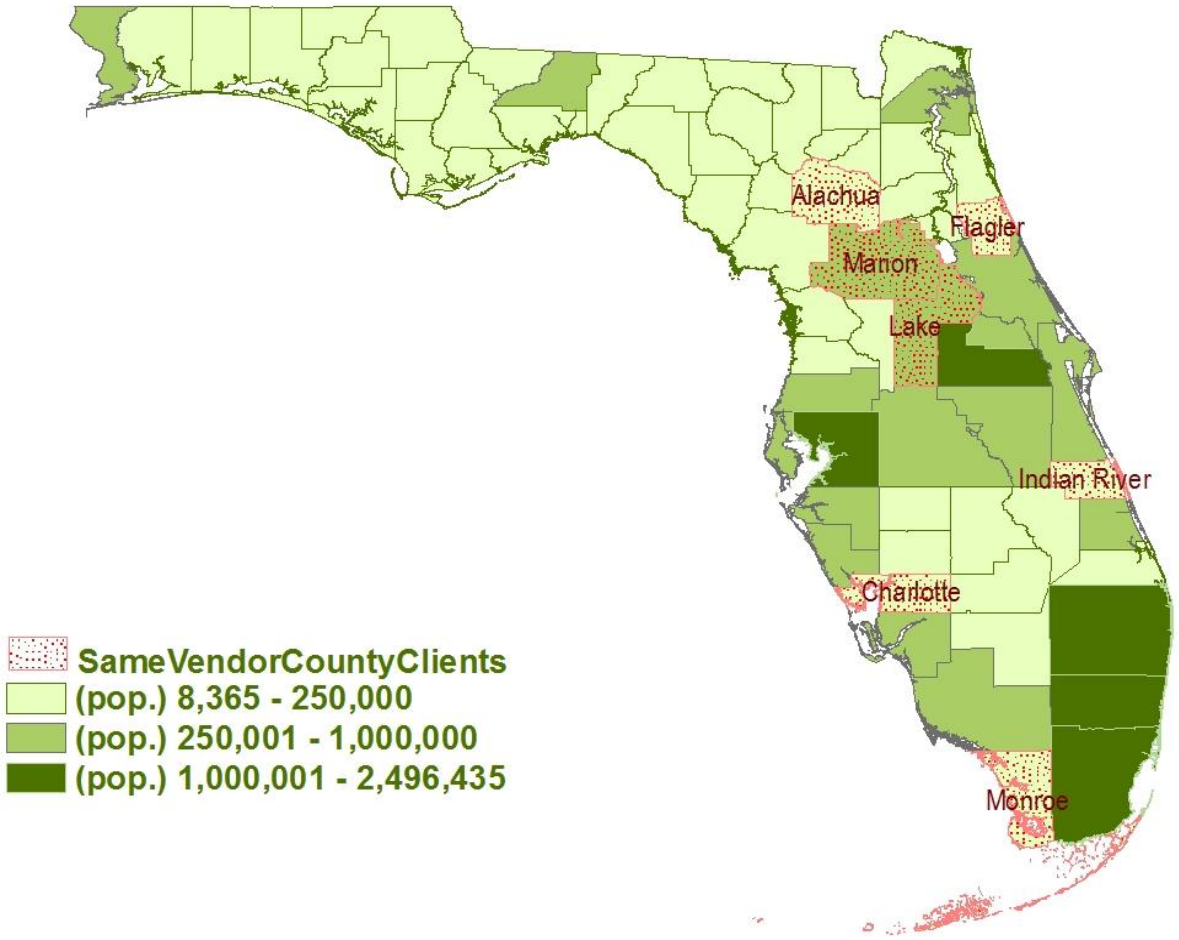

Figure 3-13. Florida counties by population size overlaid with counties with the same closed system as Alachua County.

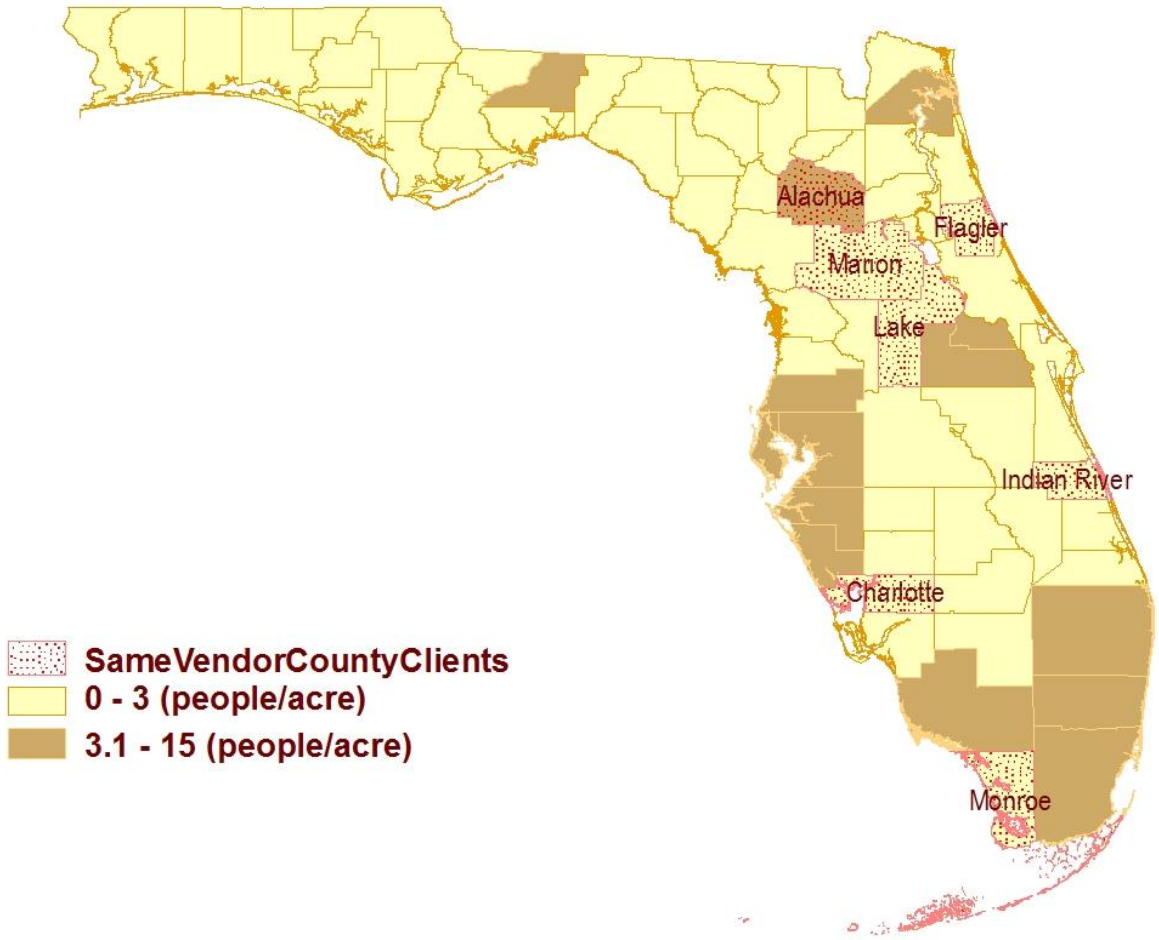

Figure 3-14. Florida counties by population density overlaid with counties with the same closed system as Alachua County.

Sample of other local governments

Based on these findings, in order to ensure a good cross-section representation of governments by their *type*, *size,* and *urbanization* level, and a balanced geographic distribution across the state, three additional counties with urban character, and three large cities were selected as a sample. The three counties are: Hillsborough, Leon, and Orange. The three cities are: Tampa, Tallahassee, and Orlando. Figure 3-15 below, shows their location.

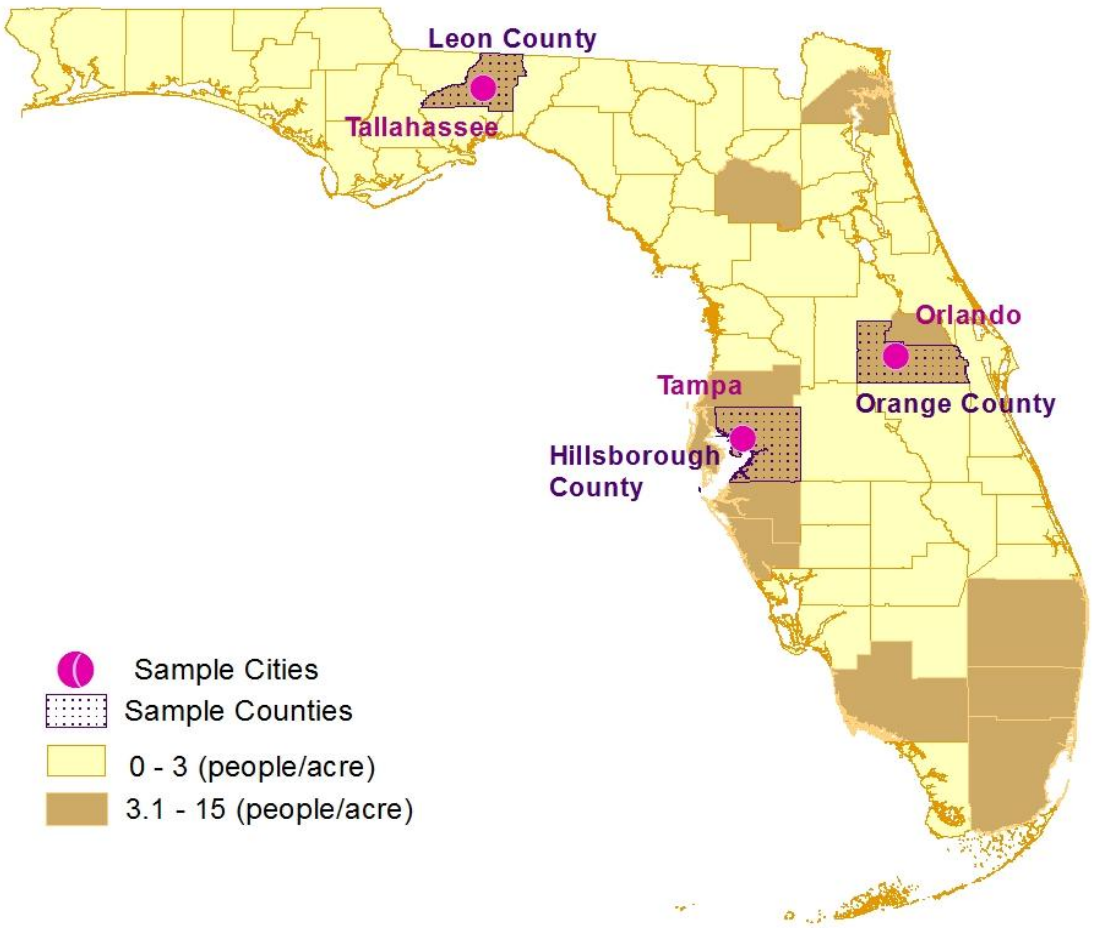

Figure 3-15. Florida counties by population density overlaid with the three counties and the three cities in our sample.

As it can be seen in Figure 3-16 below, our sample of three urban counties, and three large cities, will complement the seven counties and the nine cities whose pattern of acquisition we already know. The combination of the two groups, gives us a good representation of local governments in the state of Florida.

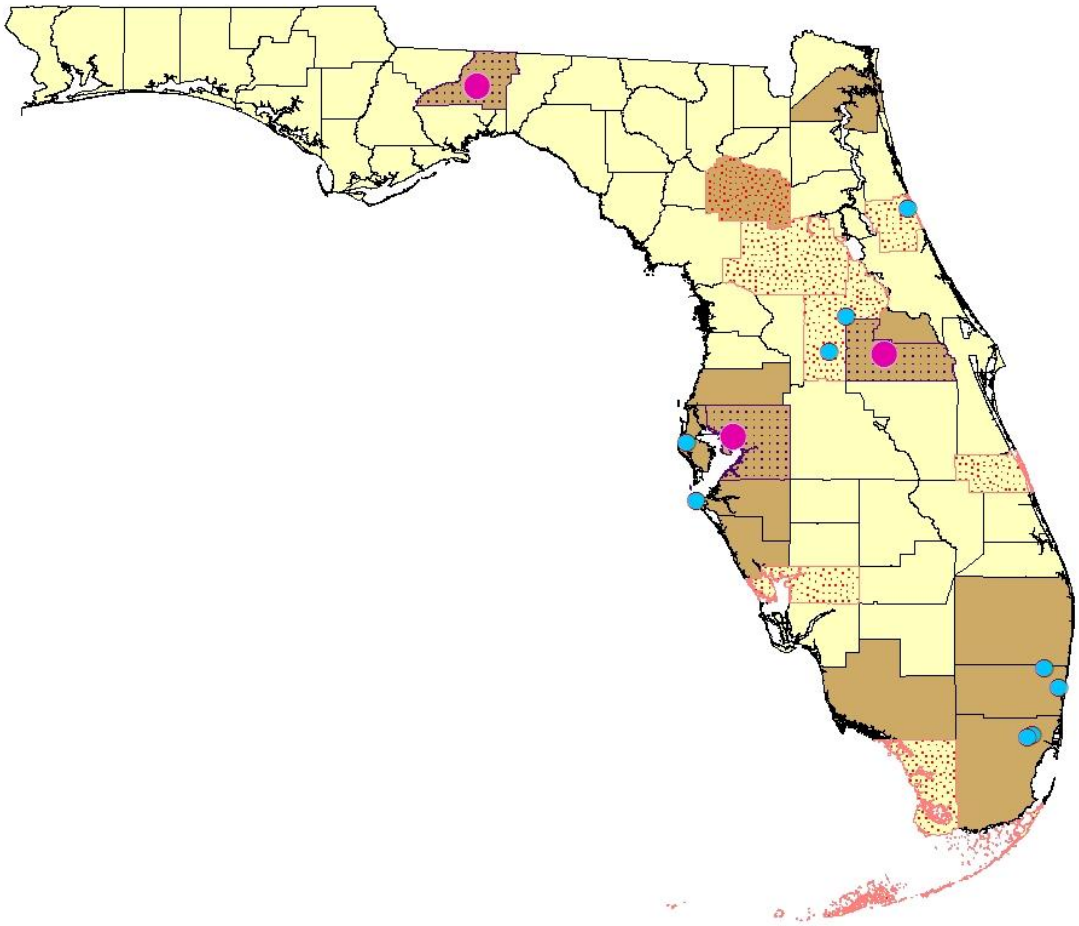

Figure 3-16. Florida counties by population density overlaid with counties and cities with the same closed system as Alachua County, and with the three counties and the three cities in our sample.

For this sample of six local governments fourteen dependent variables were collected from various public data and sources and from telephone inquiries when it was necessary. Table 3-6 shows the fourteen variables and their unit of measurement.

Table 3-6. Florida local government variables and units of measurement

Nr	Variable	Unit of Measurement
1	Population served by the local government.	Total Persons
2	Per capita annual revenue of the local government.[8]	Dollars
3	Per capita annual expenditure of the local government.	Dollars
4	Existence of a computerized system for building permits activities.	Yes/No
5	Manner of development of the computerized system.	Open/Closed/Mixed
6	Manner of acquisition of the computerized system.	In house/Purchased/Mix
7	Provider of the computerized system.	Name of vendor
8	Purchase cost of the computerized system.	Dollars
9	Annual operating costs of the computerized system.	Dollars
10	Number of licenses for staff users.	Number of users/Unlimited
11	Online data entry for staff.	Yes/No
12	Online accessibility for users.	Yes/No
13	Web 2.0 features.	Yes/No/Somehow
14	Geo-enablement.	Yes/No/Somehow

Summary

In this chapter, we have presented the framework for the current research. Seeking to attest its theses that an open system is better than a closed one in the context of building permitting activities of local governments in the state of Florida, this research compares these two systems by exploring three main variables: quality of services, cost, and transparency. It also surveys the nature of the current pattern of development (open vs. closed) of building permit computational technologies in local governments throughout Florida.

In the first unit of analysis (Alachua County), an understanding of each of the systems was first established, followed by an exploration of the three variables as they relate to each of the two corresponding systems in use: the closed system, and the

[8] Revenue or expenditure per capita is used for a comparative contextual reference only. Caution is used in its interpretation when comparing cities with counties, as they each provide different services.

open system. For each of these variables, their broad definition was first established, related research questions were built, and consequent indicators and measures were identified.

In the second unit of analysis (State of Florida), an understanding of the level of urbanization across local governments was first established. This was followed by the development of a geospatial database that contains local governments with the same system as the proprietary one in Alachua County, and by the development of a geospatial database that contains the sample of other local governments to be surveyed. It ends with the identification of corresponding indicators and measures to be used in the sample.

CHAPTER 4
RESULTS

We're moving even more visibly and more tangibly into a real, tangible, human organization. We modify techniques. We use them. We share them. We decentralize them.

--Chris Hedges, in *"A Master Class in Occupation."*

This chapter presents a summary of findings and results. It is composed of two sections, one for each unit of analysis. In the first section, summaries of findings from Alachua County's comparison between the open and the closed system are presented. In the second section, findings and results about the development pattern of permitting technology in local governments of Florida are provided.

Alachua County

As explained in previous chapters, this study argues that an Open Systems paradigm for the development of building permit and inspection technologies in the State of Florida is superior to the current proprietary one from at the least three perspectives: (a) quality of service, (b) cost of public expenditure, and (c) governmental transparency.

Summary descriptions were provided for the proprietary, and the open systems in Alachua County, in Chapter 3, in the section "Alachua County Government." These descriptions were followed by expanded definitions of each of the three perspectives that are being considered: *service*, *cost*, and *transparency*; and by research questions and related indicators that were developed with the goal of creating a general frame by which to investigate and compare the two systems. Further summarized findings organized by each variable are presented below. It should be noted that often indicators

may fall under more than one variable. For example, an efficiency indicator can fall either under quality of service, or under cost.

Quality of Service. As detailed in Chapter 3, the research questions that guided the investigation of this variable were about: (a) new services in the new system which did not exist in the old, (b) expansion of use in the new system from the perspective of number of users, hours, etc., (c) system acceptance and utilization by various actor groups such as builders, public, etc., and (d) levels of efficiency in operations. Eight indicators were identified such as: *amount of services, web 2.0 services, geo-enabled services, integration with existing information systems, data quality and integrity, ability to change, ability to reuse and share,* and *extent of system use by hours and users*.

As demonstrated by the summary description of these two systems in the previous chapter, in the section “Comparing the two systems,” results show that these eight indicators could barely capture the disproportional difference in quality of service between the two systems. The new system has literally transformed how staff, builders, planners, and the public daily engage in the permitting activities. An account of this transformation is provided in documents included in Appendices E, H, J, K, and L, written by the two Building Officials (one retired), the Assistant Building Official, and representatives of the local building community.

In these accounts they report about the difference in quality of services between the two systems, emphasizing the superiority of the new and its transformative impact on the permitting operations. For example, a local builder (Appendix E) states: “*It is a wonderful system. It gives us 24-hour access to the information where in the past, with only the phone system, we could call in 24 hours but half the time it wasn't working and*

we had no real-time information on whether it actually went through," or the Assistant Building Official (Appendix L) states: "*The permit tracker software is now our primary operating system. Building inspectors and code officers have accepted it with enthusiasm largely because they were allowed to participate in its development*," or the Building Official (Appendix K) states: "*With the addition of the Building Permit Tracker on their laptops, Building Inspectors and Code Officers have the ability to thoroughly document and schedule inspections and make any necessary changes from the office, field, or home. This has been a cost and time savings not only for travel, but with increased efficiency in field inspections. The use of the GeoMapper and the ability to view multiple reports are added tools for inspectors, as well as the public."*

In addition, the national recognitions awarded to various modules of the new system by well reputed local government programs and associations (Appendix E), are a testimony to its quality of service in the context of contemporary United States local government technology standards.

In technical terms, the web usage of the suite of the new applications shows 900 to 1,000 transactions per day in the year 2009. A transaction defined as a user scheduling from home a building inspection for the following day, or a user filing a code violation complaint, or a developer making a preliminary estimate of her Impact Fees, or staff registering a Green Building into our GIS database, etc. All field employees for the first time started using iPhones, laptops and printers in their vehicles. Two divisions, which account for 30 percent of the Growth Management department, started working remotely, communicating with each other, their supervisors, and customers via the web. As these applications included sub-modules for remote supervisory dispatching and

field monitoring connected live to location on a map, the Building Official and the Code Supervisor minimized their travel time. The implementation of these projects, also improved performance in six other departments in the county that were part of the permitting process.

From a quantity perspective the proprietary system was composed of four modules (two never accepted), each with very limited services and with no geographic intelligence. Some of its services, such as the vastly used report making, were only available for one or two specialized and authorized individuals, and depended on other proprietary software. The new system is composed of 18 to 20 modules, each offering a significantly broader number of services than each of the four modules above, and include real time mapping. No specialization is needed for its use, as all design is simple and services are open.

From the extent of system use perspective, while the proprietary system was serving 35 to 40 licensed users, in the office only, five days per week from 8 am – 5 pm; the new system served in the year 2009 close to 1,000 transactions per day, with lower numbers on weekends, twenty four hours per day, which statistics translate into 300 to 400 unique users per day.

While the proprietary system was used by one user group only – the Alachua County licensed employees, the new one provides for use by several types of groups. Web statistics in 2009, show the following breakdown by web user groups: Alachua County users - 400 (of which 35-40 with various levels/areas of write privileges), Commercial Sector Users – 16,900 (.com), Educational Sector Users – 4,703 (.edu),

Governmental Sector Users – 900 (.gov, state, .us), Non-for-Profit Sector Users - 460 (.org), and there are a few others not identified.

The GeoWeb Building Permit Tracker (analogous to one of the two modules in use in the old system), from a functionality perspective, integrates into a geospatial web framework the field activities of the building inspectors, the activities of office staff, and the Automatic Telephone Inspections Request system. Builders, contractors, homeowners, and homebuyers can monitor the entire process of construction, from start to finish in real time. They can view the results of plan examinations, can schedule and view inspection results, identify staff assigned to their construction site, etc. For each of the last 25 years and up to the minute, anyone can create maps that are dynamically linked to the full history of building permits and inspections in Alachua County. For each of the last 25 years and up to the minute, anyone can download a rich variety of reports in XLS, PDF, HTML, or Text format for building activities, inspections, field entry results, and telephone messages.

The GeoWeb Code Enforcement Tracker (analogous to one of the two modules in use in the old system), from a functionality perspective, integrates on the web, in real time, public complaints, office activities of staff, and field activities of Code Officers. For the first time it also translates this information into interactive maps which are served on the web integrated with other public safety map layers. Concerned residents, neighborhood coalitions, homeowners, and homebuyers, the Zoning Administrator, the County's Code Enforcement Board, Code Officers, etc., can all monitor the entire process of code complaint and of code compliance from start to finish. Anyone can submit complaints for violations, can upload pictures of the violation, can track the

status of complaints and of action orders, can identify code officers assigned to a case, etc. Anyone can view, download, or create maps which are dynamically linked to the full history of code violations in Alachua County from 1995 to date. Violation Reports from 1995 to date can also be created and downloaded in XLS, PDF, HTML, or Text format.

And finally, the new system also improved on a number of issues related to data entry quality, and to data authenticity that had for long been acknowledged in the proprietary system. These issues were identified by staff over the years, and they were later verified, and articulated by formal professional assessments.

As mentioned in Chapter 3, the feasibility study conducted by The Open Planning Project in 2007, compiled a number of system quality issues in its final report to the county, after conducting an analysis of its security and workflows, and after conducting interviews with the users.

An evaluation report conducted by Mannion Geosystems in 2007, identified system shortfalls that put to risks the integrity of the permitting operations. This evaluation raised concerns with the vendor's inadequate back up practices (which allowed for a time gap of lost permitting records), and with a non-existent installation and configuration package necessary for a system recovery, or for a system migration.

An assessment conducted by the GIS Division of the Department of Growth Management in 2007, which included a user survey, reports routine system errors, or malfunctions which additionally compromised the integrity of the system. Examples were: (a) the system not recognizing automatically that a permit had expired, or (b) not recognizing automatically that the license of a contractor had expired, or (c) that the insurance of a contractor had expired, or (d) that a code violation record number was

identical to a permit number, and so on. In Appendix N, an email exchange snapshot between the proprietary system administrator and its vendor shows a few of these issues. A reference to them can also be seen in the system evaluation provided by the Building Official (Appendix J): "*The records were not on line and a new canned system had a large price tag. It also would not allow the staff to provide input to personalize the system for our particular use and would not have provided the daily technical assistance without more cost."* or *"This streamlined the process by avoiding time consuming telephone calls for the building department staff as they had to record other department's results in the old system."*

Cost. As shown in Chapter 3, the research questions that guided the investigation of this variable were about: (a) the Total Cost of Ownership (TCO) for the old system for the time frame 2000 – 2008, (b) the TCO for the new system for the same time frame, (c) the identification of any cost savings from the implementation of the open system, and (d) the investigation of future cost losses or saving.

Eight indicators were developed. They included: *upfront cost of system acquisition and of system license, cost for yearly maintenance, cost for ad-hoc services outside of the yearly maintenance, cost of dedicated administrative staff, TCO, cost per user, cost per permit,* and *cost gain from quality of service increase (efficiency).*

The summarized indicators for each of the two systems are provided below in Tables 4-1, and 4-2. Clarifications, limitations, and assumptions that were made when compiling the tabulated summaries, follow each table.

Table 4-1. Indicator results for the proprietary system cost (2000-2008)

Nr	Cost Indicator	Measure
1	Upfront cost of system acquisition and license – three *upgrades only.*	$185,000
2	Cost for yearly maintenance and service.	$18,000/Year
3	Cost for ad-hoc services not included in yearly agreement.	$17,500/Year
4	Cost of dedicated system administrative staff.	$60,000/Year
5	TCO for life cycle.	$949,000
6	Cost per user (35-40 users).	$3,162/Year
7	Cost per permit (4,081 permits in 2008).	$29/Permit

- In *indicator 1*, information about the upfront cost of system acquisition dates back to 1995 and it cannot be found. Therefore, the acquisition cost was not included. Only the three upgrades that occurred between 2000 and 2008 were included.

- In *indicator 2*, the fee for the year 2008 was considered (Appendix O), although that cost has fluctuated over year, by $1,000 to $2,000. It is important to note that this cost is not refundable, it cannot be rolled over from year to year (Appendix I), and estimates for the maintenance work conducted under this cost, were opaque to the county.

- In *indicator 3*, one hundred hours of additional services were assumed. This is a conservative assumption, given that changes to building codes, building permit fees, and to Florida statutes happen every year. The vendor's rate is $175 per hour, and the Maintenance Agreement includes the vendor's rights to increase this rate at 60 days notice.

- In *indicator 4*, the operational budget for the full time salaried Program Analyst whose job functions were exclusively constrained to the administration of CD-Plus, is included.

- In *indicator 5*, only the cost of upgrades from indicator 1 is included, although the Total Cost of Ownership (TCO) should also include the cost of acquisition, in addition to the cost for upgrade and license payments, yearly maintenance and service, and dedicated staff.

- In *indicators 6* and *7*, we simply divide the yearly TCO for the number of licensed users, or the number of permits issued in one year

Table 4-2. Indicator results for the open system cost (2000-2008)

Nr	Cost Indicator	Measure
1	Upfront cost – *one time only*.	$19,000
2	Cost for yearly maintenance and service.	$0
3	Cost for ad-hoc services not included in yearly agreement.	$0
4	Cost of dedicated system administrative staff.	$0
5	TCO for life cycle.	$19,000
6	Cost per user (350-400 users).	$6
7	Cost per permit (4,081 permits in 2008).	$0
8	Cost gain from quality of service increase (efficiency).	$65,000/Year (1 FTE)

- In *indicator 1*, the cost that was contracted out for a portion of the GeoWeb Impact Fee module, is included, although such a module did not exist in the proprietary system.

- In *indicators 3, 4,* and *5*, the value $0 is entered as there were no longer dedicated costs for these functions. But note must be taken that these functions were absorbed by existing operations due to the entire redesign of the organizational information systems, based on openness and integration.

- In *indicator 8*, we use the Alachua County effectiveness measure which was calculated by the Alachua County, Office of Management and Budget (OMB). In compliance with its financial policies, Alachua County annually publishes Performance Measures for its programs as part of its budget document (Appendix P). In the year 2008, OMB assessed that the migration from the old system to the new brought about an effectiveness level that equates to 1 FTE (Appendix O). This was mostly due to streamlining, openness, and automations in internal organizational operations for the dispatching process in the building department. The number represents the operational budget for an entry level, full time salaried building inspector.

Results from these tabulated summaries reveal that the implementation of the Open System building and permitting suite of applications, not only did not require any additional investments, not only it lowered the cost per user and the cost per permit drastically, but in fact it even originated very significant, and annual recurring cost-savings. The proprietary system which had been in place in its current form for seven to eight years, served between 30 to 40 authorized users at a tiny fraction of the services,

and of the number of users served by the Open System. Its Total Cost of Ownership (TCO), which does not even include its initial cost of acquisition, comes at $949,000 in 2008, or $118,600 per year.

The Open System, for which a sole investment of $19,000 was made (if we consider it), and which due to its openness was integrated with the existing infrastructure of software, hardware, databases, and staff, eliminated entirely the previous yearly operating budget of $118,600, and in addition, achieved an added actual operational cost saving of $65,000 per year.

This actual saving of $183,600 per year, accounts for approximately 14 percent of the operating budget of the building division which is funded through an Enterprise Fund[1]. In the year 2010, this budget was approximately $1.3 million, and it accounted for 29 percent of the total budget of the department of the Growth Management (Alachua County Annual Report, 2010).

It must be noted that this saving of $183,600 is a recurrent saving which will continue with each year that the new system will be in operation. If we consider this saving for a time frame of five years (similar to the compilation of the TCO), from 2008 to the present 2012 (as the tracker is in operation),[2] the result yields $918,000 in savings. This equates to 70 percent of the entire annual budget for the building department. The peculiar significance of this result is especially related to the fact that the Enterprise Fund can be rolled over from year to year, and by Florida Statutes can only be used for building permits operations.

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[1] Enterprise funds, Alachua County, Florida, http://www.alachuaclerk.org/forms/enterprise.pdf.

[2] This is a timeframe outside of the scope of this study for which we do not have actual data other than informal staff confirms indicating that no additional spending has occurred on the new system.

It is important to note in these broad cost comparisons, that two of the four modules in the proprietary system had never been in use. Had they been in use, the cost for the proprietary system could have been higher.

It must also be noted that these numbers and these indicators provide a general understanding of the cost differences between the two systems. Comparing the true cost of the two systems is not an easy task, and it involves many parameters. Such a task for a true cost comparison, if it is even possible, exceeds the scope of this study.

Other cost related considerations are important to mention, although measurements for them were not conducted.

- By designing the distribution of the products to be available with no restrictions via the Internet, daily operational costs have been lowered. Web statistics show that the new modules have shifted a substantial amount of county front counter operations to the public, which is conducting business online. In relation, implementations of certain web 2.0 features provide for no cost solutions to the GIS data collection for solar permits and green buildings.

- The new system made obsolete the Automatic Inspections Request Phone System, which was previously integrated with the proprietary system. The use of the web and of iPhones gradually reduced its use down to 1-2 users per day. Its yearly operational savings was at $12,000 per year.

- By integrating the geographic module of the Code Enforcement Tracker with the Oblique Imagery (which provides for ready access to map locations of code violations overlaid with Oblique Imagery, and with other planning layers such as zoning, etc.), the code enforcement officers have won many code cases at the Code Enforcement Board which they would not otherwise have won. In addition to safeguarding public safety, this also translates into revenues for the County. A case won by the county, means that the violator will pay a proportionate fine. A typical annual revenue from code enforcement fines ranges between $20,000 and $30,000 in Alachua County.

- By using the integrated geographic features, and the Oblique Imagery from laptops or iPhones, code enforcement officers also downsized routine helicopter trips, and road trips on county vehicles for what they informally estimate to be at 85 to 90 percent of their work load. An effectiveness measure for the GeoWeb

Code Enforcement tracker had not yet been developed in 2008 by the Alachua County Office of Management and Budget, as this module was developed last.

And finally, let us also turn our attention back to the relationship of ownership of the product and its cost. Alachua County fully owns these applications and it is free to use, reuse, or share them without a license, or fee, or any restriction. When the need arises to adjust and change them as the organization grows, the cost for these adjustments is not dependent on the rate or the quality of service of a particular vendor and can be competitive. Full ownership also creates a prerequisite for better returns of public investments at a much larger perspective, when we take into account sharing and exchange with other local governments. This will hopefully be highlighted by the findings in our second unit of analysis, the State of Florida.

Transparency. In Chapter 3, under the section “Transparency,” the transparency variable was defined as part operational transparency (i.e. ready access to data and process), and as part transparency of the system’s inner workings (i.e. related to ownership and freedom of system use). In either one of the two parts, there are also two intertwined sides to transparency. One side has more of an economic meaning, such as is the case with the increase in efficiency of operations; and the other side has more of a political meaning, such as is the case with public freedom of scrutiny and expression.

In this context, it is also to be noted, that as mentioned in Chapter 3, certain indicators do not squarely fall under one variable only. This is especially applicable with the indicators of the transparency variable. These indicators overlap with indicators under the variable quality of service, and cost.

As shown in Chapter 3, the research questions that guided the investigation of the transparency variable were about: (a) open decision making (i.e. the increase of permitting process operational transparency from the replacement of the proprietary system with the open system), (b) open access to public data (i.e. the increase of transparency, or access to the historical archive of permitting records), (c) open access to publicly owned systems (i.e. political benefits to the public and to organizational resources from an open system), and (d) economic benefit to organizational resources (i.e. efficiency).

Eight indicators were developed. They included: *Transparency of operations for the building industry; for the public at large; for the organization's management; for the operations of the permitting staff; for the planners; open data as a public record; openness of the system as an inter-operable product; availability of system for use and re-use as a public asset.*

The summarized indicators for each of the two systems are provided below in Table 4-3, and Table 4-4. Clarifications follow for each table.

Table 4-3. Indicator results for the proprietary system transparency

Nr	Transparency Comparison Indicator	Measure
1	Transparency of operations for the building industry.	no
2	Transparency of operations for the public at large.	no
3	Transparency of operations for the organization's management.	no
4	Transparency of operations for permitting staff.	50%
5	Transparency of operations for planners.	no
6	Transparency of the data as an open public record.	no
7	Openness of the system as an inter-operable product.	no
8	Transparency as availability of use and re-use as a public asset.	no

- In *indicator 1*, openness of the process of permitting, inspections, and code enforcement to the developers, and to the building industry is captured.

- In *indicator 2*, we address the general public, mostly home owners, who engage in renovations, additions, repairs, etc. They generate a significant portion of permits.

- In *indicator 3*, we capture not only the upper levels of the organization that very often need information to answer public inquiries, but we also address citizen advisory boards, or quasi judicial decision making bodies such as the Planning Board, or the Board of Adjustments, or the Code Enforcement Board.

- In *indicator 4*, we address several groups of permitting staff: the certified staff, the clerk staff, and the mid-level management staff, such as the Building Official. Most of them are concentrated in the Building Department, but there are representatives in six other departments such as Fire, Environmental, Public Health, Public Works, etc.

- In *indicator 5*, we address the planners of the Comprehensive Plan division, the planners of the Development Review and Zoning division, and all the other planners in peripheral departments such as transportation, historic, housing, or environmental.

- In *indicator 6*, we address the historical archive of the rich data that is created by the daily processes and operations in permitting, and in code enforcement. This is mostly data used for public purpose studies, by researchers, policy makers, neighborhood watch devotees, etc. There is also a vast need in this area by major organizations at the state and federal level to whom reporting on building activities every month by the county is required by law.

In all indicators, the measure “no” was used to represent the fact that these groups did not have any type of ready access to this process at any point in it. Even from the 35 to 40 authorized users, only some had ready access to the operations. These were the close to ten building clerks who worked in the office.

In principle, and by law, all of these groups were entitled to make a phone call to the office, or to place a public records request and to follow the lengthy legal process of obtaining the requested record. But this only means that they had access *de jure*, but not *de facto* to the process which generates new data every five minutes. This type of access is not part of our definition of transparency.

Table 4-4. Indicator results for the open system transparency

Nr	Transparency Comparison Indicator	Measure
1	Transparency of operations for the building industry.	100%
2	Transparency of operations for the public at large.	100%
3	Transparency of operations for the organization's management.	100%
4	Transparency of operations for permitting staff.	100%
5	Transparency of operations for planners.	100%
6	Transparency of the data as an open public record.	100%
7	Openness of the system as an inter-operable product.	Yes
8	Transparency as availability of use and re-use as a public asset.	100%

It must be noted that with the measure 100 percent we imply that there is no information that resides in the permitting system which is not publicly and readily available to anyone, with no restriction, and in real time. This of course does not include information which is exempt from public records by law, such as a social security number, or a credit card number, etc.

In indicator 7, we capture the inter-operability as a potential mostly. That is why we use the measure yes, rather than a specific degree. This is a very broad topic that exceeds the context of this study, but following is an attempt to an explanation.

The underlying code in these applications was not initially written in a generic or portable way. The applications were highly-customized around Alachua County's systems architecture, operations, and organizational structure. This applies to the design of the internal architecture of these products, not to the design of their functions or to their user interfaces. Their functions and their user interfaces have been designed very generically and they can be ported anywhere just as they are.

Good care was taken to design the internal code and architecture as generically as possible. But given the resources, given the nontraditional approach that was taken, and given the nature of the work, this did not turn out to be an easy task. These four projects do not yet fit the definition of a general solution which can readily be implemented as is,

and which can be deployed right out-of-the-box to another agency with no effort or knowledge from them. So, yes means within the confines of Alachua County, but potentially within other confines if more effort is applied.

In indicator 8, we capture the issue of ownership and copyright of the system (software and database). One of the most important aspects of transparency, or openness of the product (software and database) in a governmental setting, is also the issue of its copyright and license. The Alachua County open system is fully owned by the public, it is not copyrighted, and therefore it is not licensed. It is a product in the public domain. According to the Florida public record law (Chapter 119, F.S.), “Every person who has custody of a public record must allow the record to be inspected and examined by any person,” and “The custodian must furnish a copy of the record…” The statute goes on to define “data processing software” as a “public record,” and to also explain the exceptions to this process, which include licensed data and software, as is the case with the proprietary system in Alachua County.

The issue of ownership of the product is an important aspect of transparency. Aside from the ability to change and share the product in order to improve it, the type of ownership of the product also defines the return on the public investment (i.e. payment of contractors). This is especially of importance in the current innovation economy, when “The Open Source pattern, part collaborative creativity, part organizational style, and part manufacturing process, can take hold whenever users can read and contribute to the recipes on their own” (Shirkey, 2005).

Florida

As explained in Chapter 3, to help answer the research questions about (a) the extent of use of proprietary systems by local governments for building permit and

inspections, (b) the range and distribution pattern of these proprietary systems across local governments, and (c) the scale of parallel acquisitions from the same vendor by local governments - two geospatial databases were created in this unit of analysis.

One database identifies nine small cities, and seven counties of rural character, all of which use the same proprietary system as the one in Alachua County. And, as the Alachua County's case study provides a good understanding of these sixteen local governments, they were not explored any further.

The other database identifies six additional local governments: three counties with an urban character, and three large cities. The cities are: Orlando, Tampa, and Tallahassee. The counties are: Orange, Hillsborough, and Leon. Fourteen indicators were identified for collection from each of them: *population, per capita annual revenue, per capita annual expenditure, existence of a computerized system, manner of system development, manner of system acquisition, provider, cost of purchase, cost of operation, number of licensees, online staff capability, online user capability, web 2.0 features,* and *geo-enablement.*

The results of the data collection showed that all these six local governments (and many more by indirect discovery) use the same proprietary product for their building and development systems. This product is named ACCELA and it is provided by Accela, Inc.

Accela, Inc. is based in California. Its web site indicates a company composed of 150 employees, and with 500 ACCELA product deployments nationwide. Little information can be found about these 500 customers, and little information can be found about the technology behind the product, or its integration capabilities. Based on

information related to the sale of the product, ACCELA is clearly a proprietary product, which is licensed by number of users for data input, and which is based on a "centralized data base."

A further exploration of web site publications from each local government in our sample revealed that ACCELA is deployed (in parallel) more or less in the same manner in most of them. Consequently, the envisioned approach for collecting the fourteen indicators for each of the six governments in the sample, evolved into a broad evaluation of the ACCELA product. This will be laid out in the pages that follow, but in Table 4-5, and Table 4-6 below, a summary of the findings for most of the indicators is provided.

Table 4-5. Indicator results for sample cities

Variable	Orlando	Tampa	Tallahassee
Population served.	238.300	335.700	181.376
Per capita total revenue ($).	3,587	2,268	5,780
Per capita total expenditure ($).	3,402	2,565	5,865
Existence of a computerized system for building permits.	Yes	Yes	Yes
Manner of system development.	Proprietary	Proprietary	Proprietary
Manner of system acquisition.	Purchased	Purchased	Purchased
System provider.	Accela, Inc.	Accela, Inc.	Accela, Inc.
Online data entry for staff.	Yes	Yes	Yes
Online accessibility for users.	Yes	Yes	Yes
Web 2.0 features.	Somehow	Somehow	Somehow
Geo-enablement.	Somehow	Somehow	Somehow

Source: Florida TaxWatch, 2011, with data from 2009.

Table 4-6. Indicator results for sample counties

Variable	Orange	Hillsborough	Leon
Population served.	1,146.000	1,229.226	275,500
Per capita total revenue ($).	1,980	2,564	1,326
Per capita total expenditure ($).	1,980	2,564	1,326
Existence of a computerized system for building permits.	Yes	Yes	Yes
Manner of system development.	Proprietary	Proprietary	Proprietary
Manner of system acquisition.	Purchased	Purchased	Purchased
System provider.	Accela, Inc.	Accela, Inc.	Accela, Inc.
Online data entry for staff.	Yes	Yes	Yes
Online accessibility for users.	Yes	Yes	Yes
Web 2.0 features.	Somehow	Somehow	Somehow
Geo-enablement.	Somehow	Somehow	Somehow

Note. Includes all taxing jurisdictions in county and uses total county population.
Source: Florida TaxWatch, 2011, with data from 2009.

Three indicators are missing from these tables: cost of purchase, cost of operation, number of licensees. These three indicators had been selected to provide us with a broad picture of the cost of these systems. During the collection of the data, it turned out that finding information on these three indicators was not as straightforward a process, as it had initially been envisioned. Inquiries addressed to the individual local governments, at times went unanswered, at times provided conflicting information based on who was answering the question. In addition, as ACCELA is purchased in various modules, and in various models of deployment, it would have taken a long and separate study to compile reliable and accurate measures for these indicators, so that they would also be comparable amongst them.

But it turned out, that this obstacle, did not affect our envisioned broad evaluation of the cost spent by these local governments in purchasing, and in maintaining building permit and inspection technologies as all of the findings converged into one product,

ACCELA. This way, by shifting our focus in investigating the cost of purchase and of use for ACCELA as a general product, by any local government, rather than investigating separate costs by each local government, we are able to satisfy the cost concern in our sample. While it is not within our scope to compare ACCELA with either one of Alachua County's systems (open or closed), given that ACCELA has emerged as a significant product, provided below is a brief summary by our three variables.

ACCELA. It seems that ACCELA is used in at least twenty local governments across Florida, and that these governments purchased it as a "sole source" product. This information was found indirectly and by chance in public documents that relate to the local governments in our sample. In the vendor's web site (same as with the Alachua County's vendor), this information is not available, so this number is approximate. From the inquiries conducted in our sample, Leon County and Tallahassee have made a joint purchase of the product. But although they have a joint contract with the vendor, they have two separate implementations of the system. Also, with the exception of Tampa, where ACCELA seems to be hosted in house, in the other local governments in our sample, ACCELA is deployed as a "hosted service" from the vendor.

Cost. Counties that have purchased ACCELA in the last five years include Brevard, and Escambia. Brevard contracted in 2006 for $2.6 million with ACCELA, and Escambia contracted in 2007 for $2.3 million. Brevard has a population of 543,376 (US Census, 2010), and a per capita revenue of $1,237 (Florida TaxWatch, 2011). Escambia, has a population of 297,617 (US Census, 2010), and a per capita revenue of $1,304 (Florida TaxWatch, 2011). As we can see, both counties are very comparable

with Leon County in our sample. In addition, in 2012 the City of Tampa signed a contract with Accela, Inc for $4.4 milllion.

It is very hard to decipher the particular modules and components that these contracts are purchasing. These contracts are sizeable documents (approximately 100 pages), not easy to understand, as they are not well organized, and as their language is highly specialized either within the constraints of organizational jargon and legal terms. One page sample of this linguistic bureaucratic convolution is provided in Appendix Q. It represents the first page in the 80 page contract between the City of Tampa and Accela, Inc.

Nevertheless, several patterns can still be discerned from these contracts. In all cases these costs (a) cover both the licensed/hosting and the annual maintenance, (b) they seem to include the code enforcement module, (c) they seem to license an average of thirty five data entry users per organization, and (d) they cover a time span of three to four years with a justification that “it is fiscally prudent to sign a multiple year contract” and to “lock to current rate,” as the vendor imposes a 5% cost increase per year.

In reference to the most important cost indicator that we identified for Alachua County, the Total Cost of Ownership (TCO), ACCELA has an approximate cost of $500,000 per year, which for a life cycle of eight years (our Alachua County time frame) results in at least $4 million.

Transparency. As ACCELA is a proprietary product, its ownership remains with the vendor and therefore the product is not available for scrutiny, or for reuse by the public or the local government. Many operations are available online, for the general

user, but it seems that many restrictions are also in place. For example, contractor registration is required before being able to view certain operations. Although certain aspects of the permitting and inspection process are online, the entire permitting system from start to end does not seem available online.

The code enforcement module does not seem to provide its operations online, and neither are the daily dispatch operations, and inspector allocations available for view and interaction online.

Access to the historical archive of building permits, provided via online reporting, is rigid and limited. There is not a wide variety of options for the user to customize its request, or to receive the product in any format other than PDF, and much less in a geospatial format.

Quality of Service. Several of the features that deal with quality of service are also related to issues of access and transparency and they were included in the previous paragraph. Other features that deal with quality of services, such as data integrity and authenticity, cannot be assessed by exploring ACCELA as a user. But it is of importance to mention that although ACCELA is advertised as a product integrated with GIS, and in fact a separate module for GIS is sold as part of the product, the permitting and inspection system does not seem integrated with GIS when one uses the system in a general user capacity. It does not seem that a report can be created based on location, or that one can view permitting and inspections on a map. The GIS system that stores zoning and other planning information can be accessed by the ACCELA interface, but separately, not integrated with it. Web 2.0 features were also hard to find from a general exploration. It is very obvious though from this general exploration of

ACCELA that its quality of services is by far superior than the one provided by the proprietary system used by Alachua County. But this higher quality is also reflected in its largely much higher cost.

In sum, as it was expected, these findings reveal that the Alachua County is a pioneering case, and that most of the local governments in Florida use a proprietary system for their building and inspection technologies.

As it was also expected, these findings reveal that Florida depends upon a very small number of vendors for the building and inspection technologies. These vendors enter into separate parallel agreements with each local government, and remain in these agreements for lengthy segments of time, selling the same licensed product to each of them.

Results about significantly high costs related to the purchase, and the operations of building permit and inspection technologies, also confirm the expectations, and the premises of the study. An integrated and conclusive discussion of these results is provided in the following chapter.

CHAPTER 5
CONCLUSIONS

As a result of more than three decades of expansion of informational property rights, today's copyright regime is by far too rigid and is in practice profoundly at odds with the digital environment.

--La Quadrature du Net, in "*Beyond ACTA, Reform Copyright*."

The last chapter in this study contains three sections. The first section, "Summary," presents a brief review and conclusive interpretations of the results. The second section, "Limitations and Future Research," provides a summary of recognized assumptions and limitations in the data and method, and contemplates questions for further complementary research. The third section, "Recommendations," presents closing thoughts about potential policy implementations related to this study.

Summary

In this study we set out to prove that given Florida's uniform building code, steering Florida's local governments towards an Open Systems paradigm for building permit technologies, creates the conditions for (a) transformative improvements in delivery of services, (b) significant cost-savings of public expenditures, and (c) an increase in governmental transparency.

To test this thesis, we used an exploratory single-case study strategy with two units of analysis. First we analyzed a building permit and inspection computerized system developed with an open paradigm by Alachua County, utilizing data from the 2000 to 2009 timeframe. Afterwards we examined the current level of adoption of the open paradigm used by local governments of the State of Florida.

Results for the three variables in the Alachua County unit of analysis are as follows:

Quality of Service. The new system has literally transformed how staff, builders, planners, and the public engage with each other in the daily process of permitting, inspections, and code enforcement activities, and it has established a higher standard for data entry integrity, and authenticity. The core of this improvement is perhaps best summarized in the statements of the Building Official of the county: "*It has revolutionized the way of doing business…"* and of a local builder *"It is a wonderful system. It gives us 24-hour access to the information...."* [1]

Cost. The previous proprietary system in Alachua County had a Total Cost of Ownership (TCO) of $949,000 (or $118,600 per year), for 2000-2008. It served 30 to 40 licensed users, and only in the office.

The new open system had a total investment of $19,000 (or $4,750 per year), for 2008-2012[2]. The total cost of actual savings from its implementation, was $183,600 per year. For the period 2008-2012 the value of actual savings was $918,000. If we further considered a time frame of 2008-2016 (equal to the one used for the proprietary system), and the unlikely investment of $4,750 per year (most likely none), the value of the cost savings from the Open System is conservatively predicted to be at $1.43 million. The Open System serves an unlimited number of users regardless of location.

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[1] Gainesville Sun. 2008. *County praised for new interactive growth management web site*. http://www.gatorsports.com/article/20081123/NEWS/811231006. (accessed on January 20, 2012)

[2] Data beyond the year 2009 were outside of our scope. But informal interviews with Alachua County staff indicate that no additional investments have been made from 2009 to 2012 in the Open System.

Transparency. This variable is defined as both ready-access to transparency of data and operations, and as transparency of the product (software, and related data and documents).

Results on operational transparency, show that the entire building and permitting information system in Alachua County, is publicly available in real time, to anyone, anywhere, for the last twenty five years - as opposed to the almost complete opacity of the proprietary system.

Results on product transparency, as per the very definition of an open systems product, confirm that the new system is not copyrighted, and is in the public domain. By association, the open system carries the four classic freedoms: to use, to scrutinize, to change, and to share the product. This product is also a public investment upon which, not only county staff, but anyone from the public can also build upon. In fact, following a request by the author, a copy of one of the four products, the “Geogreen Mapper” application, was entirely transferred by Alachua County, to the GeoPlan Center of the University of Florida, within a matter of hours.

Overall, the results from Alachua County are consistent with the established theses that free licensing leads to "better quality, higher reliability, more flexibility, lower cost,” (Wheeler, 2005). But in addition to the results for the three variables, let us also summarize on the process by which the four open system applications were developed in Alachua County. These products are not an adaptation or a replication of another innovation. They are original work, crafted carefully to fit an existing architectural system and organizational structure.

The investigation showed that the conditions and the motivations that launched their creation are very similar to the conditions which research has consistently identified as typical triggers for the start, and the development of open source projects. Just as with open source projects, the Alachua County efforts were born, out of *frustration* with the old system, out of a *desire to tinker* with it, and with the purpose of *helping to solve problems*.

Their style of incremental development, with frequent releases that were tested and improved upon by a large base of users, resembles the particular style of open source development coined the “bazaar” style (Wheeler, 2000).

Similar to the free culture behind the open source movement, participating staff (developers and users) were motivated by an “ethical drive,” and were persistent in their struggle to find a way to solve a problem. They provided a "cultural subsidy," (Landini, 2012) and were willing to undertake risks and to utilize existing resources, rather than pursue extra resources. The work culture of the development staff had generated a grassroots support in the organization from those who would be the beneficiaries of these projects. These beneficiaries represented a broad base of tester/users, mostly from the low to the mid levels of the organization. It was mostly this grassroots support that on a daily basis generated the necessary progressive alliances and the rightful negotiations that sustained the temperance and the optimism that was needed for such a clearly significant task when considering the available resources.

Results from the ten counties and the twelve cities examined in the Florida unit of analysis are, as follows.

The extent of use of proprietary systems by local governments for building permit and inspection technologies is pervasive, if not ubiquitous in the State of Florida. The Alachua County case is a pioneering example. The scale of parallel product acquisitions from the same vendor by local governments is high. We identified only two vendors that operate in the State of Florida, but this number could be higher. Each vendor had been contracted as a sole source provider. Each vendor services a range of approximately twenty local governments. Of the two different products that they offer, the Alachua County's prior system has a lower quality, and a lower cost. The second product has a higher quality, which shows less service features, and less transparency features than Alachua County's Open System, at a recurring cost of approximately $500,000 per year.

These findings indicate that as predicted, the residents of Florida, through their representative administrative agents (their local governments), each year, collectively, make significant payments to vendors of building and permitting technologies. A very broadly assessed sum of twenty governments for each of our two vendors averages at around $10 - $12 million per year. Florida has 478 governments who make separate parallel acquisitions of more or less the same products.

In return for these high payments, the residents of Florida receive products which they can only use under dictated conditions, that they cannot scrutinize, improve upon, or share amongst themselves (as they ordinarily do with most public products). In more accurate terms, in return for these payments, the residents of Florida rent these products, rather than purchase them. Their critical daily operations depend upon these products, which are immune from public oversight, and which these vendors can take away at a thirty day's notice. Through these proprietary products, these vendors also

take away from local governments a number of public freedoms by not allowing them to modify and improve upon purchased products, which to common sense wisdom are forms of free expression and association. These rights are provided to the vendors through the legal system, as an exemption to the Florida public records law, or as coined by the Free Software Foundation through “legal subsidies, funded by our freedoms” (Sullivan, 2012).

The organizational model in local governments has a tendency to reward based on the size of the budget and on the size of the program, rather than on the quality or on the amount of services provided to the public. This dynamic does not create many incentives for creating better systems. The processes of acquisition and development of computer systems have grown into intricate processes that support this status quo. An inordinate amount of staff time is spent during a Request for Proposal process, which routinely end up with selections of locked-in proprietary technologies that as our results demonstrate, foster subsidies with public resources to the vendors.

These results have proven that contrary to conventional perception, improvements in governmental services, and in the democratization of public data and processes, are not necessarily tied to the size of budgets. They just as well, and perhaps even better, can be obtained by transitioning from old paradigms into new ones, that are also more aligned with contemporary models of development and acquisition, and which meaningfully include the users.

It must be noted that an open paradigm can be used even when a project is contracted to a vendor. As long as the contract places the right licensing conditions that protect user freedoms to use that product. There are many vendors in the market that

work this way, which as we saw in the study, was the method employed by Alachua County in one of its applications.

In sum, this study is not proposing the replacement of the current proprietary technologies in building permit and inspection technologies. It is only proposing the expansion of the current paradigm of procurement, acquisition, and development practices to formally embrace the Open Systems method as an equal or perhaps better alternative than the proprietary one.

Limitations and Future Research

The importance of examining the limitations and the underlying assumptions that impact the validity of the results and conclusions of this work is important for proper interpretation and for translating the case study to other regions and other government functions. Let us acknowledge a few of the limitations and assumptions that have impacted this work.

Firstly, to say that the amount of data and documentation that were available for the Alachua County unit of analysis was overwhelming, this would be a modest understatement. The author had in her possession volumes of emails, reports, contract agreements, publications, presentations, policy documents, memoranda, et cetera, covering a time frame of almost a decade. While on one hand, this made for a vast and detailed information source to explore, this information store, on the other hand, made for a very challenging task of extracting, and distilling what was of most value to the study's thesis. This challenge may have contributed to relevant data not being included, or to irrelevant data being included.

Secondly, for the State of Florida unit of analysis, the experience of collecting relevant information was reverse. Collecting meaningful, detailed, and specific

information from local governments about their purchasing contracts, and about documents and information related to building permit and inspection technologies turned out to be extremely challenging. Very frequently contracts and purchases are conducted in separate parts, and when only one of them was provided, the request was considered closed. At other times different staff within the same organization would provide different answers. Although, this challenge did not end up affecting the scope of the study, it would have been beneficial to have been able to collect higher quality data from Florida's local governments.

Thirdly, the inherently poor and outdated outcomes from single vendor proprietary systems, which the vendor has no incentive to improve, or to enhance in the absence of market competition (given the prohibitively high cost to local governments from switching vendors), were highlighted in the introductory premises for the study and in the literature review. The results showed that the Alachua County's very poor proprietary system was not an aberration, as sixteen other local governments in Florida also have used it. Nevertheless, it must be noted, that this study has not made any attempts to argue that a good system that guarantees transparency and service quality at low cost, is only possible when it is built with an open model. Any such assumptions, if implicitly made in the study, were not intended. It is up to future research to visit this argument.

And finally, the scope of this study was broad and it was a large-scale exploration of the best manner by which building permit and inspection technologies can be procured, purchased, or developed in the state of Florida. For this reason, the investigations of this study were not meant to rigorously compare the merits and the

details of one computational system versus the other, or of open source versus proprietary software. The investigations were only meant to highlight the most relevant parameters for comparing one paradigm versus the other. It is in this context, that the results of this study should be understood and interpreted.

This broad exploration could nevertheless, be a very good foundation for a more focused future research effort that would capitalize on the ideas introduced by this study. The following are a few research areas that would complement this research and that would overcome some of the limitations.

- Given that public safety is the fundamental purpose of the permitting processes, investigating whether the adoption of an open pattern of development for building permits, inspections and code enforcements, impacts the outcomes of life safety and property safety, should be explored.
- Given the uniqueness of the Alachua County's case, investigating the system's long term sustainability and effectiveness, by re-assessing the system's performance, and incremental adaptation after a period of three to four years, is worth considering.
- Given the uniqueness and the success of the Alachua County's case, investigating the process that created its open systems products, and finding out what were the ingredients and the combination of conditions that made it possible, would be of value.
- Making a comparison from the use perspective of the Alachua County's open system with the other proprietary product which the results indicate that is serving twenty local governments in Florida, would complement this research.
- Conducting a comprehensive survey of the building permit technologies (or lack of them) used by all 478 local governments in the State of Florida, would fill in a gap that was beyond the capabilities of the available resources to the author.
- Investigating whether a cost savings can be obtained when local government share permitting technology products, or parts of them, as opposed to paying separately for the full cost of them, and whether a larger number of sharing parties, lowers their individual contributing costs, is of economic interest to lowering the cost of governmental services.

Recommendations

The results show that not only do local governments in Florida overwhelmingly use proprietary software systems for building permit and inspection management technologies, but they also use the sole source contract model when acquiring these technologies. The sole source contract is a legally recognized exception, which is usually part of the financial policies and procedures of governments, and this provision is intended for use in situations when there is only one company that can provide the requested services, and therefore a competitive contract bid would end up with the same company as the sole applicant.

The sole source policy can be implemented very easily once a local government has received a certain service from a company for an initial contractual period. From then on, the contract refers to this company's services as "specific services that no one else in the market provides." The use of a non-competitive contractual model explains the existence of only two vendors in Florida, which offer building and permit technology services, while each are contracted as sole source exceptions.

This policy framework, combined with the legislative framework (i.e. Florida's public records law exemption for proprietary software), have enabled a condition where vendors have locked-in a number of local governments for a lengthy period of time, thus perpetuating a mutual dependency between them and local governments. This situation constrains local government freedoms to share technology and to benefit from each other's investments, and it constraints the public's right to scrutinize and to benefit from public investments.

This phenomenon is not only limited to local governments in Florida, or state governments in the United States, it also extends to the federal government. A study

conducted in 2009 from MeriTalk titled “The DIY Federal IT Bailout: Finding Funds”, indicates that the United States federal governments could save $3.7 billion from shifting to open source solutions.

But in the past few years, the federal government has formally recognized the value of open source licenses (and open data) for its investments in Information Technology as a benefit to the public. As discussed in the literature review, in 2009, President Obama issued the Open Government Directive, asking federal departments to take actions and to open their operations to the public. At its core, this directive has the open source principles of transparency, and collaboration. As a result, the Federal Open Technology Report Card was developed in 2011, by the Open Source for America (OSFA)[3] organization, who conducted a review of federal departments to determine their level of use of open source technologies.

These efforts show that changes in policy and legislative frameworks are already in the formal agendas of the public sector. These improvements are imperative in our changed society, where people are openly working together in unprecedented ways and scales, and where the emerging innovation economy and the public sector can mutually benefit from each other’s investments.

Results in our study, show that it would be beneficial for Florida to foster open systems, and open technologies at the state level, and to propose amendments to current financial policies, or legislation that would include or consider the open alternative as a legitimate alternative. Although, an explicit impediment does not exist in

[3] OSFA is an organization of technology industry leaders, non-government associations, and academic and research institutions promoting the use of open source technologies in the U.S. federal government.

the current legal framework to discourage the use of open licenses and open technologies, the mere absence of explicit policies or legislation about them, encourages the continuation of the status quo.

In the same way, and much quicker and easier to implement, local government financial policies or administrative procedures for technology projects can also include policies that require the consideration of open systems or open technologies, either before considering sole source contracting, or before considering proprietary vendors, or a combination of both.

As an example, other policies can also require that a local government negotiate with vendors about the possibility of placing a product in the public domain, as an incentive for prioritizing their contract. Alachua County's case has shown that this is very realistic, but other cases also exist, such as the Law Enforcement Automated Data Repository (LEADR), which is an open source system that was initially designed by counties to share information across jurisdictions, and which is now used by hundreds of agencies.

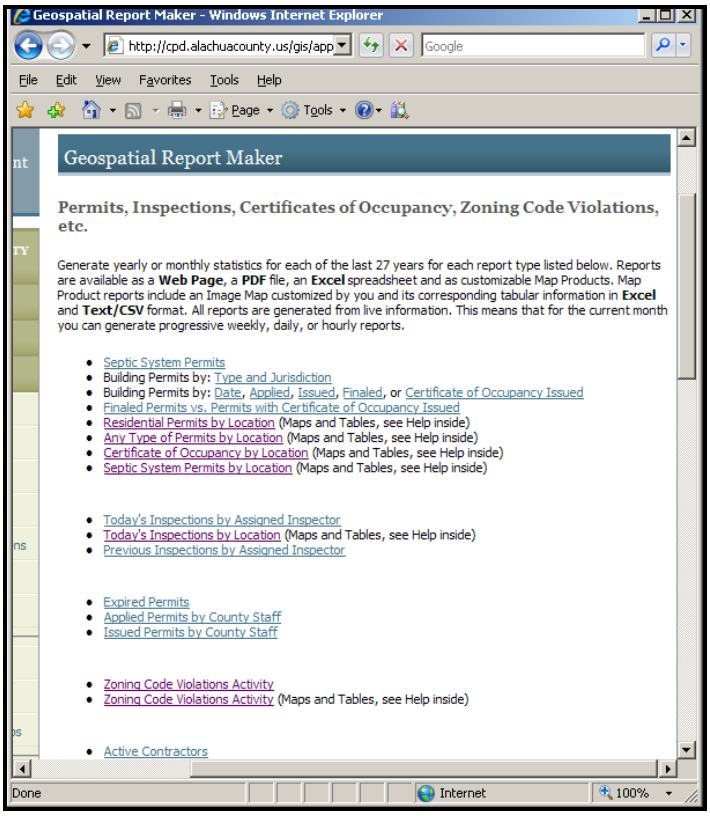
Other ways to support this effort in local governments could include employee incentives in administrative policies for their involvement or promotion of open system implementations.

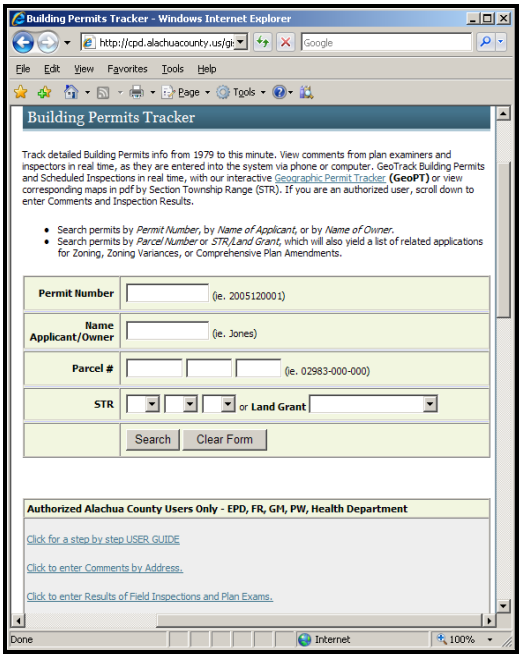
The value and the need for these policies, to encourage the use of open systems, will at a minimum protect individual efforts that will try to challenge the present closed model.

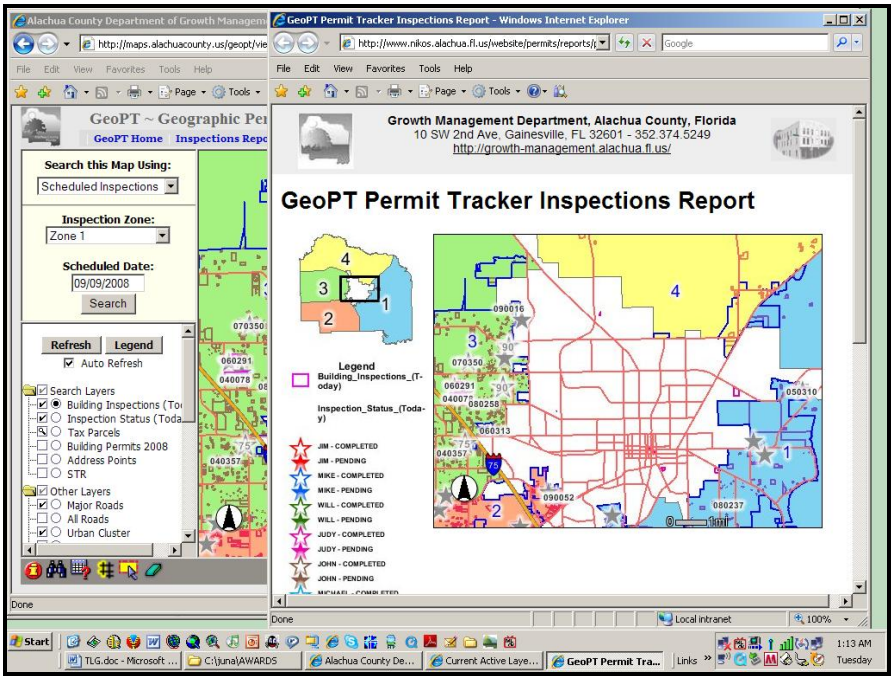
Formal bodies that would have the authority to shape these policy improvements could include the Florida City and County Management Association, the Florida

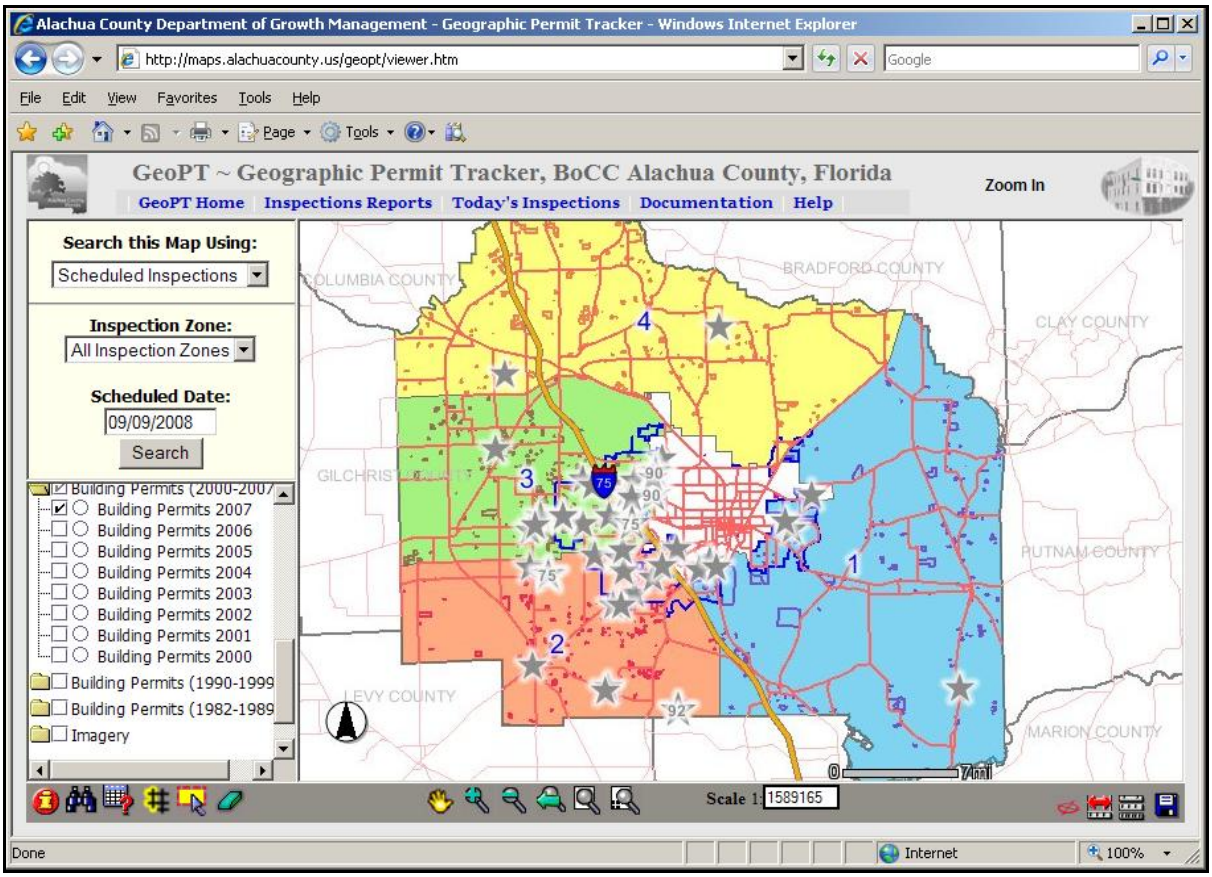
Association of Counties, the Florida League of Cities, the Florida Building Commission, the Florida Home Builders Associations, and the Building Officials Association of Florida. The inclusion of open ways to develop building permit and inspection computational technologies, as the results of this study have demonstrated, fits well with the missions and the goals of each of these entities from various perspectives.

APPENDIX A
ALACHUA COUNTY GEOWEB BUILDING PERMIT TRACKER









example follows

Alachua County
Daily Inspection Schedule For
Aug 17, 2012

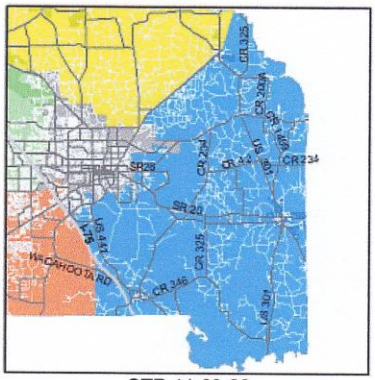
Area	Permit #	Req	Description	Date
1	2012010030	600	SEMI-PERMANENT POWER	Aug 17, 2012
1	2012010150	999	FINAL INSPECTION	Aug 17, 2012
1	2012060424	999	FINAL INSPECTION	Aug 17, 2012
1	2012070040	490	ROOF SHEATHING NAILING	Aug 17, 2012
1	2012070090	320	POURED CELLS/FULL	Aug 17, 2012
1	2012070325	550	CEILING CONCEALMENT/FULL	Aug 17, 2012
1	2012080028	999	FINAL INSPECTION	Aug 17, 2012
1	2012080041	999	FINAL INSPECTION	Aug 17, 2012
1	2012080048	999	FINAL INSPECTION	Aug 17, 2012
1	2012080056	999	FINAL INSPECTION	Aug 17, 2012
1	2012080129	999	FINAL INSPECTION	Aug 17, 2012
1	2012080250	490	ROOF SHEATHING NAILING	Aug 17, 2012

12 Total Inspections for Area

Alachua County Inspection Sheet

2012010030 : 600

Permit Number: **2012010030**
Inspection Code: **600**
Permit Type: **BUILDING RESIDENTIAL (BR)**
Inspection Area: **1** Confirmation Number: **.**
Issued Date: **18-JAN-12** Status: **INSPECT**
Job Location: **23114 NE 69 AVE , MELROSE**
Job Description: **SINGLE FAMILY DWELLING---3/3.5**
Job Phone: **(352)473-7600** Job Value: **220640**
Sub Division: **WALLACE GROVES**
Water: Sewer: Lot: **3**
Block/Bldg: R-T-S: **22-09-11** Flood Zone:
Front: **25** Left: **10** Right: **10**
Rear: **WET** Special:
Owner Name: **FLACH & VAN DILLEN,**
Contact Name: **JIM**
DBA: **JIM TEMPLE CONSTRUCTION INC**
Project Description: **SINGLE FAMILY DWELLING---3/3.5**
Directions: **WALLACE GROVES 2**



STR 11-09-22

Contact Phone: **(352)339-4849**
Certificate Number: **1483**

Additional Information: **EPD/PW PAS - APPROVED, REPLACES SFD DEMOLISHED ON PERMIT 2007110328. STEMWALL FOUNDATION. ICYNENE PROPOSED - NEED IGNITION BARRIER SPECS. NEED SEPTIC INFO.**

REQ	DESCRIPTION	REQUEST DATE	RESULT	RESULT DATE	INSPECTOR
100	TEMPORARY POWER POLE	20-JAN-12	90	20-JAN-12	BLD152
150	FOUNDATION FOOTING/FULL	20-JAN-12	92	20-JAN-12	BLD152
	NEED LETTER FROM SAPIENZA ON PORTION OF FOOTING OVER 5 COURSES REC'V'D SAPIENZA ADDENDUMS 2/1/12 JKJ				
200	ROUGH IN PLUMBING/FULL	03-FEB-12	90	02-FEB-12	BLD072
250	STRUCTURAL SLAB/FULL	08-FEB-12	90	08-FEB-12	BLD072
255	STRUCTURAL SLAB/PARTIAL	02-FEB-12	90	02-FEB-12	BLD072
	NOTES FROM APPLICANT: "ACTUAL INSPECTIONS NEEDED ARE ROUGH IN PLUMBING AND GARAGE SLAB"				
300	LINTEL-TIE BEAM/FULL	23-MAR-12	82	24-MAR-12	BLD072
	THIS IS A REINSPECTION NOT READY				
300	LINTEL-TIE BEAM/FULL	24-FEB-12	81	24-FEB-12	BLD072
	NOT READY				
300	LINTEL-TIE BEAM/FULL	27-FEB-12	91	27-FEB-12	BLD072
	THIS IS A REINSPECTION 1ST LIFT				
300	LINTEL-TIE BEAM/FULL	27-MAR-12	90	27-MAR-12	BLD072
	THIS IS A REINSPECTION				
300	LINTEL-TIE BEAM/FULL	10-FEB-12	91	10-FEB-12	BLD072
	NOTES FROM APPLICANT: "GARAGE LINTEL TIE-BEAM"				

490	ROOF SHEATHING NAILING	27-APR-12	90	29-APR-12	BLD072
	THIS IS A REINSPECTION				
490	ROOF SHEATHING NAILING	24-FEB-12	91	24-FEB-12	BLD072
	GARAGE				
400	STRUCTURAL FRAMING/FULL	27-JUN-12	90	27-JUN-12	BLD142
400	STRUCTURAL FRAMING/FULL	26-JUN-12	74	26-JUN-12	BLD142
	NOTES FROM APPLICANT: "REQUESTING STRUCTURAL FRAMING FULL INSPECTION. ROOF SHEATHING NAILING PREVIOUSLY MADE."				
430	SUBCONTRACTOR VERIFICATION REL	27-JUN-12	92	27-JUN-12	CDM162
	6/27 RECEIVED SUB SHEET ELECTRIC DAVID GUNTER HVAC TODAY'S HEAT & AIR PLUMBING DONE RIGHT PLUMBING ROOFING JIM TEMPLE GAS NONE LOW VOLTAGE CRIME PREVENTION				
450	MECHANICAL FRAMING/FULL	29-JUN-12	92	29-JUN-12	BLD232
	RESUBMITTED ENERGY FORM W/ CORRECTED WINDOW SHGC # 6/28/12 JKJ. -TWO BACK WINDOWS AND UPSTAIRS BATH LOWER SASHES NEED TO BE TEMPERED. MASTER BED SMOKE NEEDS TO BE MOVED TO WITHIN 1' OF CEILING...JCF				
500	INSULATION/FULL	05-JUL-12	90	05-JUL-12	BLD142
550	CEILING CONCEALMENT/FULL	10-JUL-12	90	10-JUL-12	BLD142
600	**SEMI-PERMANENT POWER**	**17-AUG-12**			
900	HEALTH DEPARTMENT RELEASE				
955	EPD RELEASE				
985	CHECK JOB PER B.O.				
	13 IPF				
999	FINAL INSPECTION				

Building Permits Tracker

Track detailed Building Permits info from 1979 to this minute. View comments from plan examiners and inspectors in real time, as they are entered into the system via phone or computer. GeoTrack Building Permits and Scheduled Inspections in real time, with our interactive Geographic Permit Tracker **(GeoPT)** or view corresponding maps in pdf by Section Township Range (STR). If you are an authorized user, scroll down to enter Comments and Inspection Results.

- Search permits by *Permit Number*, by *Name of Applicant*, or by *Name of Owner*.
- Search permits by *Parcel Number* or *STR/Land Grant*, which will also yield a list of related applications for Zoning, Zoning Variances, or Comprehensive Plan Amendments.

Permit Number	2012010030 (ie. 2005120001)
Name Applicant/Owner	(ie. Jones)
Parcel #	(ie. 02983-000-000)
STR	or **Land Grant**
	Search Clear Form

Building Permit #2012010030

Master Permit #: 2012010030
Status: INSPECT
Type: BUILDING RESIDENTIAL (BR)
Work Without Permit: NO
Contractor Est. Cost: 220,640
Private/Government: PRIVATE
FCC Code: *SINGLE FAMILY DETACHED (101)
Job Description: SINGLE FAMILY DWELLING---3/3.5
Job Phone #: (352)473-7600
Job Fax #: (352)473-4080
Applicant: CONTRACTOR
TEMPLE, JAMES G.
(352)473-7600
Contact: JIM
(352)339-4849
Owner: FLACH & VAN DILLEN,
5022 NW 11TH PL
GAINESVILLE, FL 32605

Contractor:
Doing Business As: JIM TEMPLE CONSTRUCTION INC
Status: ACTIVE
Address: 5342 SE 7TH AVENUE, KEYSTONE HEIGHTS FL 32656-

Location:

Address:	23114 NE 69 AVE, MELROSE (73133)
Tax Parcel:	18689-003-000
Block:	
Lot:	3
Subdivision:	WALLACE GROVES (3897)
STR #:	11-09-22 Click for maps of Future Land Use, Zoning, and Environmental Constraints
Inspection Area:	EAST AREA (1)

Zoning / Set Backs / Lot:

Zoning:	
Z.A. Page:	
Front Set Back:	25 ft
Rear Set Back:	WET ft
Left Side Set Back:	10 ft
Right Side Set Back:	10 ft
Special Set Back:	
Historical Legal Description:	WALLACE GROVES 2 PB D-62 LOT 3 OR 4057/0460
Lot Width:	
Lot Depth:	
Lot Area:	
Lot Acres:	

Building:

Construction Code:	HEATED
Job Value:	$220,640.00
Living Space:	3062 ft ^{2}
Non-living Space:	1741 ft ^{2}
Total Space:	4803 ft ^{2}
Rooms:	
Bedrooms:	3
Baths:	3.5
Stories:	
Habitable Floors:	2
Elevators:	
Residential Units:	1
Commercial Units:	0
Buildings:	1
Porch:	NO
Notice of Commencement:	RECORDED

Plans Required: YES
BCIA Fund:
Certificate of Occupancy/Completion: YES
Radon: YES
Plan Alterations:
Parking Spaces:
Standard:
Compact:
Handicap:
Carport: NO
Utility:
Electric Company: Clay Electric - Keystone
Well: YES
Water Permit:
Septic: YES
Sewer Permit: NEEDS
Sewer Permit Date:
Additional Information:
EPD/PW PAS - APPROVED, REPLACES SFD DEMOLISHED ON PERMIT 2007110328. STEMWALL FOUNDATION. ICYNENE PROPOSED - NEED IGNITION BARRIER SPECS. NEED SEPTIC INFO.
Dates:
Application Date: Jan 4, 2012
Issued Date: Jan 18, 2012
Final Date:
CO Date:
Expiration Date: Jan 6, 2013
Update Info:
Previous Update: Jan 18, 2012
Last Update: Jan 18, 2012
9 Fees:

DATE	AMOUNT - DESCRIPTION
Jan 4, 2012	$198.18 - PLANS REVIEW (POSTED)
Jan 4, 2012	$17.84 - DBPR SURCHARGE (POSTED)
Jan 4, 2012	$990.90 - PERMIT FEE (POSTED)
Jan 4, 2012	$17.84 - DCA SURCHARGE (POSTED)
Feb 1, 2012	$70.00 - RE-STAMPING RE-CERTIFY PLANS (PENDING)
Mar 24, 2012	$70.00 - REINSPECTION FEE (POSTED)
Aug 8, 2012	$124.74 - PARKS/REC IMPACT FEE RESID (POSTED)
Aug 8, 2012	$1,343.43 - EAST TRANS IMPACT FEE RES. (POSTED)
Aug 8, 2012	$75.24 - FIRE IMPACT FEE RESIDENTIAL (POSTED)

0 Letters:

DATE SENT **TYPE OF LETTER**

** Note:* Letters can be Viewed in HTML format or Downloaded in RTF format. RTF files can be opened using WordPad or Microsoft Word.

2 Comments:

DATE	COMMENT
Jan 9, 2012	IN REVIEW - JEFF: NEED SEPTIC INFO ICYNENE PROPOSED - NEED IGNITION BARRIER SPECS
Apr 2, 2012	Hold CO for 18689-3 Flach and Dillan until the buffer is replanted. Betty Rosenblatt, Sr. Environmental Specialist

23 Inspections:

PRIORITY / **CODE**	**DESCRIPTION** **NOTES** ***RESULT***
100 / 100	TEMPORARY POWER POLE APPROVED (Jan 20, 2012) RESULTS FROM JUDY DAVIS
150 / 150	FOUNDATION FOOTING/FULL NEED LETTER FROM SAPIENZA ON PORTION OF FOOTING OVER 5 COURSES rec'v'd Sapienza addendums 2/1/12 jkj ACCEPTED AS NOTED (Jan 20, 2012) RESULTS FROM JUDY DAVIS
200 / 200	ROUGH IN PLUMBING/FULL APPROVED (Feb 2, 2012) RESULTS FROM JIM MCNIEL
250 / 250	STRUCTURAL SLAB/FULL APPROVED (Feb 8, 2012) RESULTS FROM JIM MCNIEL
255 / 255	STRUCTURAL SLAB/PARTIAL NOTES FROM APPLICANT: "Actual inspections needed are rough in plumbing and garage slab" APPROVED (Feb 2, 2012) RESULTS FROM JIM MCNIEL
330 / 300	LINTEL-TIE BEAM/FULL NOTES FROM APPLICANT: "Garage lintel tie-beam" PARTIAL,APPROVED (Feb 10, 2012) RESULTS FROM JIM MCNIEL
330 / 300	LINTEL-TIE BEAM/FULL not ready DISAPPROVED (Feb 24, 2012) RESULTS FROM JIM MCNIEL
330 / 300	LINTEL-TIE BEAM/FULL THIS IS A REINSPECTION 1st lift PARTIAL,APPROVED (Feb 27, 2012) RESULTS FROM JIM MCNIEL

330 / 300 LINTEL-TIE BEAM/FULL
THIS IS A REINSPECTION not ready
DISAPPROVED - REINSP FEE RQD (Mar 24, 2012)
RESULTS FROM JIM MCNIEL

330 / 300 LINTEL-TIE BEAM/FULL
THIS IS A REINSPECTION
APPROVED (Mar 27, 2012)
RESULTS FROM JIM MCNIEL

390 / 490 ROOF SHEATHING NAILING
garage
PARTIAL,APPROVED (Feb 24, 2012)
RESULTS FROM JIM MCNIEL

390 / 490 ROOF SHEATHING NAILING
THIS IS A REINSPECTION
APPROVED (Apr 29, 2012)
RESULTS FROM JIM MCNIEL

400 / 400 STRUCTURAL FRAMING/FULL
APPROVED (Jun 27, 2012)
RESULTS FROM WILL WALKUP

400 / 400 STRUCTURAL FRAMING/FULL
NOTES FROM APPLICANT: "Requesting Structural Framing Full Inspection. Roof Sheathing Nailing previously made."
INSPECTION CANC. BY DEPARTMENT (Jun 26, 2012)
RESULTS FROM WILL WALKUP

430 / 430 SUBCONTRACTOR VERIFICATION REL
6/27 received sub sheet

electric david gunter

hvac today's heat & air

plumbing done right plumbing

roofing jim temple

gas none

low voltage crime prevention
ACCEPTED AS NOTED (Jun 27, 2012)
RESULTS FROM LYNN HALL

450 / 450 MECHANICAL FRAMING/FULL
RESUBMITTED ENERGY FORM W/ CORRECTED WINDOW SHGC # 6/28/12 JKJ.
-two back windows and upstairs bath lower sashes need to be tempered.
master bed smoke needs to be moved to within 1' of ceiling...jcf
ACCEPTED AS NOTED (Jun 29, 2012)
RESULTS FROM JOHN FREELAND

500 / 500 INSULATION/FULL
APPROVED (Jul 5, 2012)
RESULTS FROM WILL WALKUP

550 / 550

CEILING CONCEALMENT/FULL
APPROVED (Jul 10, 2012)
RESULTS FROM WILL WALKUP

600 / 600 SEMI-PERMANENT POWER
PENDING (Aug 17, 2012)

900 / 900 HEALTH DEPARTMENT RELEASE
NOT SCHEDULED

955 / 955 EPD RELEASE
NOT SCHEDULED

985 / 985 CHECK JOB PER B.O.
13 IPF
NOT SCHEDULED

999 / 999 FINAL INSPECTION
NOT SCHEDULED

Authorized Alachua County Users Only - EPD, GM, PS, PW, Health Department

Click for a step by step USER GUIDE

Click to enter Comments by Address.

Click to enter Results of Field Inspections and Plan Exams.

Click to enter the Impact Fee Calculator Staff Site.

Click to enter the Impact Fee Calculator Admin Site.

Click for a list of Alachua County Authorized Users.

About the Permit Tracker

Geospatial Report Maker

Back to Data Search and Reports

Report Description

The Building Permits Activity report shows the value of construction and number of building permits issued each month of the last 27 years. Each report shows the totals year to date and the totals from the same month of the previous year.

Contact John Freeland, Alachua County Building Official, with questions or comments about this report.

Report Parameters

Issued Month: January

Issued Year: 1984

Permit Type: AP - Accessory Building

Jurisdiction: - All Jurisdictions -

Report Format: Excel

View Report

→ example follows

Alachua County Logo

Alachua County
Board of County Commissioners
Department of Growth Management

10 SW 2nd Ave, Gainesville, FL 32601
Tel: 352.374.5249, Fax: 352.338.3224
http://growth-management.alachuacounty.us/

Report Parameters

- Issued Month = March
- Issued Year = 2012
- Permit Type = RR - Roofing
- Jurisdiction = Alachua County

		Current Month		Year to Date		Previous Year Monthly Total		Previous Year Year to Date	
FCC Code	FCC Description	Number	Value	Number	Value	Number	Value	Number	Value
101	SINGLE FAMILY DETACHED	0	$0	0	$0	0	$0	0	$0
102	SINGLE FAMILY ATTACHED	0	$0	0	$0	0	$0	0	$0
103	TWO FAMILY BUILDINGS	0	$0	0	$0	0	$0	0	$0
104	3 AND 4 FAMILY BUILDING	0	$0	0	$0	0	$0	0	$0
105	5 OR MORE FAMILY BUILDING	0	$0	0	$0	0	$0	0	$0
112	MANUFACTURED HOUSING	0	$0	0	$0	0	$0	0	$0
113	REPLACE MANUFACTURED HOUSING	0	$0	0	$0	0	$0	0	$0
150	RES. ELECT. NEW	0	$0	0	$0	0	$0	0	$0
151	RES. ELECT. ALT./REPAIR	0	$0	0	$0	0	$0	0	$0
152	COM. ELECT. NEW	0	$0	0	$0	0	$0	0	$0
153	COM. ELECT. ALT./REPAIRS	0	$0	0	$0	0	$0	0	$0
201	RESIDENTIAL - MISC.	0	$0	0	$0	0	$0	0	$0
213	HOTEL/MOTEL;TOURIST CABINS	0	$0	0	$0	0	$0	0	$0
214	OTHER NON-HOUSKEEPING SHELTER	0	$0	0	$0	0	$0	0	$0
250	RES. PLUMB. NEW	0	$0	0	$0	0	$0	0	$0
251	RES. PLUMB. ALT./REPAIRS	0	$0	0	$0	0	$0	0	$0
252	COMML. PLUMBING NEW	0	$0	0	$0	0	$0	0	$0
253	COMML. PLUMBING ALT./REPAIR	0	$0	0	$0	0	$0	0	$0
260	FIRE SPRINKLER SYSTEM-NEW	0	$0	0	$0	0	$0	0	$0
261	NEW FIRE ALARM SYSTEM	0	$0	0	$0	0	$0	0	$0
262	REPLACE/REPAIR EXISTING ALARM SYSTEM	0	$0	0	$0	0	$0	0	$0
265	FIRE SPRINKLER SYSTEM - RENOVATE	0	$0	0	$0	0	$0	0	$0
318	AMUSEMENT/SOCIAL/RECREATION	0	$0	0	$0	0	$0	0	$0
319	CHURCH / RELIGIOUS BUILDING	0	$0	0	$0	0	$0	0	$0
320	INDUSTRIAL	0	$0	0	$0	0	$0	0	$0
321	PARKING GARAGE	0	$0	0	$0	0	$0	0	$0
322	SERVICE / REPAIR STATIONS	0	$0	0	$0	0	$0	0	$0
323	HOSPITAL/INSTITUTIONAL	0	$0	0	$0	0	$0	0	$0
324	OFFICE/BANK/PROFESSIONAL	0	$0	0	$0	0	$0	0	$0
325	PUBLIC WORKS & UTILITIES	0	$0	0	$0	0	$0	0	$0
326	SCHOOLS & OTHER EDUCATIONAL	0	$0	0	$0	0	$0	0	$0
327	STORES & CUSTOMER SERVICES	0	$0	0	$0	0	$0	0	$0
328	OTHER NONRESIDENTIAL BUILDINGS	0	$0	0	$0	0	$0	0	$0

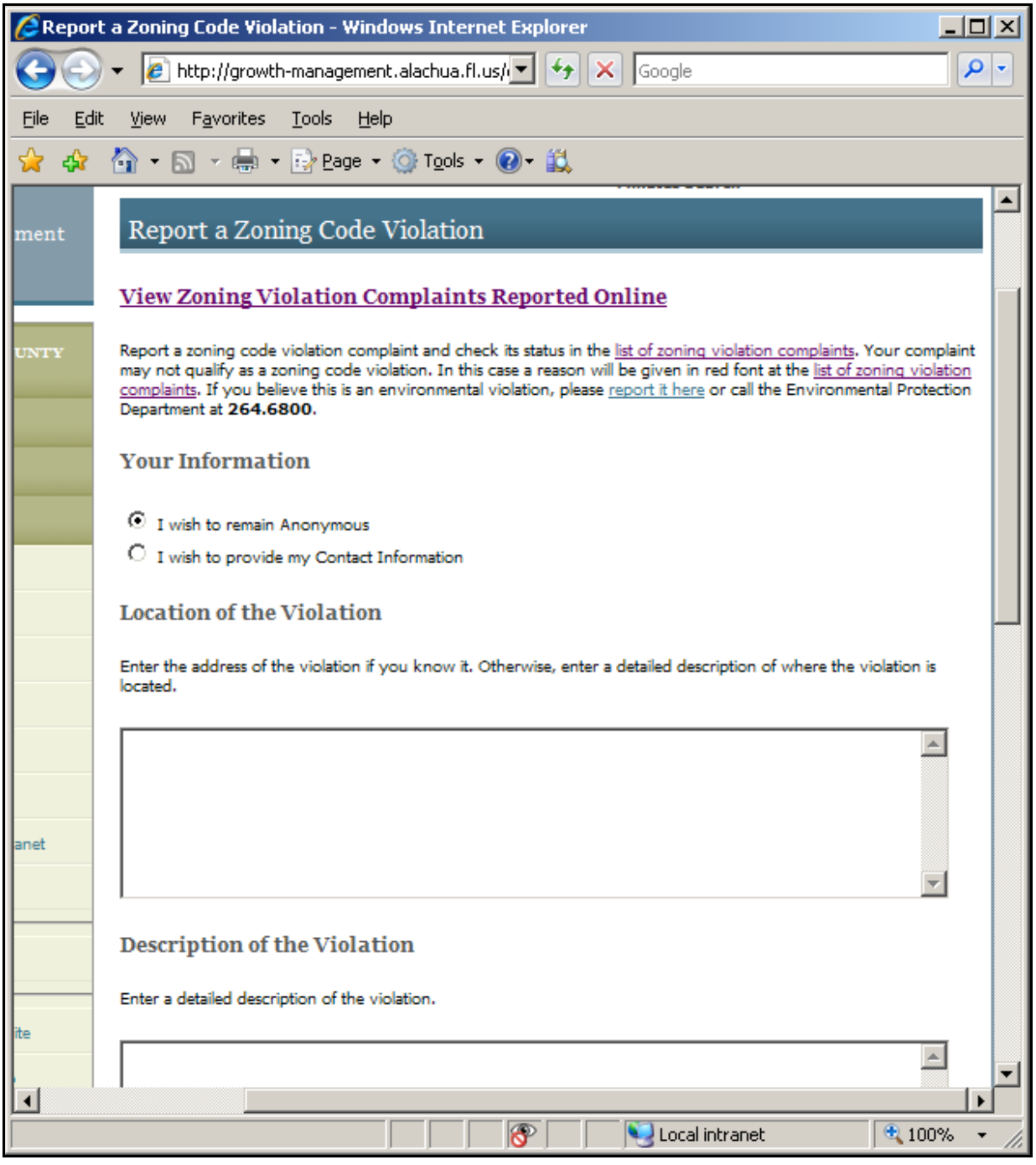
329	STRUCT. OTHER THAN BLDGS.	0	$0	0	$0	0	$0	0	$0
350	RESIDENTIAL MECHANICAL NEW	0	$0	0	$0	0	$0	0	$0
351	RESID. MECHANICAL ALT/REPAIR	0	$0	0	$0	0	$0	0	$0
352	COMML. MECHANICAL NEW	0	$0	0	$0	0	$0	0	$0
353	COMML. MECHANICAL ALT./REPAIR	0	$0	0	$0	0	$0	0	$0
434	RESIDENTIAL ALTER. / ADDN.	1	$7,265	1	$7,265	0	$0	1	$15,816
437	NONRES. ADDN./ALT & CONVER	2	$13,320	2	$13,320	0	$0	0	$0
438	RES. CARPORT/GARAGE ADDITIONS	0	$0	0	$0	0	$0	0	$0
555	GARAGE SALE (TEMPORARY)	0	$0	0	$0	0	$0	0	$0
644	INTERIOR DEMOLITION	0	$0	0	$0	0	$0	0	$0
645	DEMO SINGLE FAMILY HOUSE	0	$0	0	$0	0	$0	0	$0
646	DEMO 2 FAMILY BUILDING	0	$0	0	$0	0	$0	0	$0
647	DEMO 3 & 4 FAMILY BUILDING	0	$0	0	$0	0	$0	0	$0
648	DEMO 5 OR MORE FAMILY BLDG	0	$0	0	$0	0	$0	0	$0
649	DEMO NON RES. BLDG/STRUCT.	0	$0	0	$0	0	$0	0	$0
650	DEMOLITION - OTHER STRUCTURE	0	$0	0	$0	0	$0	0	$0
651	DEMOLITION - PLUMBING	0	$0	0	$0	0	$0	0	$0
652	DEMOLITION - ELECTRICAL	0	$0	0	$0	0	$0	0	$0
701	ROOF: NEW RESIDENTIAL	0	$0	0	$0	0	$0	0	$0
702	ROOF: REPAIR RESIDENTIAL	74	$493,094	156	$1,107,491	70	$486,521	189	$1,241,157
703	PAVER TILE RESIDENTIAL	0	$0	0	$0	0	$0	0	$0
704	SLAB/DRIVE/WALL EXT;RES.	0	$0	0	$0	0	$0	0	$0
705	UTILITY SHED: RESIDENTIAL	0	$0	0	$0	0	$0	0	$0
706	SATELLITE DISH	0	$0	0	$0	0	$0	0	$0
707	MINOR RES. REPAIR	0	$0	0	$0	0	$0	0	$0
708	REMODEL: RESIDENTIAL	0	$0	0	$0	0	$0	0	$0
710	SCREEN ENCLOSURE: RESIDENTIAL	0	$0	0	$0	0	$0	0	$0
711	POOL: RESIDENTIAL	0	$0	0	$0	0	$0	0	$0
712	SPA: RESIDENTIAL	0	$0	0	$0	0	$0	0	$0
714	CARPORT CONV. TO GARAGE	0	$0	0	$0	0	$0	0	$0
801	UNCLASSIFIED COMMERCIAL STRUCT.	0	$0	0	$0	0	$0	0	$0
802	TOWER: COMMERCIAL	0	$0	0	$0	0	$0	0	$0
803	WOOD DECK (DOCK)	0	$0	0	$0	0	$0	0	$0
804	EXT. SLAB/WALL;COMML	0	$0	0	$0	0	$0	0	$0
805	UTILITY/ACCESSORY: COMMERCIAL	0	$0	0	$0	0	$0	0	$0
806	POOL: COMMERCIAL	0	$0	0	$0	0	$0	0	$0
807	SPA: COMMERCIAL	0	$0	0	$0	0	$0	0	$0
808	ADDITION: COMMERCIAL	0	$0	0	$0	0	$0	0	$0
809	REMODEL: COMMERCIAL	0	$0	0	$0	0	$0	0	$0
810	REPAIR: COMMERCIAL	0	$0	0	$0	0	$0	0	$0
811	PAVING: COMMERCIAL	0	$0	0	$0	0	$0	0	$0
812	PAVING: RESIDENTIAL	0	$0	0	$0	0	$0	0	$0
813	EXT SLAB / WALL RESIDENTIAL	0	$0	0	$0	0	$0	0	$0
819	TENANT BUILD OUT (1ST CONST)	0	$0	0	$0	0	$0	0	$0
820	ROOF: NEW COMMERCIAL	0	$0	0	$0	0	$0	0	$0
821	ROOF: REPAIR COMMERCIAL	3	$88,434	16	$379,626	3	$293,156	18	$478,075
825	MANUFACTURED BLDG. COMMERCIAL	0	$0	0	$0	0	$0	0	$0
900	REISSUE PERMIT	0	$0	0	$0	0	$0	0	$0
901	PRELIMINARY REVIEW ONLY	0	$0	0	$0	0	$0	0	$0
903	REVISION: COMMERCIAL	0	$0	0	$0	0	$0	0	$0

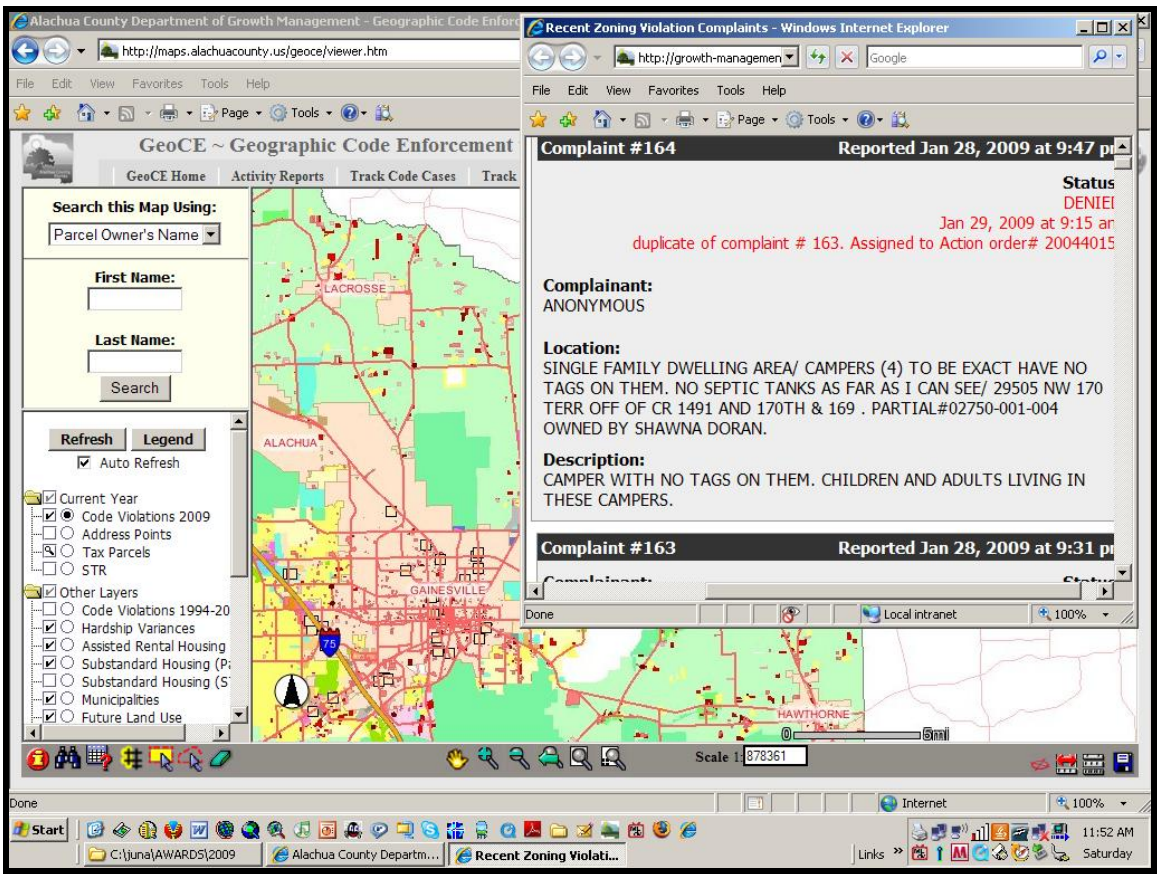
904	REVISION: RESIDENTIAL	0	$0	0	$0	0	$0	0	$0
905	FENCE	0	$0	0	$0	0	$0	0	$0
906	STUCCO/SIDING: RESIDENTIAL	0	$0	0	$0	0	$0	0	$0
909	STUCCO/SIDING: COMMERCIAL	0	$0	0	$0	0	$0	0	$0
910	TEMP CONST TRAILER	0	$0	0	$0	0	$0	0	$0
911	SIGN: OFF-SITE	0	$0	0	$0	0	$0	0	$0
912	SIGN: ON-SITE PERMANENT	0	$0	0	$0	0	$0	0	$0
913	SIGN: PORTABLE	0	$0	0	$0	0	$0	0	$0
914	SIGN: TEMPORARY	0	$0	0	$0	0	$0	0	$0
915	TENT	0	$0	0	$0	0	$0	0	$0
916	SIGN DEMO / REMOVAL	0	$0	0	$0	0	$0	0	$0
918	LANDSCAPING	0	$0	0	$0	0	$0	0	$0
919	TREE REMOVAL	0	$0	0	$0	0	$0	0	$0
922	CANOPY (NO SIDES)	0	$0	0	$0	0	$0	0	$0
	Totals:	80	$602,113	175	$1,507,702	73	$779,677	208	$1,735,048

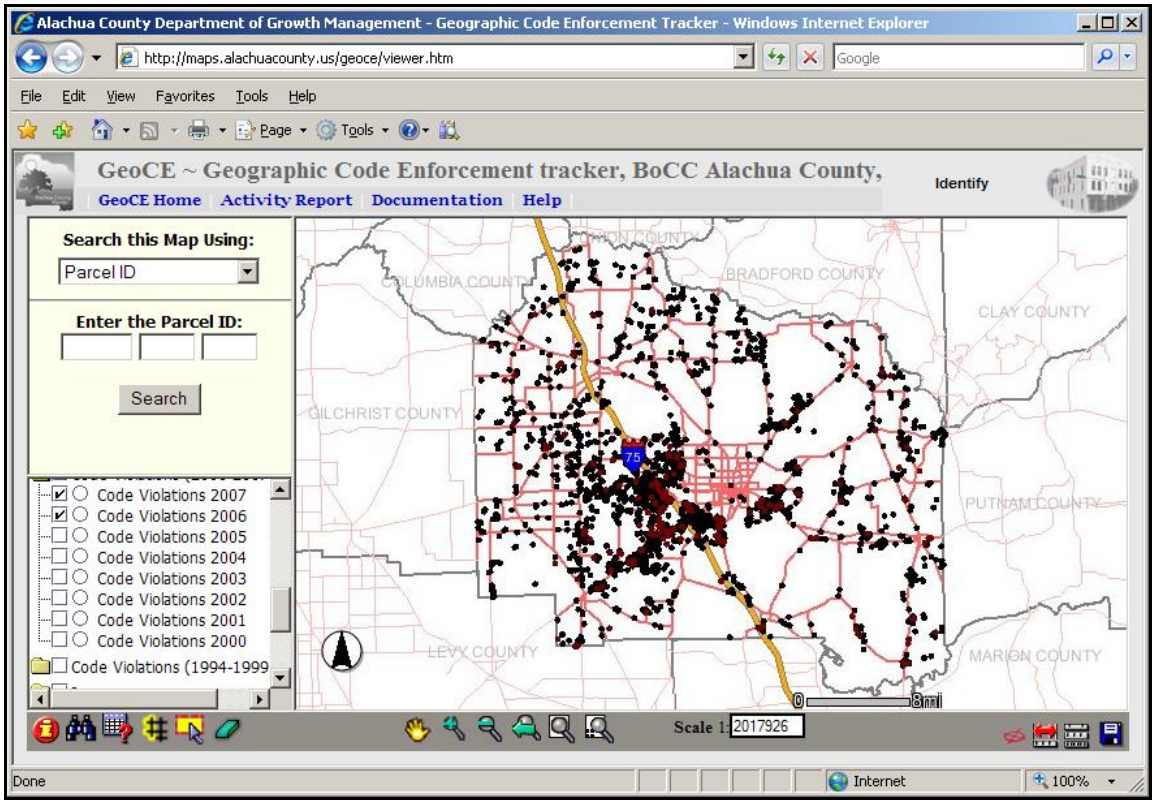
The Building Permits Activity report shows the value of construction and number of building permits issued each month of the last 27 years. Each report shows the totals year to date and the totals from the same month of the previous year.

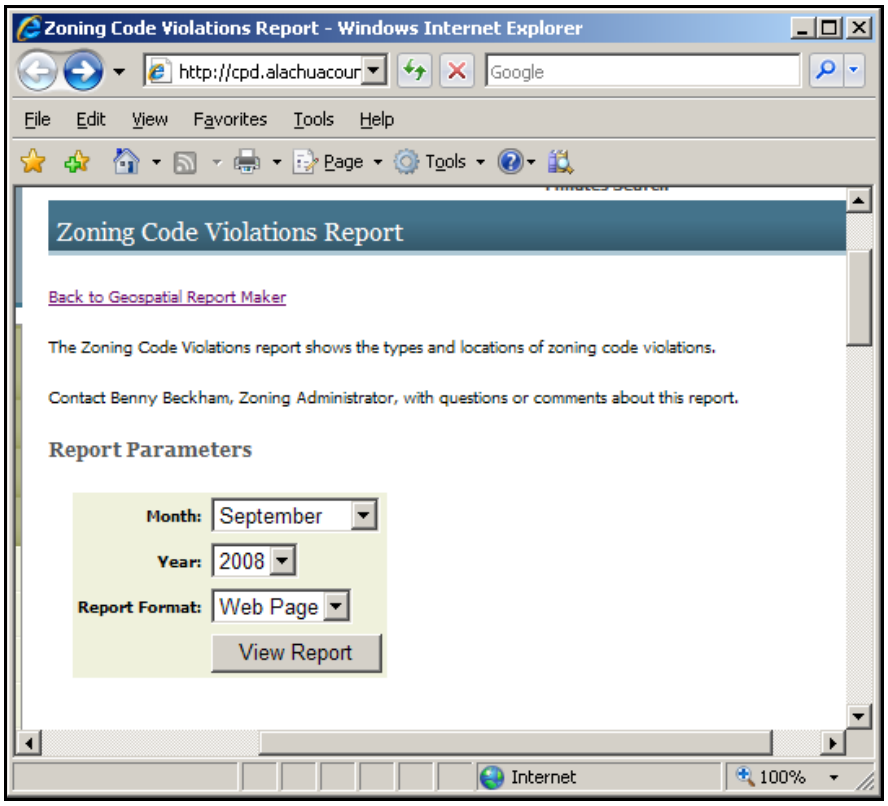
This report was generated on August 17, 2012 at 1:40 pm.

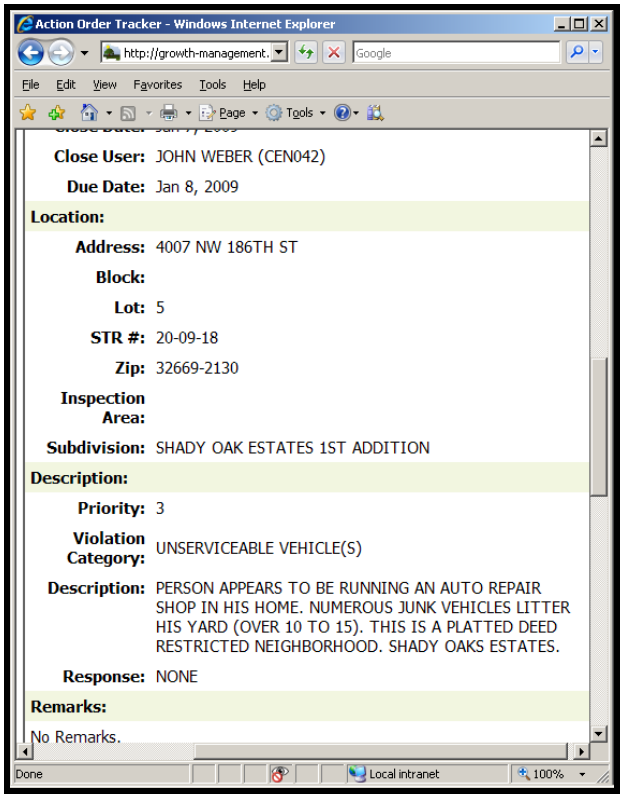
APPENDIX B
ALACHUA COUNTY GEOWEB CODE ENFORCEMENT TRACKER

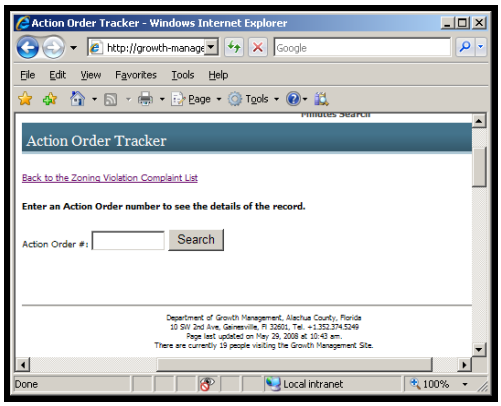



Alachua County Department of Growth Management - Geographic Code Enforc
http://maps.alachuacounty.us/geoce/viewer.htm
GeoCE ~ Geographic Code Enforcement
GeoCE Home
Activity Reports
Track Code Cases
Search this Map Using:
Parcel Owner's Name
First Name:
Last Name:
Search
Refresh
Legend
Auto Refresh
Current Year
Code Violations 2009
Address Points
Tax Parcels
STR
Other Layers
Code Violations 1994-20
Hardship Variances
Assisted Rental Housing
Substandard Housing (P
Substandard Housing (S
Municipalities
Future Land Use
LACROSSE
ALACHUA
GAINESVILLE
HAWTHORNE
Scale 1: 878361
Recent Zoning Violation Complaints - Windows Internet Explorer
http://growth-managemen
Complaint #164
Reported Jan 28, 2009 at 9:47 pr
Status
DENIEI
Jan 29, 2009 at 9:15 ar
duplicate of complaint # 163. Assigned to Action order# 20044015
Complainant:
ANONYMOUS
Location:
SINGLE FAMILY DWELLING AREA/ CAMPERS (4) TO BE EXACT HAVE NO TAGS ON THEM. NO SEPTIC TANKS AS FAR AS I CAN SEE/ 29505 NW 170 TERR OFF OF CR 1491 AND 170TH & 169 . PARTIAL#02750-001-004 OWNED BY SHAWNA DORAN.
Description:
CAMPER WITH NO TAGS ON THEM. CHILDREN AND ADULTS LIVING IN THESE CAMPERS.
Complaint #163
Reported Jan 28, 2009 at 9:31 pr
Done
Local intranet
100%
Internet
11:52 AM
Saturday

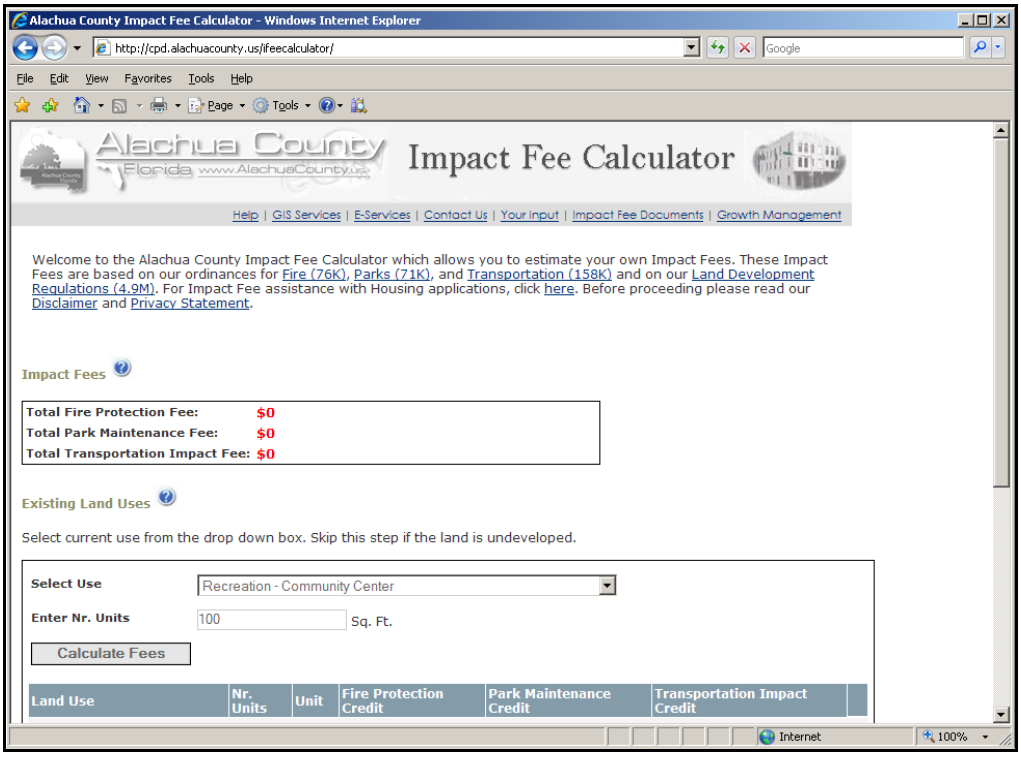

Alachua County Department of Growth Management - Geographic Code Enforcement Tracker - Windows Internet Explorer
http://maps.alachuacounty.us/geoce/viewer.htm
GeoCE ~ Geographic Code Enforcement tracker, BoCC Alachua County,
GeoCE Home
Activity Report
Documentation
Help
Identify
Search this Map Using:
Parcel ID
Enter the Parcel ID:
Search
Code Violations 2007
Code Violations 2006
Code Violations 2005
Code Violations 2004
Code Violations 2003
Code Violations 2002
Code Violations 2001
Code Violations 2000
Code Violations (1994-1999
COLUMBIA COUNTY
BRADFORD COUNTY
CLAY COUNTY
GILCHRIST COUNTY
PUTNAM COUNTY
LEVY COUNTY
MARION COUNTY
Scale 1: 2017926
Done
Internet
100%

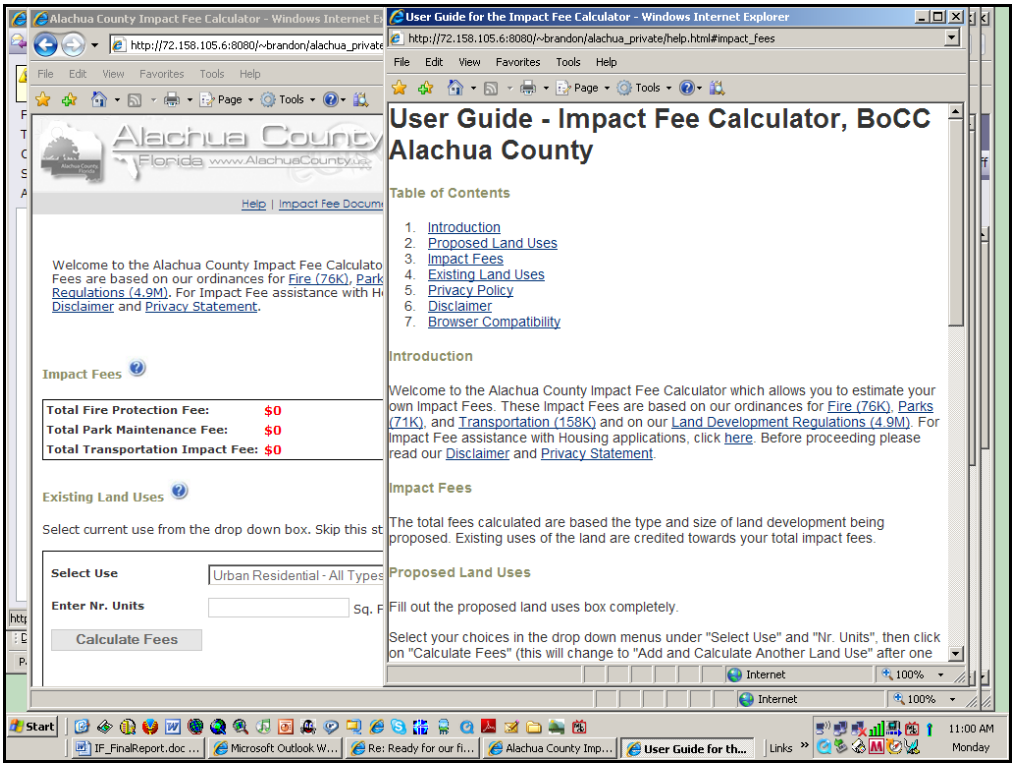

Zoning Code Violations Report - Windows Internet Explorer
http://cpd.alachuacour
Google
File Edit View Favorites Tools Help
Page Tools
Zoning Code Violations Report
Back to Geospatial Report Maker
The Zoning Code Violations report shows the types and locations of zoning code violations.
Contact Benny Beckham, Zoning Administrator, with questions or comments about this report.
Report Parameters
Month: September
Year: 2008
Report Format: Web Page
View Report
Internet
100%

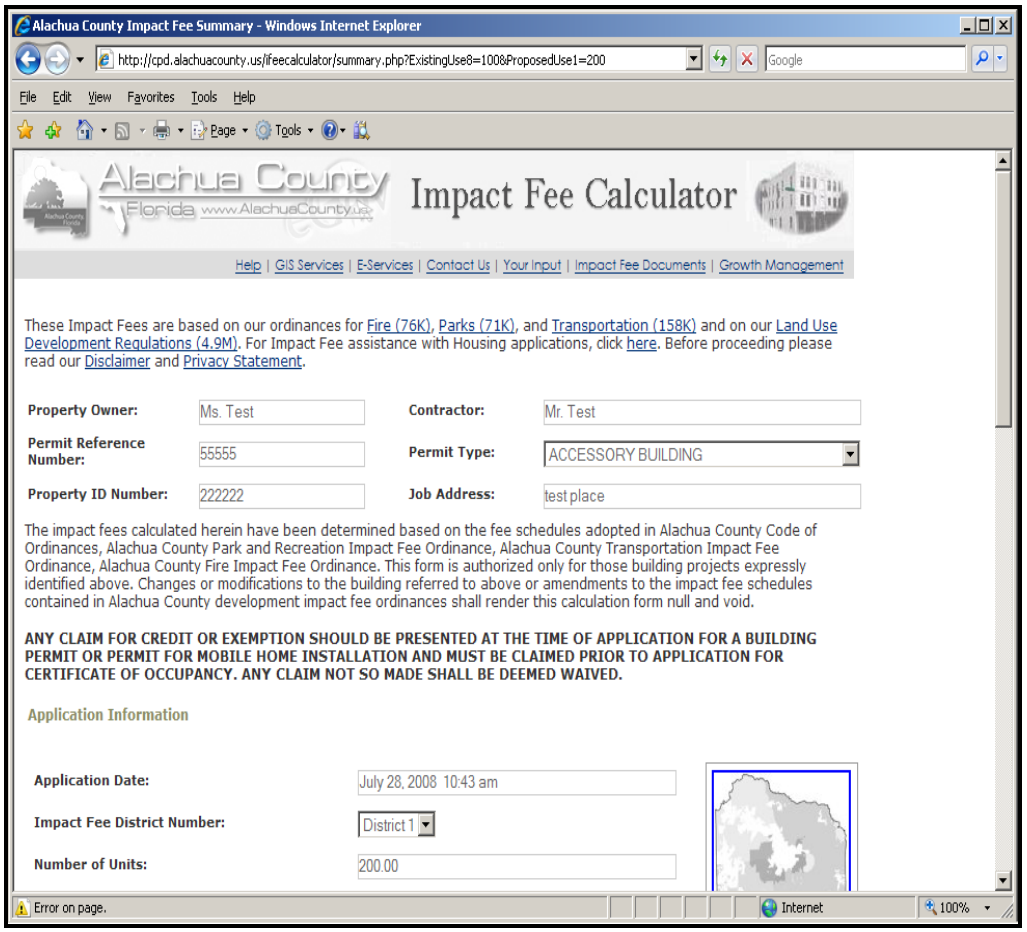

Action Order Tracker - Windows Internet Explorer
http://growth-management.
Google
File Edit View Favorites Tools Help
Page Tools
Close User: JOHN WEBER (CEN042)
Due Date: Jan 8, 2009
Location:
Address: 4007 NW 186TH ST
Block:
Lot: 5
STR #: 20-09-18
Zip: 32669-2130
Inspection Area:
Subdivision: SHADY OAK ESTATES 1ST ADDITION
Description:
Priority: 3
Violation Category: UNSERVICEABLE VEHICLE(S)
Description: PERSON APPEARS TO BE RUNNING AN AUTO REPAIR SHOP IN HIS HOME. NUMEROUS JUNK VEHICLES LITTER HIS YARD (OVER 10 TO 15). THIS IS A PLATTED DEED RESTRICTED NEIGHBORHOOD. SHADY OAKS ESTATES.
Response: NONE
Remarks:
No Remarks.
Done
Local intranet
100%


Action Order Tracker - Windows Internet Explorer
http://growth-manage
Google
File Edit View Favorites Tools Help
Page Tools
Action Order Tracker
Back to the Zoning Violation Complaint List
Enter an Action Order number to see the details of the record.
Action Order #:
Search
Done
Local intranet
100%

APPENDIX C
ALACHUA COUNTY GEOWEB IMPACT FEE CALCULATOR






Alachua County Impact Fee Summary - Windows Internet Explorer
http://cpd.alachuacounty.us/ifeecalculator/summary.php?ExistingUse8=1008ProposedUse1=200
Alachua County Florida www.AlachuaCounty.us
Impact Fee Calculator
Help | GIS Services | E-Services | Contact Us | Your Input | Impact Fee Documents | Growth Management
These Impact Fees are based on our ordinances for Fire (76K), Parks (71K), and Transportation (158K) and on our Land Use Development Regulations (4.9M). For Impact Fee assistance with Housing applications, click here. Before proceeding please read our Disclaimer and Privacy Statement.
Property Owner: Ms. Test
Contractor: Mr. Test
Permit Reference Number: 55555
Permit Type: ACCESSORY BUILDING
Property ID Number: 222222
Job Address: test place
The impact fees calculated herein have been determined based on the fee schedules adopted in Alachua County Code of Ordinances, Alachua County Park and Recreation Impact Fee Ordinance, Alachua County Transportation Impact Fee Ordinance, Alachua County Fire Impact Fee Ordinance. This form is authorized only for those building projects expressly identified above. Changes or modifications to the building referred to above or amendments to the impact fee schedules contained in Alachua County development impact fee ordinances shall render this calculation form null and void.
ANY CLAIM FOR CREDIT OR EXEMPTION SHOULD BE PRESENTED AT THE TIME OF APPLICATION FOR A BUILDING PERMIT OR PERMIT FOR MOBILE HOME INSTALLATION AND MUST BE CLAIMED PRIOR TO APPLICATION FOR CERTIFICATE OF OCCUPANCY. ANY CLAIM NOT SO MADE SHALL BE DEEMED WAIVED.
Application Information
Application Date: July 28, 2008 10:43 am
Impact Fee District Number: District 1
Number of Units: 200.00
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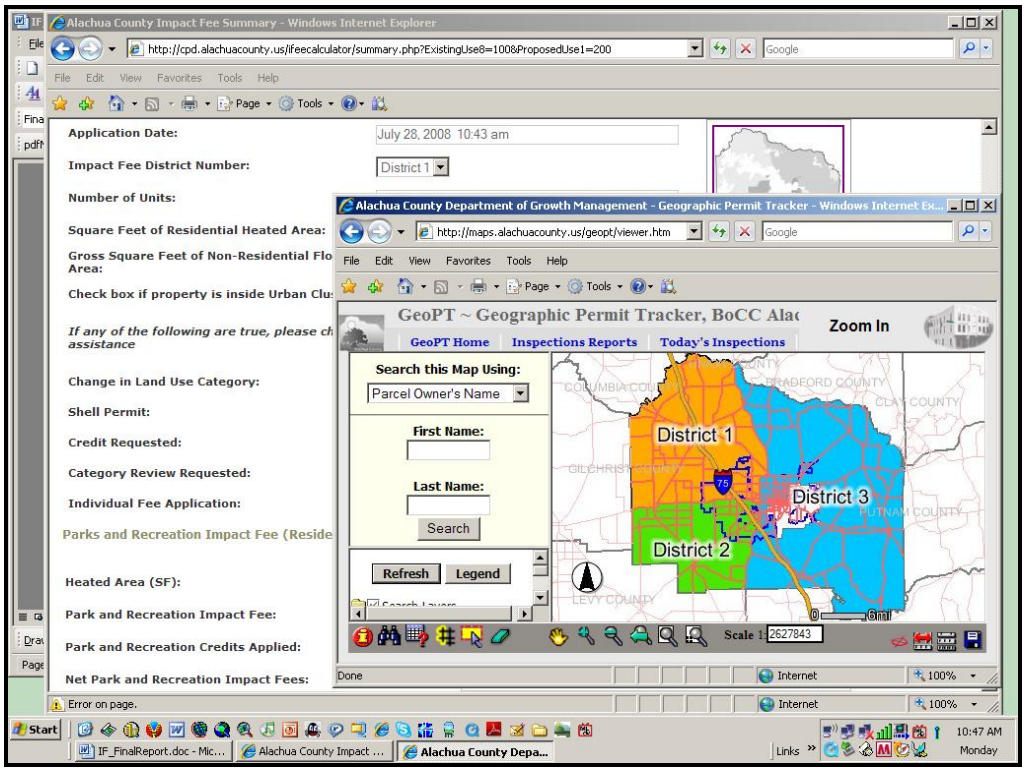
Alachua County Impact Fee Summary - Windows Internet Explorer
Application Date: July 28, 2008 10:43 am
Impact Fee District Number: District 1
Number of Units:
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Check box if property is inside Urban Clu:
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Category Review Requested:
Individual Fee Application:
Parks and Recreation Impact Fee (Reside
Heated Area (SF):
Park and Recreation Impact Fee:
Park and Recreation Credits Applied:
Net Park and Recreation Impact Fees:
Alachua County Department of Growth Management - Geographic Permit Tracker - Windows Internet Ex...
http://maps.alachuacounty.us/geopt/viewer.htm
GeoPT ~ Geographic Permit Tracker, BoCC Alac
Zoom In
GeoPT Home
Inspections Reports
Today's Inspections
Search this Map Using:
Parcel Owner's Name
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Last Name:
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Legend
District 1
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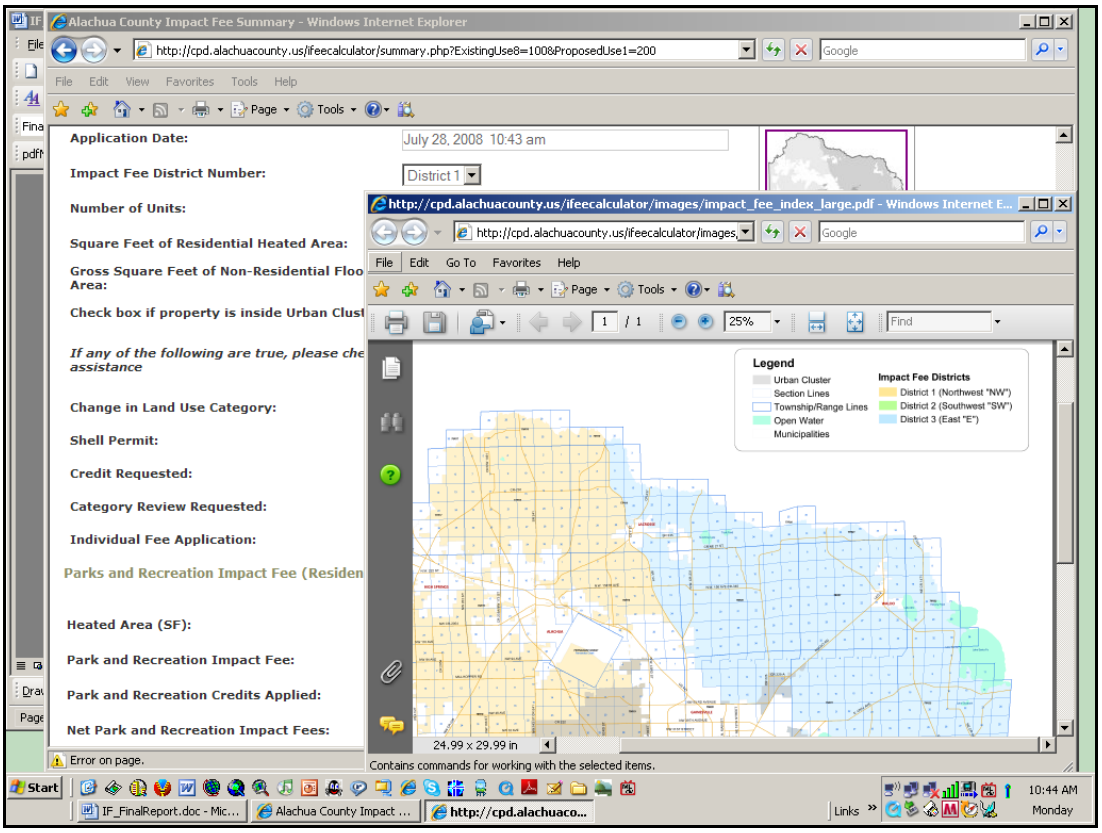
Alachua County Impact Fee Summary - Windows Internet Explorer
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Application Date:
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Number of Units:
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Net Park and Recreation Impact Fees:
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Township/Range Lines
Open Water
Municipalities
Impact Fee Districts
District 1 (Northwest "NW")
District 2 (Southwest "SW")
District 3 (East "E")
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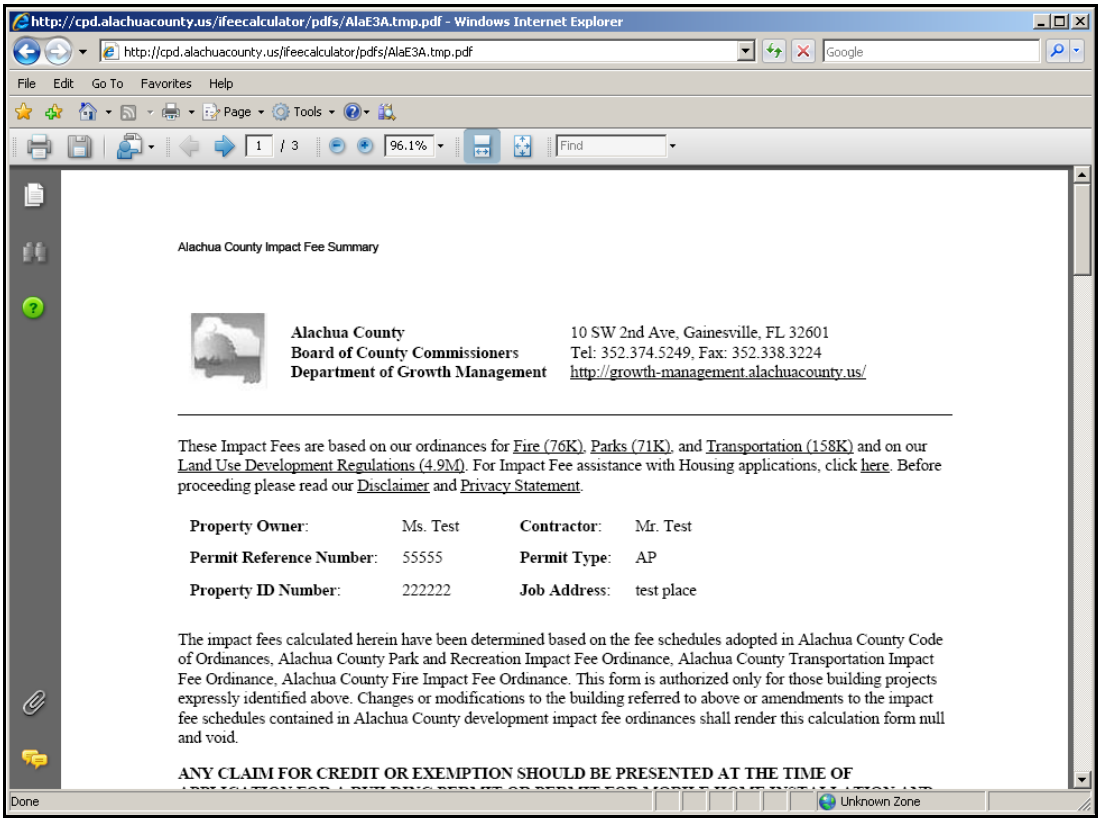
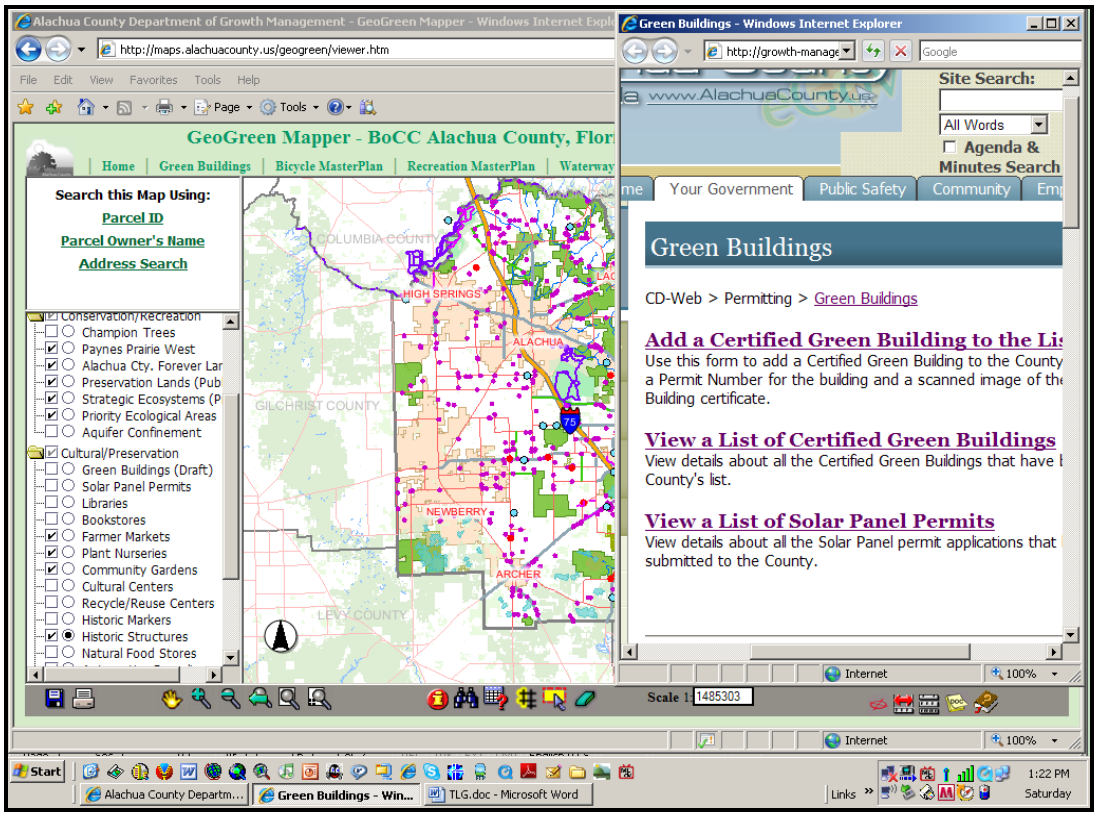
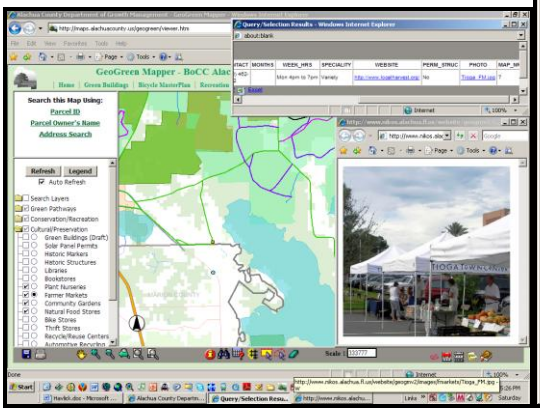
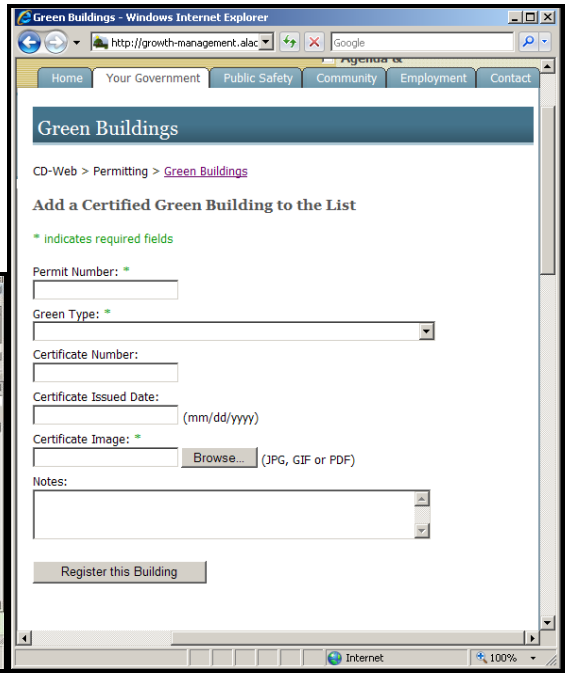
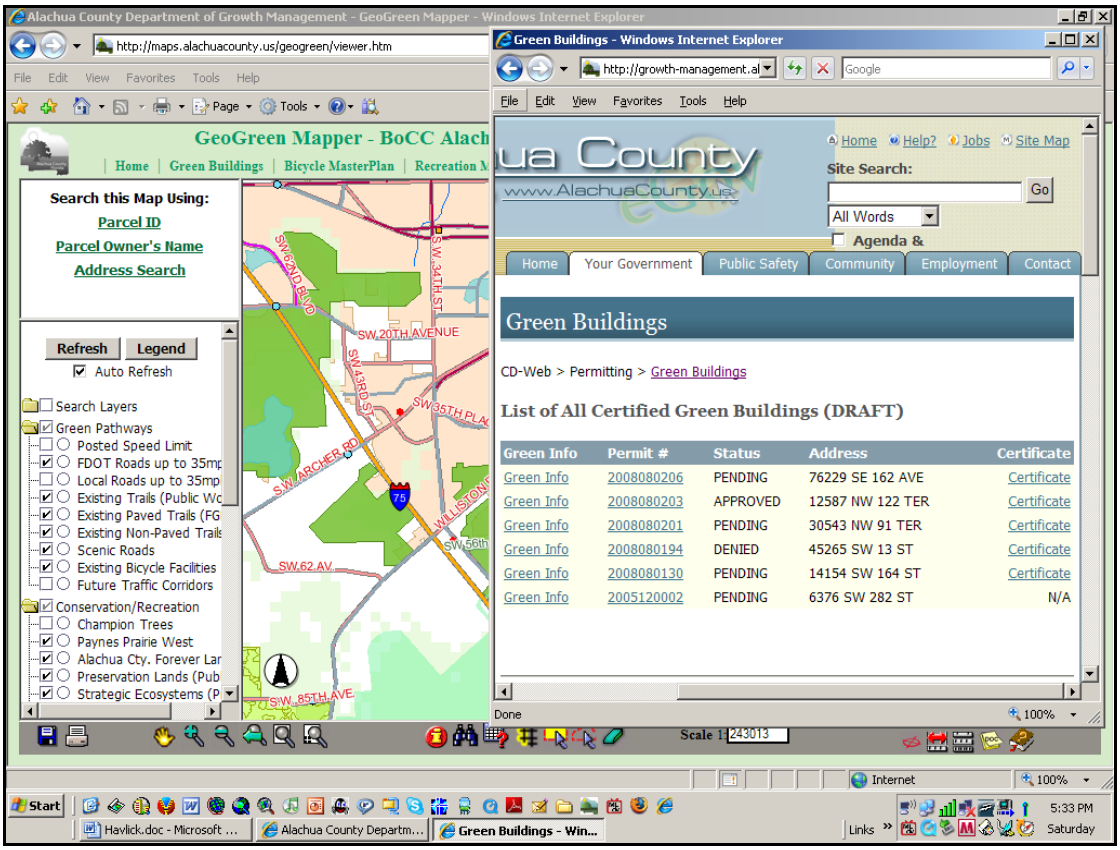

http://cpd.alachuacounty.us/ifeecalculator/pdfs/AlaE3A.tmp.pdf - Windows Internet Explorer
Alachua County Impact Fee Summary
Alachua County
Board of County Commissioners
Department of Growth Management
10 SW 2nd Ave, Gainesville, FL 32601
Tel: 352.374.5249, Fax: 352.338.3224
http://growth-management.alachuacounty.us/
These Impact Fees are based on our ordinances for Fire (76K), Parks (71K), and Transportation (158K) and on our Land Use Development Regulations (4.9M). For Impact Fee assistance with Housing applications, click here. Before proceeding please read our Disclaimer and Privacy Statement.
Property Owner: Ms. Test
Contractor: Mr. Test
Permit Reference Number: 55555
Permit Type: AP
Property ID Number: 222222
Job Address: test place
The impact fees calculated herein have been determined based on the fee schedules adopted in Alachua County Code of Ordinances, Alachua County Park and Recreation Impact Fee Ordinance, Alachua County Transportation Impact Fee Ordinance, Alachua County Fire Impact Fee Ordinance. This form is authorized only for those building projects expressly identified above. Changes or modifications to the building referred to above or amendments to the impact fee schedules contained in Alachua County development impact fee ordinances shall render this calculation form null and void.
ANY CLAIM FOR CREDIT OR EXEMPTION SHOULD BE PRESENTED AT THE TIME OF

APPENDIX D
ALACHUA COUNTY GEOGREEN MAPPER








Alachua County Department of Growth Management - GeoGreen Mapper - Windows Internet Explorer
http://maps.alachuacounty.us/geogreen/viewer.htm
GeoGreen Mapper - BoCC Alach
Home | Green Buildings | Bicycle MasterPlan | Recreation
Search this Map Using:
Parcel ID
Parcel Owner's Name
Address Search
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Legend
Auto Refresh
Search Layers
Green Pathways
Posted Speed Limit
FDOT Roads up to 35mp
Local Roads up to 35mp
Existing Trails (Public Wc
Existing Paved Trails (FG
Existing Non-Paved Trails
Scenic Roads
Existing Bicycle Facilities
Future Traffic Corridors
Conservation/Recreation
Champion Trees
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Alachua Cty. Forever Lar
Preservation Lands (Pub
Strategic Ecosystems (P
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Green Buildings - Windows Internet Explorer
http://growth-management.al
File Edit View Favorites Tools Help
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Home Help? Jobs Site Map
Site Search:
Go
All Words
Agenda &
Home
Your Government
Public Safety
Community
Employment
Contact
Green Buildings
CD-Web > Permitting > Green Buildings
List of All Certified Green Buildings (DRAFT)
Green Info | Permit # | Status | Address | Certificate
Green Info | 2008080206 | PENDING | 76229 SE 162 AVE | Certificate
Green Info | 2008080203 | APPROVED | 12587 NW 122 TER | Certificate
Green Info | 2008080201 | PENDING | 30543 NW 91 TER | Certificate
Green Info | 2008080194 | DENIED | 45265 SW 13 ST | Certificate
Green Info | 2008080130 | PENDING | 14154 SW 164 ST | Certificate
Green Info | 2005120002 | PENDING | 6376 SW 282 ST | N/A
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Green Buildings - Win...
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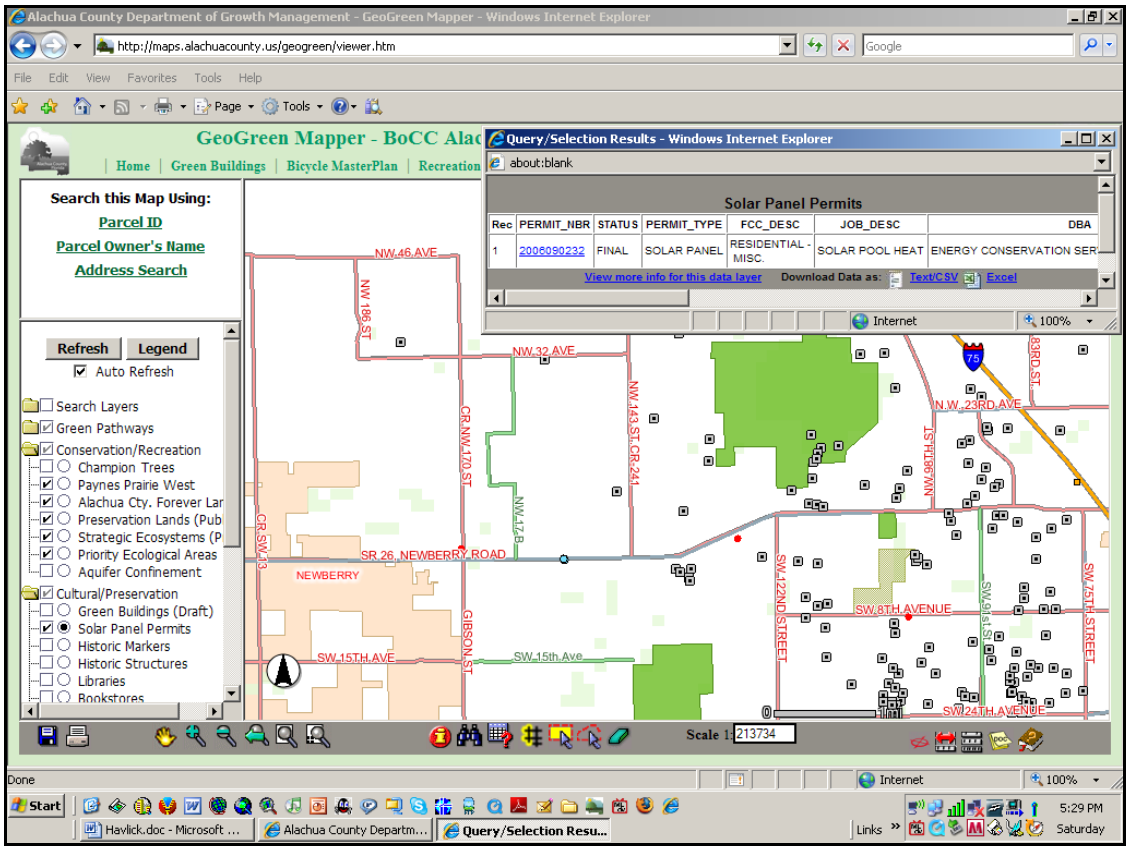
Alachua County Department of Growth Management - GeoGreen Mapper - Windows Internet Explorer
http://maps.alachuacounty.us/geogreen/viewer.htm
GeoGreen Mapper - BoCC Alac
Home | Green Buildings | Bicycle MasterPlan | Recreation
Search this Map Using:
Parcel ID
Parcel Owner's Name
Address Search
Refresh
Legend
Auto Refresh
Search Layers
Green Pathways
Conservation/Recreation
Champion Trees
Paynes Prairie West
Alachua Cty. Forever Lar
Preservation Lands (Pub
Strategic Ecosystems (P
Priority Ecological Areas
Aquifer Confinement
Cultural/Preservation
Green Buildings (Draft)
Solar Panel Permits
Historic Markers
Historic Structures
Libraries
Bookstores
Query/Selection Results - Windows Internet Explorer
about:blank
Solar Panel Permits
Rec | PERMIT_NBR | STATUS | PERMIT_TYPE | FCC_DESC | JOB_DESC | DBA
1 | 2006090232 | FINAL | SOLAR PANEL | RESIDENTIAL - MISC. | SOLAR POOL HEAT | ENERGY CONSERVATION SER
View more info for this data layer
Download Data as: Text/CSV Excel
NW.46.AVE
NW.32.AVE
SR.26.NEWBERRY.ROAD
NEWBERRY
SW.15TH.AVE
SW.15th.Ave
SW.8TH.AVENUE
SW.24TH.AVENUE
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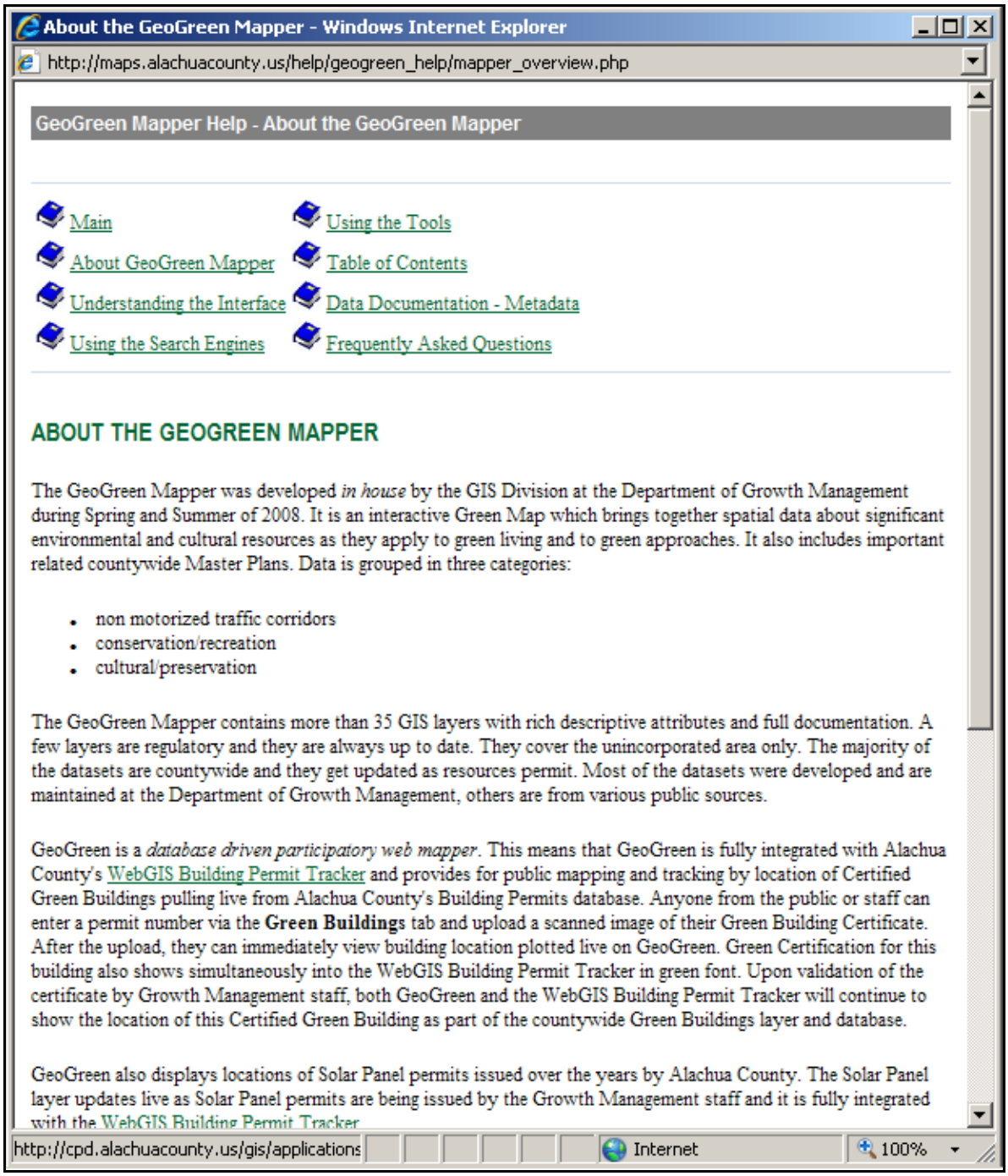
About the GeoGreen Mapper - Windows Internet Explorer
http://maps.alachuacounty.us/help/geogreen_help/mapper_overview.php
GeoGreen Mapper Help - About the GeoGreen Mapper
Main
About GeoGreen Mapper
Understanding the Interface
Using the Search Engines
Using the Tools
Table of Contents
Data Documentation - Metadata
Frequently Asked Questions
ABOUT THE GEOGREEN MAPPER
The GeoGreen Mapper was developed in house by the GIS Division at the Department of Growth Management during Spring and Summer of 2008. It is an interactive Green Map which brings together spatial data about significant environmental and cultural resources as they apply to green living and to green approaches. It also includes important related countywide Master Plans. Data is grouped in three categories:
non motorized traffic corridors
conservation/recreation
cultural/preservation
The GeoGreen Mapper contains more than 35 GIS layers with rich descriptive attributes and full documentation. A few layers are regulatory and they are always up to date. They cover the unincorporated area only. The majority of the datasets are countywide and they get updated as resources permit. Most of the datasets were developed and are maintained at the Department of Growth Management, others are from various public sources.
GeoGreen is a database driven participatory web mapper. This means that GeoGreen is fully integrated with Alachua County's WebGIS Building Permit Tracker and provides for public mapping and tracking by location of Certified Green Buildings pulling live from Alachua County's Building Permits database. Anyone from the public or staff can enter a permit number via the Green Buildings tab and upload a scanned image of their Green Building Certificate. After the upload, they can immediately view building location plotted live on GeoGreen. Green Certification for this building also shows simultaneously into the WebGIS Building Permit Tracker in green font. Upon validation of the certificate by Growth Management staff, both GeoGreen and the WebGIS Building Permit Tracker will continue to show the location of this Certified Green Building as part of the countywide Green Buildings layer and database.
GeoGreen also displays locations of Solar Panel permits issued over the years by Alachua County. The Solar Panel layer updates live as Solar Panel permits are being issued by the Growth Management staff and it is fully integrated with the WebGIS Building Permit Tracker
http://cpd.alachuacounty.us/gis/applications
Internet
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APPENDIX E
RECOGNITIONS FOR THE ALACHUA COUNTY BUILDING PERMIT SUITE

Recognitions and featured projects - GIS Division

- June 2009 - Two National Awards. NACo's Best in Category Award (IT) and NACo's Achievement Award. Twenty counties were awarded nationwide a Best in Category Award. *"A WebGIS Code Enforcement Tracker"*
- March 17, 2009 - Alliance for Innovation Webinar
  Featuring Alachua County's use of Open Source for a Cost Effective Government
- March 8, 2009 - NACo GIS Committee - NACo Legislative Conference
  Presentation by invitation - How GIS Can Save Counties Money
- November 26, 2008 - Government Technology Magazine - Digital Communities
  GeoGreen Mapper - An Interactive Green Map for Alachua County, Florida
- November 23, 2008 - The Gainesville Sun
  County Praised for new interactive Growth Management Web Site
- October 2008 - GOSCON 2008
  Government Open Source Conference
  Click to see keynote speaker's highlight of our work.
- 2008 NACo Achievement Award for *"A Web GIS Building Permit Tracker built with Open Technology and Participatory Approach"*.
- 2008 Florida City and County Management Association (FCCMA)
  Innovation in Communication and Technology Award - Honorable Mention
- The 2007 ESRI Map Book, Volume 22nd, published in June, contains two of our projects:
  - A Decision Support System for detecting Sub-Standard Housing
  - A Study in support of the 10 Year Master Plan for the Community Support Services.
- 2007 SERUG Conference - Annual ESRI Conference for six Southeastern States. Jacksonville, Fl, May 2007. *First Price in two Categories in the Mapping Contest: 'Software Integration' and 'People's Choice' Awards.*
- 2006 County Arts and Culture Award, from the Art and Culture Commission of the National Association of Counties (NAC0) and Americans for the Arts. For our many spatial web applications on Historic Preservation over the years, all developed in partnership with the University of Florida and with funding from the Florida State Department. Chicago, Il, August 2006.
- 2006 SERUG Conference - Annual ESRI Conference for six Southeastern States. Jacksonville, Fl, April 2006.
  Mapping Contest Winners
- 2006 Florida City and County Management Association
  Innovation in Communication and Technology Award - Honorable Mention

  No winners in the category, award shared with Charlotte County. Panama City Beach, Fl, May 2006. See Gainesville Sun's article on this.
- University of Florida, College of Design, Construction and Planing
  2006 Annual Publication 'Perspective', Research Section, Page 10/11
- The Gainesville Sun - April 17, 2006
  Team's software saves county some big bucks
- Geography Network, January 2006 - March 2006
  Featured at the Homepage - Alachua County's GeoGM Mapper
- National Association of Counties
  Featuring Alachua County's Decision Support System for Substandard Housing.
  Digital Dynamics: You can do THAT with GIS?
- The High Springs Herald - December 2004
  Newberry unveils new city Website
- The 2004 Pirelli Internetional Award
  Finalist in the Environment Category

- The Gainesville Sun - September 4, 2004
  Alachua County history gains global exposure
- The Gainesville Sun - October 28, 2003
  Historic access - Project layers historic sites, data on Web, CDs

From the County's Community Update Newsletter and the County's Press Releases.

- July 20th, 2009 - NACo Awards - Community Update
- July 13th, 2009 - Alachua County Wins NACo Awards - Press Release
- Spring 2009 - Measuring the Impact of our GeoWEB Services on the Local Community
- March 2009 - Impact Fee Calculator Online Service
- October 2008 - Impact Fee Online Services
- August 2008 - GeoGreen - A Green Map for Alachua County
- June 2008 - Three county programs receive national awards
- May 2008 - GIS Division features Public Map Display
- April 2008 - Code Enforcement Tracker
- November 2007 - County reveals Web-based GIS Services for Building Permits and Inspections
- July 2006 - Papajorgji Elected to URISA Board of Directors
- May 2005 - Alachua County Geographic Information Systems GeoGM Mapper is out of this world!
- February 2005 - Lending a Hand in the Wake of Tsunami

Department of Growth Management, Alachua County, Florida
10 SW 2nd Ave, Gainesville, Fl 32601, Tel. +1.352.374.5249
Page last updated on August 15, 2009 at 3:34 pm.
There are currently 6 people visiting the Growth Management Site.

Retrieved January 20, 2012. From http://closup.umich.edu/public-sector-excellence/info/153/a-web-gis-code-enforcement-tracker-.

NACo National Association of Counties

The Voice of America's Counties

June 5, 2009

Juna Papajorgji
GIS Manager
10 SW 2nd Avenue
Gainesville, FL 32601

Dear Juna Papajorgji:

Congratulations! I am pleased to announce that your county's 2009 Achievement Award Winning program, ***A Web GIS Code Enforcement Tracker,*** has been designated ***"Best of Category"*** in the Information Technology category.

This is the 12th year that NACo has instituted this special recognition within the Achievement Award program. This additional recognition program was initiated to highlight the most outstanding county model programs submitted to the awards competition. Your county should be proud of its work: only twenty of these "Best of Category" awards were conferred.

In addition to the Achievement Award Certificate that you are receiving in this packet, a plaque will be presented to your county at the Thirteenth Annual Awards Ceremony during NACo's Annual Conference in Nashville, Tennessee, on Sunday, July 26, 2009 at 3:30 pm in Bayou Room C/D.

An official invitation to this reception is enclosed. We hope you or a designated representative can attend the ceremony. Please RSVP to Chris Markwood at 202.661.8801 or cmarkwood@naco.org by June 30 if you are planning to attend. In the event that someone from your county is unable to attend, your plaque will be mailed to you after the annual conference.

NACo congratulates your county on its special achievement, and we look forward to seeing you in Nashville!

Sincerely,

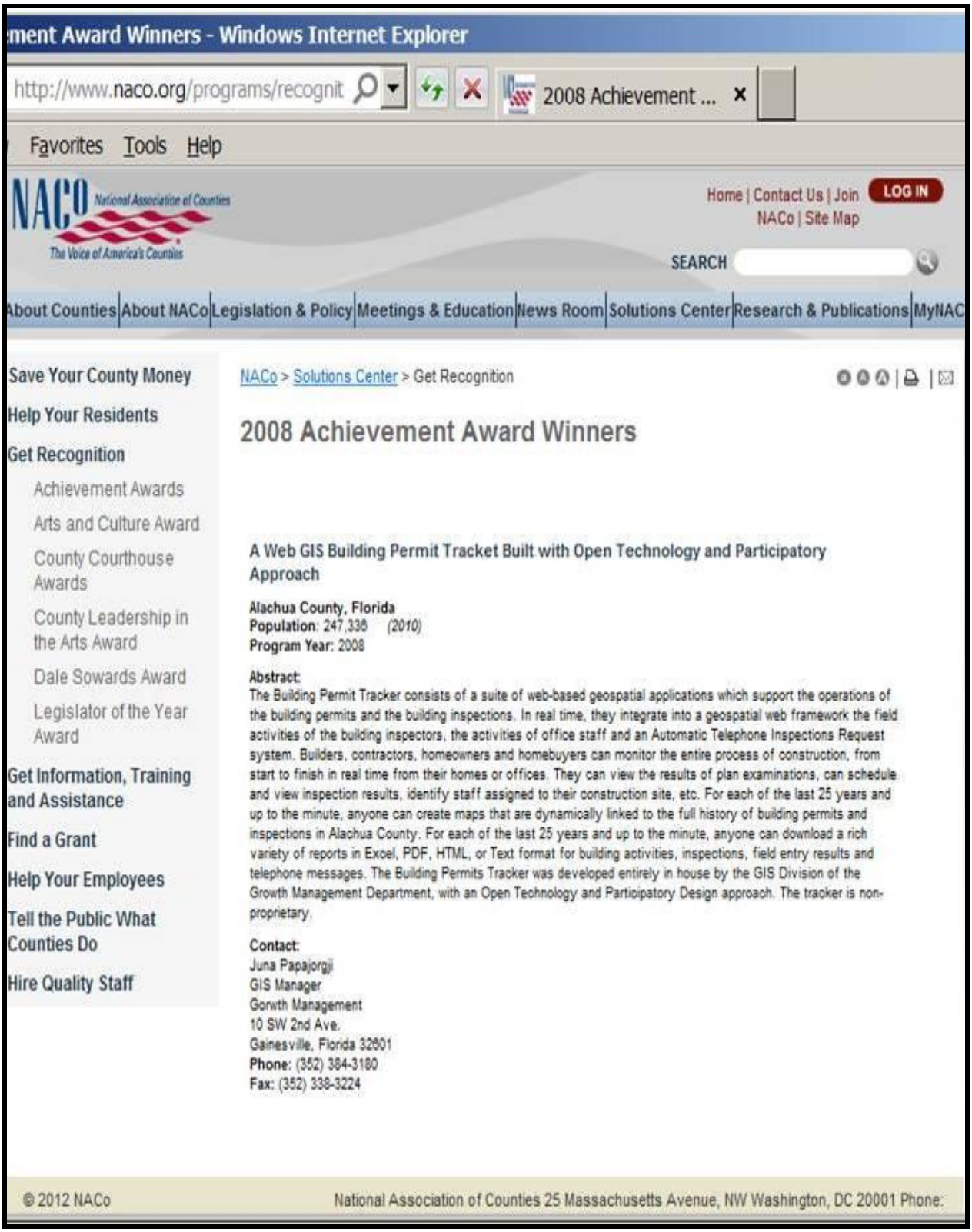
Larry E. Naake

Larry E. Naake
Executive Director

Enclosures

25 Massachusetts Avenue, NW | Suite 500 | Washington, DC 20001 | 202.393.6226 | fax 202.393.2630 | www.naco.org

Retrieved January 21, 2012. From http://icma.org/Documents/Document/Document/774.



Retrieved, January 20, 2012. From
http://www.naco.org/programs/recognition/Pages/2008AchievementAwardWinners.aspx?PF=1.

Government Technology Magazine[1] (2008).

[1] Retrieved January 21, 2012. From http://www.digitalcommunities.com/articles/GeoGreen-Mapper---An-Interactive-Green.html#.

Opinions from the Alachua County building construction industry leaders.[2]

"The site also has an interface that allows the public to enter information about their home, such as whether it has solar panels or is a certified green building. The home appears as a point on the map. The county will be able to use this in future planning to create, say, a green community that would draw like-minded residents. Or a real estate agent could be able to find a green house for a client.

'It has revolutionized the way we are doing business,' said county building inspector John Freeland. 'Our office is downtown. Essentially we were coming 10 miles through Gainesville's jurisdiction and then back out just to come into the office. This way the route is started much more efficiently. Contractors are using the system much more heavily now.'

Reports are online in real time, so the permittee can view the inspection report or an inspector's schedule. Contractors can also leave inspectors notes online and find that their efficiency is improved.

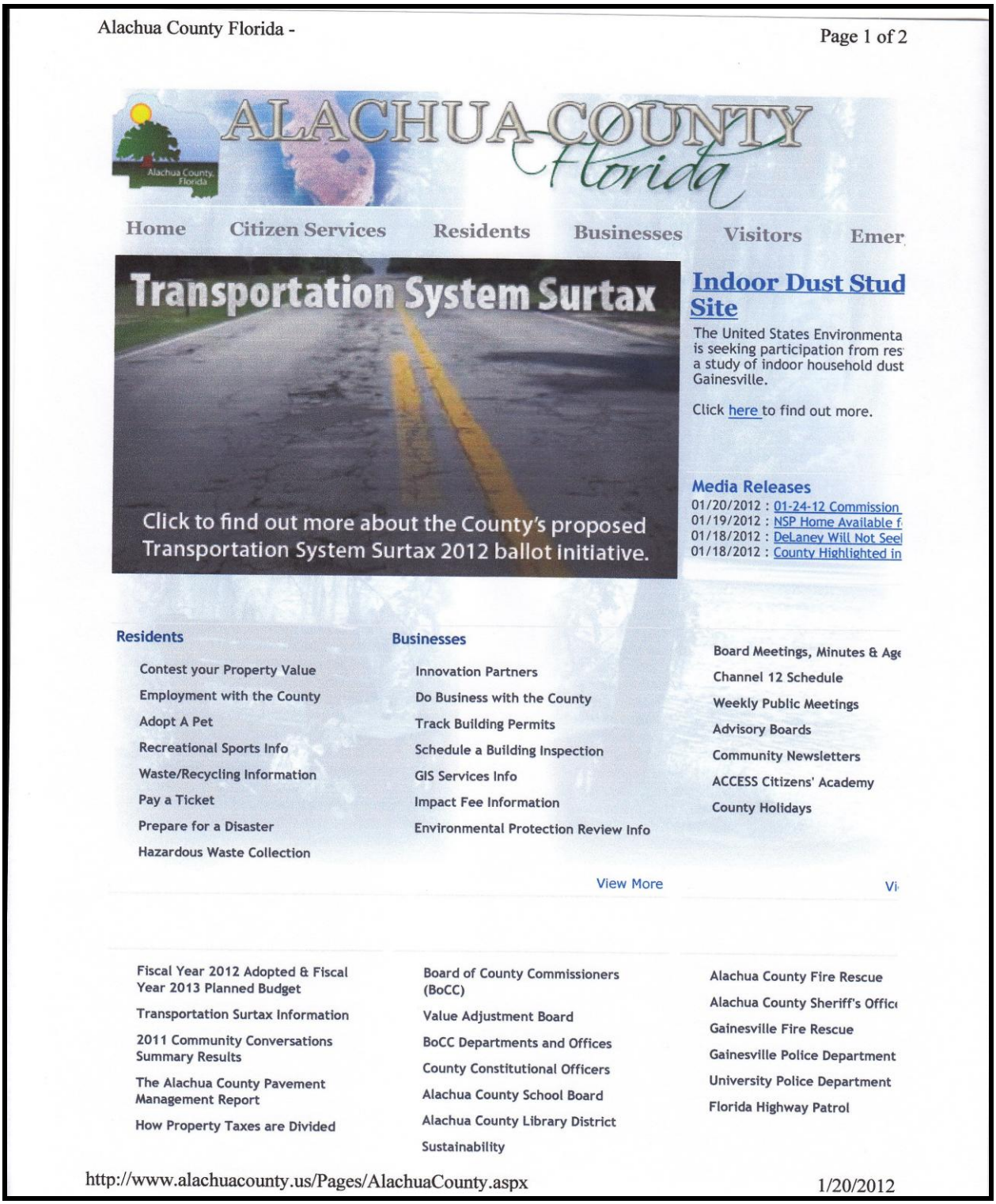
'It is a wonderful system. It gives us 24-hour access to the information where in the past, with only the phone system, we could call in 24 hours but half the time it wasn't working and we had no real-time information on whether it actually went through,' said Mark Farris of Barry Bullard Homes. 'Now it makes scheduling inspections so much easier. We can leave notes online and they can leave us notes.'

The system has increased employee efficiency in a variety of ways, officials said. Building inspectors used to have to come into the office in the morning to divvy up assignments, drive to the assignments and then file their reports back in the office. Now, however, they have laptops. They check in via computer for assignments, go straight to them and enter the report at the scene. That saves the county money and improves efficiency."

---

[2] Gainesville Sun. (2008). *County praised for new interactive growth management web site*. Retrieved January 20, 2012. From http://www.gatorsports.com/article/20081123/NEWS/811231006

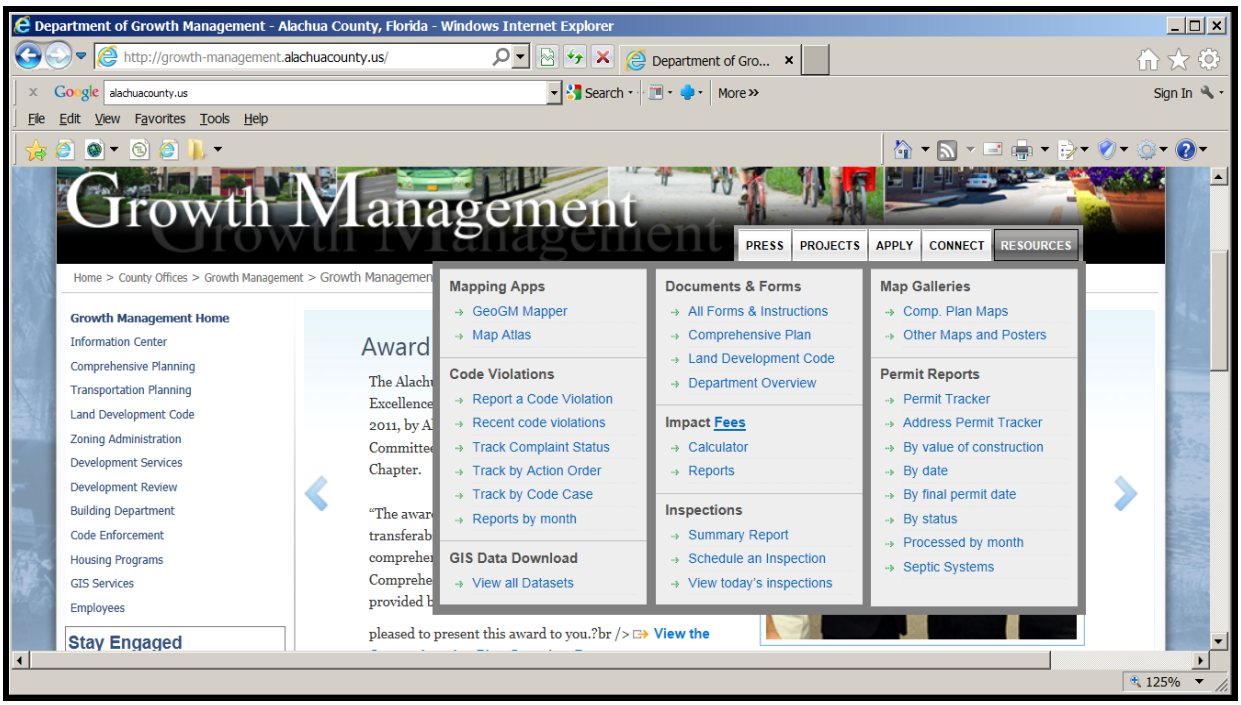
APPENDIX F
ALACHUA COUNTY BUILDING PERMIT SUITE OF IN OPERATION



Advisory Boards Participation Booklet

Translate

View More View More Vi



Retrieved January 20, 2012. From http://growth-management.alachuacounty.us.

Email communication with John Freeland, current Building Official for Alachua County, and assistant Building Official at the time of this communication.

John Freeland
Sent: Wednesday, October 08, 2008 2:18 PM
To: Juna Papajorgji
Attachments: hillsborocountyfeetimestudy.pdf (767 KB) ; JF UF Presentation (DB 7-2~1.ppt (220 KB)

Juna
I attached a copy of the Maximus study from Hillsboro county, (the same company that put out a report for us) that I found on the net. On page 2 it lays out software infrastructure costs: $333,3347.00 for permitting software, 39k for data storage, 92k for computers. I do not know if these are annual costs or one time purchases but I was astounded at how much commercial software costs. It would be interesting to see what features you get for that kind of money. I do not know if any of this helps but I thought you might find it interesting when looking at the value/ cost savings of the tracker systems.
I also noticed that their .hourly productive rate. was 102.63. I have not seen our report but ours should be around 63$. I do not totally understand the formula but I think this could possibly be compared as an indicator of department efficiency.

I also wanted to let you know I did a 2 hour presentation last week at UF for the School of Building Construction. I introduced the Permit Tracker as part of my presentation with a short overview of how to access it and what data might be useful to the students. The professor, (Dr Brown) asked for a list of thirty or so active commercial jobs that he could assign to students as research projects. He was delighted when I showed him that the students could be able to monitor them on the web. He has asked that I do this presentation (about 95% of the time is spent on building code and inspection procedures) every semester. I am attaching the power point that I start off with. I would love any comments or critique.
Thanks

APPENDIX G
EMAIL CORRESPONDENCE WITH PUBLIC AGENCIES

From: Meeks, Travis (Engineering) [travis.meeks@hcpid.org]
Sent: Monday, March 14, 2011 12:50 PM
To: Papajorgji,Juna
Cc: Brian, Scott (HCPID)
Subject: Our Approach with Participatory Design and Open Technology

Juna,
Hi, my name is Travis Meeks and I work for Harris County, Texas which encompasses the City of Houston. I read a fascinating article I got off of the ICMA website you had put together. I wanted to know if there was any way I could gather more information related to your discovery and implantation of the Alachua County Permitting/GIS system?

Would you have time to talk? What would be the best way to reach you?

Travis Meeks
Assistant Manager Fire Protection
Harris County Fire Code
10555 Northwest Freeway ste. #100
Houston Texas, 77092
713-316-3536
travis.meeks@hcpid.org
"Practice fire safety, the life saved may be your own"

From: Larry Baltz <lbaltz@mcata.org.al>
To: Juna Goda Papajorgji <juna@ufl.edu>, Timothy Clark <sk8ertim@ufl.edu>
Subject: Permit Tracker
Date: Thu, 30 Jul 2009 15:24:44 +0200

Hi Juna and Tim,

I came across your presentation summary on the GOSCON'08 website and I'm impressed with the work you've done.

I'm working on a USAID program in Albania and one of the components is planning to provide a construction permit tracking tool for the municipalities of the country. We are in the early stages of defining the requirements and stakeholders.

I've be interested in the current state of your project and whether the code for the project is open source. I understand that most (if not all) of the tools were open source, but was the application you created open source?

In any case, I'd be interested in learning more about the project with the goal of either using it directly in the Albanian context or using it as a model for creating a permit tracking tool here.

Thanks in advance for any information you can provide,

Larry Baltz
IT Integration Team Leader
MCC Albania Threshold Program II
Tel:++355 4 23 80 418

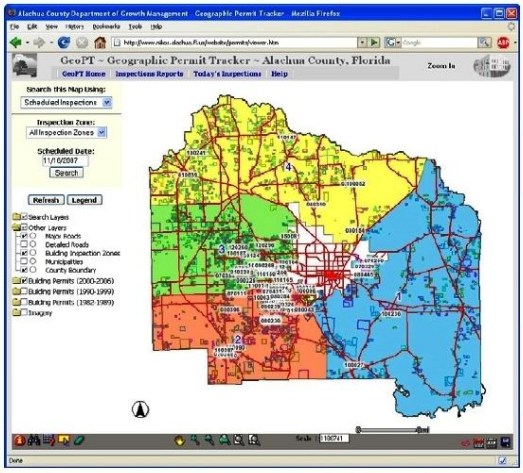
APPENDIX H
ALACHUA COUNTY COMMUNITY NEWSLETTER

A Report on the Activites of Alachua County Government

Community Update

Alachua County, Florida

County unveils web-based GIS services for building permits and inspections



Alachua County recently unveiled a set of web-based applications that has transformed the operations of the building permits and the building inspections processes. In real time, they integrate the field activities of inspectors, office activities of staff, and the Automatic Telephone Request system, into a single geospatial web framework. For the first time geographic intelligence has been added to building activities in Alachua County and real time access to the entire construction process has been made possible for anyone with an internet connection.

Builders, contractors, homeowners, and homebuyers can now monitor the entire process of construction, from start to finish, from their homes or offices, in real time. They can view the results of plan examinations, schedule inspections, view inspection results, and identify County staff assigned to their construction site. From twenty-five years ago to the present, anyone can create maps that are dynamically linked to the full history of building permits and inspections in Alachua County. In addition, anyone can create maps and download reports in Excel or Text format for building activities, inspections, field entry results, and telephone messages for a specific area of the county.

In speaking of the new system Adam C. Bolton, Executive Vice President of Robinshore Incorporated said, "I was happy to help with the testing of the on-line building inspection request system. The web-based inspection request system is a great improvement over the phone system, as it clearly shows all the requested and pending inspections as well as the previous inspection results. One of the most useful features allows contractors to attach notes to each inspection to provide the building inspectors with additional information without having to reach them by phone."

Currently these new applications are processing 600 to 700 transactions per day. The implementation of this project, in addition to enhancing services to the building community and the residents at large, has also increased the efficiency and the performance of six departments within the County.

GIS *continued on page 2*

FEATURES PAGE

Community Update is published by the County Manager's Communications Office

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Production Technician

GIS: County saves $500,000 with new website

Continued from page 1

As a proprietary vendor does not own this product and it is copyrighted by Alachua County, the County is saving upfront acquisition costs of approximately $500,000 and $50,000 per year in ongoing costs.

Following are the links to various parts of the applications.

http://cpd.alachuacounty.us/gis/applications/permits.php

http://cpd.alachuacounty.us/gis/applications/reports/

http://cpd.alachuacounty.us/gis/applications/schedule_inspection.php

For information and/or assistance, contact Alachua County, Growth Management Department GIS Manager Juna Papagorgji at 352-384-3180.

Juna Papajorgi, Alachua County Growth Management Department GIS Manager, was instumental in creation of the new web-based GIS services

Adam Bolton, Executive Vice President of Robinshore Incorporated (left) assisted with the testing of the on-line building inspection request system.

Energy Commission to host climate change presentation by Dr. Sam Brody

The Alachua County Energy Conservation Strategies Commission (ECSC) will host a special presentation on the capacity of communities to enact climate change policy November 19, 2007 from 4:30 p.m. to 5:30 p.m.. Dr. Sam Brody, Texas A&M will present geographic models and demographic analysis related to Alachua County. The results of his work provide important information to policy makers interested in mitigating the adverse impacts of global climate change on local communities.

The presentation titled, Distribution of Risk from Climate Change will be held in Grace Knight Conference Room Alachua County Administration building, 12 SE 1st Street Gainesville, FL 32601

This presentation is an initiative of the ECSC, and is open to the public. UF, County and City staff are encouraged to attend.

The mission of the ECSC is to draft by May 2008, a comprehensive report on energy use, its relationship to climate change and local socio-economic impacts, including recomendations of actions that may be implemented by the Board of County Commissioners and the community at large.

Dr. Sam Brody of Texas A&M will present on climate change in the Commission board room November 19, 4:30 p.m. to 5:30 p.m.

Immediately following the presentation the ECSC will have its regular meeting in the same room. The public is encouraged to attend.

For more information on this presentation, please contact Sean McLendon, Alachua County Environmental Protection Department 352-264-6802.

APPENDIX I
MAINTENANCE AND SUPPORT AGREEMENT

PERCONTI DATA SYSTEMS, INC.
Maintenance and Support Agreement FY 2008

This Maintenance and Support Agreement is made and entered into by and between Perconti Data Systems, Inc., hereinafter referred to as "Support Vendor", and a licensee of the Perconti Data Systems, Inc. Licensed Program, hereinafter referred to as "Customer". This agreement is considered binding upon full payment by Customer of the proper Perconti Data Systems, Inc. maintenance invoice.

WITNESSETH:

WHEREAS, the Customer has purchased a license to one or more modules of the computer system henceforth referred to as "Licensed Program". The Customer has obtained a non-exclusive, non-transferable license to use certain computer software (the "Licensed Program") on certain terms and conditions; and

WHEREAS, Support Vendor has, as the owner of the Licensed Program, the source code and other support documentation for the Licensed Program and has the requisite authorization to have access to the Licensed Program in Customer's possession and to make and offer to Customer the maintenance modifications, enhancements, and new releases provided for herein; and

WHEREAS, Support Vendor desires to offer Customer certain services with respect to the Licensed Program on the terms and conditions set forth herein;

NOW THEREFORE, in consideration of the premises hereof, and the mutual obligations herein, the parties hereto, intending to be legally bound, hereby agree as follows:

Definitions

For the purposes of this Agreement, the following definitions shall apply to the respective capitalized terms:

"Licensed Program." The computer software henceforth referred to as **CD-*Plus*** . Including any extracts from such software, derivative works of such software, or collective works constituting such software (such as subsequent Releases) to the extent offered to Customer under this Agreement or the License Agreement.

"Agreement Term." The Agreement Term shall begin upon full payment of the maintenance invoice and end on September 30, 2006.

"Normal Working Hours." The hours between 8:30A.M. and 5:00P.M. Eastern Time on the days Monday through Friday, excluding regularly scheduled holidays of Support Vendor.

"Releases." New versions of the Licensed Program, which new versions may include both Program Corrections and Enhancements.

"Approved Interface." The online support programs and mechanism by which the Support Vendor accesses the Licensed Programs installed at the Customer's location. All Approved Interfaces will be listed on the Support Vendor's web site (www.perconti.com/support). Customers may submit programs to the Support Vendor for approval and addition to the list. Addition to the Approved Interface list is at the sole discretion of the Support Vendor. The Support Vendor will make available at least one Approved Interface solution which will cost the Customer less than $199.

Scope of Services

During the Agreement Term, Support Vendor shall render the following services in support of the Licensed Program, during Normal Working Hours.

- Support Vendor shall maintain a telephone hot line and email address that allows Customer to report system problems and seek assistance in use of the Licensed Program.
- Support Vendor shall provide responsive support and maintenance by providing availability during Normal Working Hours with a goal of no longer than four (4)-hour response time. Support Vendor shall provide modem or Internet support.

- Support Vendor shall be responsible for using all reasonable diligence in correcting verifiable and reproducible program errors when reported to Support Vendor in accordance with Support Vendor's standard reporting procedures. Support Vendor shall, upon verifying that such an error is present, initiate work in a diligent manner toward development of a correction or "fix". -
- Support Vendor may, from time to time, offer Program Enhancements to its customers, generally for an additional charge.

- Subject to space availability, Customer may enroll its employees in Support Vendor's training classes, held at Support Vendor's facility, for regular or advanced training.

- Support Vendor shall consider and evaluate the development of Program Enhancements for the specific use of Customer and shall respond to Customer's requests for additional services pertaining to the Licensed Program (including, without limitation, data conversion and report-formatting assistance), provided that such assistance, if agreed to be provided, shall be subject to supplemental charges mutually agreed to by Support Vendor and Customer.

- Customer shall be responsible for procuring, installing, and maintaining all equipment, telephone lines, communications interfaces, and other hardware (other than the hardware constituting the program control center maintained at Support Vendor's facilities) necessary to operate the Licensed Software and to obtain from Support Vendor the services called for by this Agreement.

- Customer shall provide an online interface according to the specifications of the Support Vendor. Customer will permit access to system via online interface as required by Support Vendor. Failure to provide online access via an Approved Interface will result in suspension of the customers maintenance for the current month and forfeiture of that month's maintenance hours. No refunds of maintenance fees will be provided and no rollover of maintenance hours will occur. Support Vendor will inform Customer of any such situation and allow the Customer 2 business days to correct the situation, prior to suspension.

Support Vendor will provide support for a set number of hours per month according to the published maintenance schedule (available upon request) and selected by the customer. These hours will be based on a rolling average. Customer and Vendor will work together to establish support priorities.

Fees and Charges

Customer shall pay the Support Vendor for the services of this Agreement an amount set forth in the Maintenance Invoice. Fees are due within thirty (30) days from the start of the agreement. All Fees paid for this agreement are nonrefundable. All Fees must be paid in full, no partial payments will be considered valid.

Customer shall pay Support Vendor for **additional services** its fees and charges based on the Perconti rate schedule (available upon request). Support Vendor reserves the right to change its rate schedule from time to time, provided that no such change will be effective until at least sixty (60) days after Support Vendor has given Customer notice of such change.

Support Vendor shall invoice Customer at the beginning of each calendar month for all fees and charges accrued, and all reimbursable expenses incurred, during the previous month, and Customer shall pay the invoiced amount immediately upon receipt of such invoice. Any amount not paid within 45 days after the invoice date shall bear interest at the lesser of one percent per month or the highest rate allowed by applicable law.

Proprietary Rights

To the extent that Support Vendor may provide Customer with any Error Corrections or Enhancements or any other software, including any new software programs or components, or any compilations or derivative works prepared by Support Vendor (collectively, "Vendor Programs"), Customer may

- install one set of the Vendor Programs, in the most current form provided by Support Vendor, in Customer's own facility;

- use such Vendor Programs in connection with the Licensed Programs, and in a manner consistent with the requirements of the Agreement, for purposes of serving Customer's internal business needs; and

- make copies of the Vendor Programs in machine readable form for nonproductive backup purposes only. Customer may not use, copy or modify the Vendor Programs, or any copy, adaptation, transcription, or merged portion thereof, except as expressly authorized by Support Vendor. Customer's rights shall remain in effect for so long as Customer is authorized to use the Licensed Programs under the License Agreement. Upon termination of such License Agreement, Customer shall return or destroy the Vendor Programs, and returning the Vendor Programs in the manner required by the License Agreement shall be sufficient for such purpose.

The Vendor programs are and shall remain the sole property of Support Vendor, regardless of whether Customer, its employees, or contractors may have contributed to the conception of such work, joined in the effort of its development, or paid Support Vendor for the use of the work product. Customer shall not assert any right, title or interest in such works, except for the non-exclusive right of use granted to Customer at the time of its delivery or on-site development.

Disclaimer of Warranty and Limitation of Liability

EXCEPT AS EXPRESSLY SET FORTH IN THIS AGREEMENT, SUPPORT VENDOR EXPRESSLY DISCLAIMS ANY AND ALL WARRANTIES CONCERNING THE LICENSED PROGRAM OR THE SERVICES TO BE RENDERED HEREUNDER, WHETHER EXPRESS OR IMPLIED, INCLUDING (WITHOUT LIMITATION) ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.

In no event shall Support Vendor's cumulative liability for any claim arising in connection with this Agreement exceed the total fees and charges paid to Support Vendor by Customer under this agreement within the last twelve (12) months. In no event shall Support Vendor be liable for any indirect, consequential, special, exemplary, or incidental damages of whatever kind and however caused, even if Support Vendor knew or should have known of the possibility of such damages.

Termination

This Agreement may be terminated as follows:

- This Agreement shall terminate on September 30 of any calendar year.
- This Agreement shall immediately terminate upon the termination of the License Agreement.
- Failure to pay any proper invoice within 30 days or notify the Vendor within 15 days of a valid reason to withhold payment shall be cause for termination of this Agreement by the Support Vendor, at the Support Vendor's option. Partial payments will not cure a breach for non-payment.
- This Agreement may be terminated by either party upon 30 days prior written notice if the other party has materially breached the provisions of this Agreement and has not cured such breach within such notice period.

Following termination of this Agreement, Support Vendor shall immediately invoice Customer for all accrued fees and charges and all reimbursable expenses, and Customer shall pay the invoiced amount immediately upon receipt of such invoice. Customer may continue to use any work supplied to Customer by Support Vendor for the remaining term of the License Agreement. All fees paid for maintenance are non-refundable. Any amount not paid within 45 days after the due date shall bear interest at the lesser of one percent per month or the highest rate allowable by applicable law. Termination of this Agreement by either party does not relieve Customer of its obligation to pay all proper invoices.

Miscellaneous

Each party acknowledges that it has read this Agreement, understands it, and agrees to be bound by its terms. The parties further agree that this is the complete and exclusive statement of the agreement of the parties with respect to the subject matter hereof and that it supersedes and merges all prior proposals, understandings, and agreements, whether oral or written, between the parties with respect to the subject matter hereof. Specifically, this Agreement supercedes all previous Maintenance Agreements. This Agreement may not be modified except by a written instrument duly executed by the parties hereto. This agreement will be considered binding and in full effect upon full payment of the maintenance invoice. Partial payment of the maintenance invoice will not place this Agreement into effect.

This Agreement and the parties' obligations hereunder shall be governed, construed, and enforced in accordance with the laws of the State of Florida.

The Customer and Support Vendor expressly agree that any claim or controversy arising out of or relating to this agreement, or breach thereof, shall be settled by arbitration before an arbitrator or arbitrators and in accordance with the Commercial Arbitration Rules of the American Arbitration Association, and any judgment upon the award rendered by the arbitrator(s) may be entered in any Court having jurisdiction thereof. The parties agree that all arbitration arising out of this agreement shall take place in Pinellas County, Florida. The parties also agree that the prevailing party in any arbitration shall be entitled to reimbursement of attorney's fees.

In the event that any provision of this Agreement is held invalid, illegal, or unenforceable, the remaining provisions shall be enforced to the maximum extent permitted by applicable law.

Neither party may assign its rights or duties under this Agreement without the prior written consent of the other party, except to a successor of all or substantially all of its business and properties.

The waiver by either party of any term or condition of this Agreement shall not be deemed to constitute a continuing waiver thereof not of any further or additional right that such party may hold under this Agreement.

This agreement shall not be construed more favorably to one party than the other.

Notices

Any notice required or permitted to be made or given by either party under this Agreement shall be made in writing and delivered postage prepaid, addressed as set forth below or to such other address as a party shall designate by written notice given to the other party.

Support Vendor:	Agreements Perconti Data Systems, Inc. 8950 Ninth St. N., Suite 200 St. Petersburg, Fl 33702
Customer:	Customer Name The same address to which the maintenance invoice was delivered.

APPENDIX J
ALACHUA COUNTY 1ST BUILDING OFFICIAL LETTER

May 8, 2009

Carol R. Hurst
847 NW 125th Drive
Newberry, FL 32669

To Whom It May Concern:

I was employed for 32 years by the Alachua County Department of Growth Management, in the capacity of Building Inspector, Building Plans Examiner and from April 1995 until my retirement, March 1, 2008, as the State of Florida Certified Building Codes Administrator or Building Official for Alachua County. In those 32 years, I saw the process of building permitting; inspection recording and recordkeeping evolve from totally hand written, employee intensive to the computerized state of the art, Building Permit Tracker for which Alachua County was given the NACO award in June of 2008.

Juna Papajorgji, GIS Manager for Alachua County Department of Growth Management, and a small staff, with no expense to Alachua County other than their salaries, produced in-house, Building Permit Tracker. She and her staff worked closely with Alachua County building inspectors, plans examiners and permit clerks to make the building permit process more efficient and easy to use and also made Alachua County's building permit process and records available to the public via the internet.

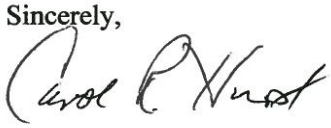
This new system was also available to other Alachua County Departments. The Public Works road inspectors, the Fire Department inspector, Environmental Protection inspectors and the Alachua County Health Department were all able to record results on line. This streamlined the process by avoiding time consuming telephone calls for the building department staff as they had to record other departments results in the old system.

The previous system that had been purchased from an outside vendor at considerable cost and required a large expense annually for technical assistance had become outdated. The records were not on line and a new canned system had a large price tag. It also would not allow the staff to provide the input to personalize the system for our particular use and would not have provided the daily technical assistance without more cost.

Building Permit Tracker was designed with the help of building permit staff, provides daily, instant technical assistance to all users and saved Alachua County the initial expense for a system and annual fees for technical support. Juna Papajorgji was instrumental in making this process possible.

I am retired but maintain an active Building Codes Administrator License in the State of Florida BN724. If you wish to contact me for further information, I am available at carol_hurst@bellsouth.net or my telephone number is 352 331-3800.

Sincerely,



Carol R. Hurst

APPENDIX K
ALACHUA COUNTY 2ND BUILDING OFFICIAL LETTER

ALACHUA COUNTY
DEPARTMENT OF GROWTH MANAGEMENT
OFFICE OF CODES ENFORCEMENT
10 SW 2nd Avenue, 1st Floor • Gainesville, Florida 32601-6294
Zoning (352) 374-5244 • Building (352) 374-5243
Fax (352) 491-4510 • Suncom 651-5244
Home Page: www.alachuacounty.us

May 20, 2009

To Whom It May Concern:

I would like to commend Juna Papajorgji for her vision and determination to create the GeoWeb Building Permit Tracker. Juna's willingness to solicit input from the Building Inspectors and Staff on the type of system which would most benefit them in their daily work has created an efficient, user-friendly system.

With the addition of Building Permit Tracker on their laptops, Building Inspectors and Code Officers have the ability to thoroughly document and schedule inspections and make any necessary changes from the office, field, or home. This has been a cost and time savings not only for travel, but with increased efficiency in field inspections. The use of Geo Mapper and the ability to view multiple reports are added tools for Inspectors, as well as the public.

The Building Permit Tracker has received much praise from contractors, county staff, and the general public for its ability to schedule inspections, track permits, and add inspectors' comments.

Alachua County is very fortunate to have an employee such as Juna who has saved the County a great deal of expense by developing programs for use by multiple departments and the general public. Juna demonstrates the height of professionalism through her integrity, dedication, creativity, and no-nonsense approach to work. It is a pleasure to know and work with a person of such high ethical standards.

Sincerely,

Phillip L. Dunnington
Building Official

APPENDIX L
ALACHUA COUNTY ASSISTANT BUILDING OFFICIAL LETTER

ALACHUA COUNTY
DEPARTMENT OF GROWTH MANAGEMENT
OFFICE OF CODES ENFORCEMENT
10 SW 2nd Avenue, 1st Floor • Gainesville, Florida 32601-6294
Zoning (352) 374-5244 • Building (352) 374-5243
Fax (352) 491-4510 • Suncom 651-5244
Home Page: www.alachuacounty.us

Steve Lachnicht
Growth Management Director

Richard E. Wolf
Growth Management Assistant Director

Phil Dunnington
Building Official

Benny Beckham
Zoning Administrator

May 21, 2009

To whom it may concern.

I would like to thank Juna Papajorgji for her vision and determination in the creation of our Geo Web Permit Tracker. Juna and her staff solicited input from the building inspectors and building department staff throughout the development of this system.

Juna's staff spent several days riding along with inspectors in the field as they ran their routes to assess and document what the real world needs of a building inspector are. They have been in consistent contact with me and other building department staff all throughout the development and implementation of the tracker system. Juna and her staff have been quick to respond to any changes or customization that we requested as the Permit Tracker went from a theoretical idea to a trial system and finally full implementation as our software infrastructure. She and her staff took the time to train field inspectors on not only how to use the tracker system but also with the general operation of the new laptops.

The Permit Tracker software is now our primary operating system. Building inspectors and code officers have accepted it with enthusiasm largely because they were allowed to participate in its development. The internet accessible Tracker system has received highly positive feedback from contractors, property owners, and the general public for its ability to track the status of permits, schedule inspections and add notes or directions from the field. The development, implementation, and continued support of the permit tracker and related web systems are handled by Juna and her staff with superior professionalism and an extremely high level of interdepartmental cooperation.

Thank You

John Freeland CBO
Assistant Building Official
Alachua County Department of Growth Management
jcf@alachua.fl.us
(352) 374-5243 x 2340 cell (352) 213-4948

APPENDIX M
SOLE SOURCE CERTIFICATION

SOLE SOURCE CERTIFICATION ADDENDUM

On July 14, 1994, the Alachua County Board of County Commissioners entered into three agreements with Perconti Data Systems, Inc. for the purchase of a comprehensive DOS-based community development software management system known as "CD-Plus". The three agreements included: 1) a software development agreement, 2) a non-exclusive end-user license agreement, and 3) a maintenance and support agreement. Under these agreements, the County purchased the building permit module, the codes enforcement module, and an integration package with the "HELLO" Interactive Voice Response System for Automated Inspection Requests, purchased from Enhanced Systems in 1992. The software development agreement was amended two times, first on April 9, 1996, to add the Development Review Module, and then on March 11, 1997, to add the Concurrency Module to the comprehensive community development software management system.

"CD-Plus" the comprehensive community development management software is only available and only licensed through the original developer and manufacturer, Perconti Data Systems, Inc. This proprietary software is not available for purchase by any other vendor.

Alachua County is now proposing to upgrade from the original DOS-based "CD-Plus" software system to "CD-Plus for Windows 95/NT" system, including an upgrade of the Interactive Voice Response System for Inspection requests. Perconti Data Systems, Inc. is the sole vendor for the upgrade of the "CD-Plus for Windows 95/NT" proprietary software.

The Office of Codes Enforcement has been determined that the Enhanced Systems product, the "HELLO" DOS-based Interactive Voice Response System is currently not Y2K compliant, and will require extensive revisions to become Y2K compliant and compatible with the current technology of a windows based system.

Perconti Data Systems, Inc. is currently using the AIRS Touch Tone Interactive Voice Response Sytem with all of their "windows platform" installations. This interactive voice response system is both Y2K compliant and functions in a Windows environment.

CD-Plus and CD-Plus for Windows 95/NT is the only product-ready software currently on the market that provides comprehensive community development management software which integrates numerous modules including building permits/ inspections, contractor licensing, code enforcement, development review, and concurrency into one database for tracking all aspects of community development management.

Because of the extensive database collection contained in the CD-Plus DOS-based system currently used, it is critical that any upgrade would be compatible with and standardized from the system presently online. The "CD-Plus for Windows 95/NT" upgrade is the only software package that will provide for this data conversion and provide all the functions of the current system. Perconti Data Systems, Inc. has developed this "next generation" of community development software in keeping with the changes in technology and the transformation to the Windows environment. Failure to upgrade at this time may result in future problems with obtaining maintenance and support and Y2K compliance. The currently used DOS-based system is quickly becoming obsolete, and will no longer be supported in the near future.

From: Patricia Rees Friday - August 4, 2000 9:42 AM
To: Perconti, Sal
Subject: Re: ao detail report - 4205

I couldn't respond to you yesterday because I went home sick.

I am faxing a copy of the report with the section marked that our inspectors do not want. I is only the VIOLATIONS FOUND section. I am also faxing a copy of action order 20031452 that I printed out this morning. The inspector says that the violation field had much more info in it yesterday than it does now. Also there is a problem with how it prints which will be obvious when you see it.
Sorry about the ASAP, but one of the inspectors needs all the information to appear so a copy of the Action Order can go to the State Attorney's office.
I do believe this is one of the changes that we requested before that was not addressed. There were so many that it is hard to keep track.
Rick's machine is ready for you to dial in whenever you like.

>>> "Sal Perconti" <percontis@perconti.com> 08/03/00 10:37AM >>>
received your fax but i have some questions...
this is the report that the officers take with them on the initial
inspection - prior to a case being created.

1 - expand header - no problem
2 - we don't have any violator info to load on the AO - that is a place for
the code officer to record the info so they can enter it back at the office.
3 - expand violation description - no problem
4 - delete entire lower section - where will the officer record the info
they need to fill in on the screens back at the office??
no property info, no inspection date, no violation info -

are you sure you want the changes, as outlined? let me know and i'll put it
on your maintenance list.

also - these changes are not considered ASAP changes when you've had this
report for months and you're just getting around to reviewing it.

Sal Perconti
Perconti Data Systems, Inc.
727-576-7727
sal@perconti.com

From: Patricia Rees Tuesday - September 19, 2000 12:03 PM
To: Shuman, Matt
Subject: RE: Stuff we need

3

database. Thanks.

Matt

-----Original Message-----
From: Pat Rees [mailto:prees@ns1.co.alachua.fl.us]
Sent: Wednesday, October 25, 2000 2:42 PM
To: MATT SHUMAN
Cc: Perconti Support
Subject: Permits can be issued when cert is inactive

Matt,

Just discovered another problem. The system is letting us issue permits when the contractor's certificate is inactive. I checked the system rules and this is checked. We have never been able, and do not want to be able, to issue a permit unless the cert is active.

Pat

From: Patricia Rees Friday - October 27, 2000 4:24 PM
To: Shuman, Matt
Subject: RE: Permits can be issued when cert is inactive

Matt,
Lets wait untol Monday to make the changes. Rick will be gone all next week so you can have access anytime you want. It will also give me time to test the changes, since it is so late today.
Pat

>>> "Matt Shuman" <shumanm@perconti.com> 10/27/00 03:50PM >>>
Pat,

I have a new version of CDPlus for you. It will only allow 1 inspection to be scheduled along with 1 temporary power pole inspection. It also will not allow an inspection to be scheduled if there are outstanding reinspection fees. I also fixed it so it will not allow Permits to be issued when the contractor's certificate is inactive. Let me know when Rick's machine is available to send it over. Thanks.

From: Patricia Rees Monday - October 30, 2000 3:32 PM
To: Shuman, Matt
Subject: RE: Cannot issue owner permits

Growth Management

Mission Statement

To provide leadership and professional advice in managing the growth of the County through community outreach and education, positive working relationships with municipalities and other governmental agencies and high professional standards; and to provide for the health and safety of the citizens of unincorporated Alachua County through services ensuring compliance with building codes; land use, zoning, and development regulations; nuisance ordinances and other applicable laws.

Vision Statement

Summary of Services Provided

The Growth Management Department prepares and maintains the Alachua County Comprehensive Plan and is responsible for its implementation through the development and administration of Land Development Regulations; the administration of housing programs; construction permitting, plan review, building code compliance, inspections, contractor licensing and enforcement of minimum housing code; the conduct of investigations and engages in enforcement regarding alleged violations of various codes and ordinances; the maintenance of geo-integrated Information Systems on Land Administration in support of decision making; and the deployment of e-Services in support of public's involvement.

Objective / Performance Measures	Indicator	FY 2007 Actual	FY 2008 Projected	FY 2008 Actual	FY 2009 Projected
Asses Operational Cost Gains from Use of Web Services					
• Additional Service Levels Resulting from allWeb Transactions	Efficiency	-	14.00	14.31	14.00
• Additional Service Levels Resulting from GeoWeb Transactions	Efficiency	-	2.50	2.41	0.70
Identify and Quantify e-User Communities of the GeoGM Mapper					
• Total annual number - GeoGM unique users per e-user category	Output	-	25,000	23,363	30,000
Maximize e-Public Access to Department's Information					
• Number of Monthly allWeb Transactions	Output	-	350,000	359,700	350,000
• Number of Monthly GeoWeb Transactions	Output	-	55,700	59,100	65,000
Quantify Efforts for Migrating out of Legacy Systems					
• GIS - FTEs saved	Effectiveness	-	1	1	1
• GIS - Yearly maintenance payments saved	Efficiency	-	18,000	18,000	18,000

APPENDIX P
ALACHUA COUNTY PERFORMANCE MEASUREMENT POLICIES

Appropriation Policy

Budget appropriations will be made as follows:

1. Appropriations will be made at the major expenditure category: personal services, operating expense, capital outlay, debt service, grants and aids, and non-operating expenses.

2. The Office of Management and Budget will ensure that the application of the indirect charges, as determined by the County's consultant, do not adversely affect the provision of services of the fund receiving the indirect charge.

3. A fund for private, not-for-profit outside agencies shall be maintained with an annual appropriation. All agencies seeking funding from the Board should do so during the annual open application process through the Community Support Services Department and the Outside Agency Funding Advisory Board.

4. A fund for approved transportation paving projects, as listed within the Comprehensive Capital Improvement Program, shall be maintained with an annual appropriation included within the tentative budget presented to the Board each year. This appropriation shall be based on 25% of the additional ad valorem taxes expected to be collected from increased property valuation derived from "new construction" as reported by the Alachua County Property Appraiser. As this is an allocation of one-time revenue for capital expenditures, the amount of the allocation will be calculated separately for each fiscal year immediately following receipt of the Property Appraiser's certified property values. The 25% new construction value calculation will exclude any new construction derived from existing CRAs or adopted Transportation Improvement Districts. The County Manager may adjust this allocation recommendation after considering mitigating budgetary constraints.

5. All requests to fund discretionary court programs, otherwise known as "local requirements," as defined within Article V of the Florida Constitution and the supporting Florida Statutes (28.24, 29.008) require Board approval during each budget process and will include a fiscal impact and cumulative funding analysis of the discretionary programs prepared by the Office of Management and Budget.

Performance Measurement

Overview

Alachua County performance management program is called Aligning for Success (AFS). The program ensures that performance results support identified strategies and goals and ensure accountability for our efforts.

Performance management is a powerful tool used to integrate strategic planning, budgeting, and management, with evaluation and reporting in a system that helps create an accountable, transparent, and responsive organization.

Alachua County chooses to use a performance management system to:

1. Align the Mission, Vision, Values, and Commissioner's Guiding Vision with department/division objectives and employee performance,

2. Set program priorities and to ensure our organizational priorities match those of the community via the Board's guidance,

3. Develop meaningful measures, especially outcome measures, to gauge program success

4. Increase organizational coordination to eliminate waste and duplication.

Performance management improves organizational capacity by providing our managers with data on established measures. This performance data empowers managers by supplying data and information necessary to make effective and efficient management decisions to achieve desired results.

Making this data available to the public through the annual Tentative and Adopted Budget documents keeps

APPENDIX Q
CITY OF TAMPA CONTRACT SAMPLE PAGE

CITY OF TAMPA

Bob Buckhorn, Mayor | **PURCHASING DEPARTMENT**

Gregory K. Spearman, CPPO, FCCM
Director of Purchasing

MEMORANDUM

DATE: February 13, 2012

TO: Gregory K. Spearman, CPPO, FCCM
Director of Purchasing

FROM: Linda J. Johnson, CPPB
Senior Procurement Analyst

SUBJECT: Construction Services Center Permitting System

Resolution 2012-88 was approved by City Council on January 19, 2012 to Accela, Inc. and Environmental Systems Research Institute, Inc. (Esri) for the provision of the Construction Services Center Permitting System in the Estimate Amount of $3,027,338.98.

It is necessary to amend the Resolution due to a scrivener's error in the total amount of the contract for Accela, Inc. Under Accela's cost, $803,858 is for the Software License and $898,480.98 is for Annual Maintenance beginning in FY2012 until FY2016. Estimated Total: $1,702,338.98. The cost for Professional Services under the Services Agreement in the estimated amount of $1,333,733 was not included in Resolution 2012-88.

Therefore, it is necessary to amend the Resolution to include the cost of $1,333,733 for professional services under the Services Agreement and to correct a funding error under the Annual Maintenance Fees. being provided by Accela, Inc. Section 2. of the original Resolution shall be amended to read:

"Section 2. That funds for payment for such purchase from Accela, Inc. are to be provided from Account No. DP5032AAL-06407 (CSD Enterprise Business System) under the License Agreement in the estimated amount of $803,858 in FY2012. Funds for payment under the Annual Maintenance Fees are to be provided from Account No. DP5032AAL- 03401 (CSD Enterprise Business System) in the estimated amount of FY2012 $169,233, FY2013 $174,309.99, FY2014 $179,539.29, FY2015 $184,925.47 and FY2016 $190,473.23, contingent upon available funds. Beginning FY2017 funding for the Annual Maintenance Fees shall be on a perpetual term basis, based on future budget appropriations and shall be controlled by requisition. Funds for payment under the Services Agreement are to be provided from Account No. DP5032AAL-06405 (CSD Enterprise Business System) in the estimated amount of $1,333,733 FY2012. Estimated Total: $3,036,071.98. That funds for payment for such purchase from Environmental Systems Research Institute, Inc. (Esri) are to be provided from Account No. DP5032AAL-06407 (CSD Enterprise Business System) in the estimated amount of FY2012 $375,000, FY2013 $475,000 and FY2014 $475,000 contingent upon available funds. Estimated Total: $1,325,000. The estimated total amount of the project is: $4,361,071.98."

As a result of the scrivener's error, any reference in the Resolution to the Estimated Total of $3,027,338.98 is corrected to read: Estimated Total: $4,361,071.98.

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BIOGRAPHICAL SKETCH

Juna Goda Papajorgji is an Albanian national, a naturalized citizen of Canada, and a permanent resident of the United States. She was raised bilingual (Albanian, and Italian) in an academic family and is formally educated in English, and French. She holds a Master of Science in Urban/Civil engineering from the University of Tirana, Albania (1981), and a Master of Arts in Urban and Regional Planning from the University of Florida (1997). She took the required PHD courses (while working) during 2001-2003, and completed the other requirements (while working) during 2011-2012.

Before moving to the United States, she led the establishment of the Civil Engineering Department, at the Center for Scientific Information and Documentation in the National Academy of Sciences in Albania. She worked in UNESCO programs and projects, in Tirana's Department of Community Affairs, and at the International Branch of the Albanian National Public Radio.

In the United States, she led the establishment of a multiple award winning, geo-enabled integrated growth management information system for Alachua County, Florida - based on Open Source, Open Technologies, and Web 2.0 elements. Concurrently, as its founding co-chair, she also led the establishment of the GISCorps – an international program that provides volunteer GIS services to underserved communities worldwide.

At the University of Florida, she is currently an Adjunct Faculty in the department of Urban and Regional Planning, where she has attracted several grant awards, and has conducted research of local, state, and national scale, at the GeoPlan Center, and at the Family Data Center.

She has spearheaded GIS teaching and GIS implementations (on site, and remotely), in Armenia, Dominican Republic, Guatemala, Haiti, Honduras, Hungary, Kenya, Mali, Marshall Islands, Namibia, Afghanistan, India, and Albania.

She is the recipient of several national and international awards and recognitions, has prolifically published and presented (frequently by invitation, or as a guest speaker) in numerous conferences, and events, both nationally and internationally.

She is a member of the Small Grants review joint panel between the Federal Geographic Data Committee (FGDC), and the Global Spatial Data Infrastructure (GSDI) association, and is a former jury member of the *Interne*tional Pirelli Award, Rome, Italy.

Currently, the Vice Chair of the Societal Impacts Committee of the Global Spatial Data Infrastructure (GSDI) association, responsible for the Developing Nations Fund, she is also a former member of the Board of Directors of the Urban and Regional Information Systems Association (URISA), and of the Florida Chapter of URISA.

She delights in philosophical and social justice readings, in travels to remote and authentic places, and as of late, in cultivating her own garden. She marvels in the art of knitting and adorns her domiciles with self made things from abandoned scraps, and hand embroidery.