City of Coral Gables

Information Technology Department

CITY ENTERPRISE OPERATION SYSTEMS RESEARCH STUDY
ENTERPRISE BUSINESS CAPABILITIES (EBC)
EXECUTIVE REPORT

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1. Report Objectives

This report compiles the findings of a nationwide research on government enterprise systems, including Enterprise Resource Planning (ERP), Enterprise Operation Systems (EOS) and horizontal integration with organization functional areas, for the market segment of medium government organizations.

The main objective of this report is to provide substantial information, analysis and expertise to help the City of Coral Gables review the best available options and make an informed and sound decision during the evaluation process of a new ERP system that fits the organization's functional requirements, budget planning, and culture of exceptional customer service and innovation.

2. Research Parameters

2.1. Research - Source Groups

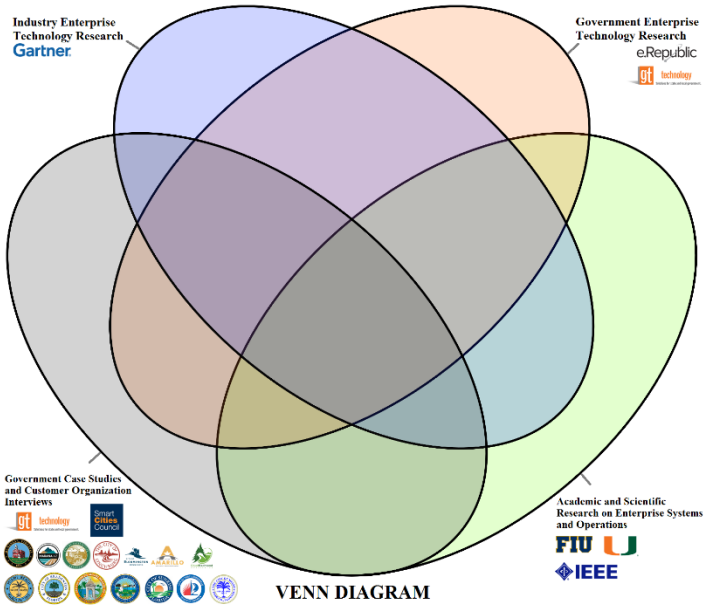
For this research, four groups of subject matter experts (SME) and research data sources were consulted:

I. Industry Enterprise Technology Research:
   a. Gartner Inc.

II. Government Enterprise Technology Research Data:
   a. e.Republic Public Sector Innovation Group, and GovTech Team.

III. Government Case Studies and Customer Organization Interviews:
   a. e.Republic 2016 Digital Cities survey - Top Government ERP Implementations for Municipalities in the U.S. within Coral Gables' Population and Revenue Range.
   b. Smart Cities Council Advanced ERP Case Studies.
   c. Previous CGIT case studies and site visits.

IV. Academic and Scientific Research on Enterprise Systems and Operations:
   a. Florida International University (FIU) Engineering Management Graduate Program – Research and Curriculum on Enterprise Systems and Advanced Production Planning.
   b. University of Miami (UM) ERP Framework.
   c. Institute of Electrical and Electronic Engineers (IEEE) Smart Cities group.



VENN DIAGRAM

2.2. Research - Benchmark Profile Statement

The following City organization profile was utilized to benchmark with case studies and narrow down the research population:

"*City of Coral Gables is a local historic municipality in Miami-Dade County, FL, with 51,000 residents, 1,100 employees, high quality of life, exceptional municipal services, home of the University of Miami and numerous multinational business headquarters and consular offices. Annual FY revenue $180M-$200M*."

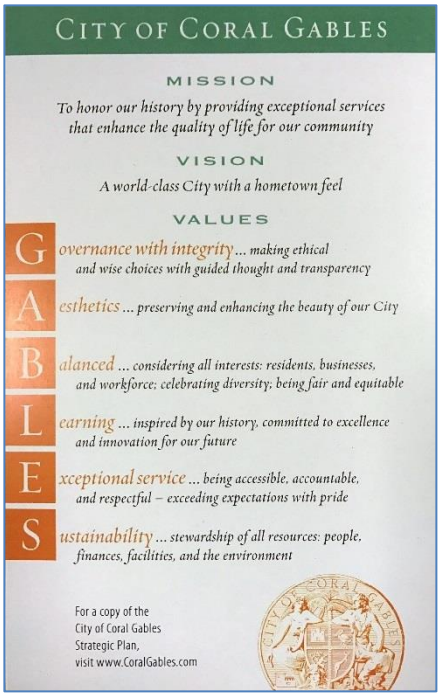
2.3. Research - Problem Statement

"*The City's 10-year-old system, Tyler EDEN, is gradually approaching sunset and lacks API's and other interoperability features to horizontally integrate with other City systems for real-time communications and transaction flow. Multiple other gaps have been identified in different functional areas of the organization, such as inadequate e-Permitting process, lack of electronic plan review, obsolete and unreliable Web services, lack of mobility features, lack of cloud services, and other deficiencies*."

2.4. Research - Purpose Statement

"*The City is planning to replace its outdated ERP system with an efficient and horizontally-integrated government enterprise system. We want to find the right technology for enhanced functionalities, efficiencies, interoperability, business intelligence and cost-effectiveness that will fit our size, budget and organization culture of exceptional customer service and innovation. A robust and scalable system platform that is up-to-date with modern features, best practices and functionalities for core financials, HR, and payroll, and integrates with other systems in functional areas such as e-permitting, land management, GIS and community recreation; with adequate and customizable automation and reporting capabilities*."

A Government Enterprise System
Aligned with the City's
Mission,
Vision,
and
Values.



3. Research Results

3.1. Industry Enterprise Technology Research

3.1.1. Source Reference Profiles:

- **Consulting Source: I-a.** Gartner Inc.
    - **Credentials:** *Gartner, Inc.* is one of the leading American research and advisory firms providing information technology related insight. Research provided by Gartner is targeted at CIOs and senior IT leaders, marketing leaders and supply chain leaders. Gartner clients include large corporations, government agencies, technology companies and the investment community. The company consists of Research, Executive Programs, Consulting and Events. Founded in 1979, Gartner has over 7,800 employees, including 1,280 in research, located in 85 countries.
    - **Subject Matter Experts (SME) credentials:** *Mike Guay,* Research Director at Gartner, specializing in Enterprise Applications. 2015 Gartner award winner for Research Client Inquiry Excellence. Covers strategies and methods for all aspects of ERP strategy, application planning, implementation, and program management. Over 30 years of experience in ERP applications and the IT industry to his position as Research Director at Gartner. Expertise includes all aspects of ERP strategy and planning including developing business cases, ERP package and integrator selection, program management and oversight, business process improvement, change management, communications, and deployment and support. His experience includes various industries and sectors, both public and private, including commercial manufacturers, defense contractors, state and local government, and education. | Added contribution by analyst *Bill Finnerty* in 2017.
    - **Consulting Process:** Conference calls with SME, emails, research documentation, subscription and professional consulting services.
    - **Research Question:** "*What are the leading ERP industry technology solutions evaluated by Gartner Inc. experts, that fit the City's profile (see section 2.2 above) and fulfill the stated gaps (2.3) and objectives (2.4)? Please recommend best practices and approaches to the ERP product selection and implementation process*."

3.1.2. Findings, Takeaways and Recommendations:

- Gartner defines "Postmodern ERP" as a technology strategy that automates and links administrative and operational business capabilities (such as finance, HR, purchasing, manufacturing and distribution) with appropriate levels of integration, on two categories: Administrative ERP Strategy: focuses on the administrative aspects of ERP, primarily financials, human capital management and indirect procurement. Generally, for service-centric industries. Operational ERP Strategy: For product-centric industries and asset-intensive organizations which are likely to extend their ERP strategy beyond administrative functions into operational areas, such as order management, manufacturing, supply chain and operations and maintenance of assets, to maximize operational efficiencies. These organizations can realize benefits from the integration between administrative and operational capabilities, for example, where operational transactions that have a financial impact are reflected directly in the financial modules.
- All the top vendors recommended by Gartner are investing in Cloud infrastructure to provide elasticity, reliability and expandability to the ERP (to avoid having to continuously buy more servers and other physical infrastructure,) and embedding analytics and algorithms in the

applications to allow more actionable dashboard information in the transactional system without having to export everything to a data warehouse.

- The recommended vendors are also investing in horizontally integrating the ERP modules with other applications. For customers that are buying applications from multiple places, these vendors are using as a differentiator their ability to provide a platform, API's and API management tools to manage integration to their core system in the cloud.
- Citizen interfacing capabilities are provided through CRM packages to allow Web/mobile access.
- They are also investing in digital government and digital business, which includes smart city concepts, intelligence analytics and algorithms. Answers to: what can you do with all the data that is coming in? and: how can you provide services, reporting and features to constituency and stakeholder's population?
- These vendors that Gartner recommends, differentiates from other vendors in the same space, in that they are all committed to the public sector. As things evolve and so do the capabilities and demands from public sector, these ones below are the products that will continue to evolve in terms of the capabilities that the citizenry expect.

For clients investing in ERP, Gartner recommends:

- Besides getting a list of functional requirements, you must consider where is the vendor investing their R&D in the next three to five years, because some of these vendors are investing in radical different areas. For example: Tyler is and has always been focused in the public sector exclusively. Infor has many different industries they have played in, but they have always had a good presence in the public sector. Infor is a very much bigger company than Tyler, but they are spreading their money in sectors like Food and Beverage, Retail, and Manufacturing, as well as Public Sector. The same happens to Microsoft, Oracle and SAP. WorkDay does not have any Manufacturing modules; and they are going for the same target areas than PeopleSoft (HR, Finance, procurement, Higher Education.)
- We must look also into the platform, their out-of-the-box integration capabilities, and out-of-the-box algorithms and analytics.

For public sector ERP and Core Financials, Procurement, HR/Payroll, Asset Management, these are the top vendors in this space that are recommended by Gartner:

Infor

- They have had an on-premise suite of products for public sector for years in the market, and have recently modernized them and put a better user interface in front of them. They are in the process of expanding an integration cloud platform hosted in the Amazon Cloud (AWS).
- If we move from EDEN to Infor, they provide a lot of capabilities like permit management. In 2017 they didn't have the broad portfolio of public sector services as Tyler, but that changed over the years. For several years in a row, Infor has been named a Leader or Visionary in Gartner's Magic Quadrant for various enterprise system categories. They now have many public sector customers.

Tyler Munis powered by Microsoft Dynamics Platform

- Tyler implements the Microsoft Dynamics framework with ERP layered functionality on top of it. It is a good match because Tyler already has a broad portfolio of peripheral public-sector functionality such as core management and licensing, which are not typically found in an ERP system, and are leveraged by Microsoft Dynamics which is a good solid ERP framework.
- It is important to validate that Tyler and Microsoft will continue their strategic partnership for years to come, and continue joint development efforts in the ERP space. (*CGIT post-consulting note*: CGIT approached Tyler about their Microsoft partnership roadmap, and they confirmed that

it is in good standing and mutually agreed upon to continue for years to come, and to continue developing for public sector ERP solutions such as the current Tyler Munis product over the Microsoft Dynamics cloud platform.)

- For the Tyler Munis ERP with Microsoft Dynamics, look at all the functionality provided by their suite and compare to what the City is looking for. Microsoft is investing very heavily in the technology aspect and their business intelligence analytics tool such as PowerBI. Microsoft is evolving the architecture of Dynamics in their Azure SQL platform to incorporate functions into the application that used to be sold separately as PowerBI. That benefits applications inside of Tyler Munis so they don't need to import/export data to take advantage of the analytics, dashboards and reporting functionalities since they are now inherent to the Microsoft Dynamics platform. You no longer need a separate reporting system. The cloud infrastructure capabilities allow to translate transactional data into much more usable and reportable data structures so you can do it from the application itself without affecting the production environment. Microsoft use their own cloud infrastructure.
- The platform allows building functionalities without affecting the source code, by simple dragging and dropping objects at a user client level, in more sophisticated fashion than other platforms.
- Microsoft has a good long-term strategy to break the walls between their Azure Cloud team, their ERP team, and their business analytics BI team. Tyler/Munis will most probably benefit from all those improvements.
- Microsoft historically has sold through their partner networks (ISB channels) that focus on the vertical industries, including public sector. In the case of Tyler Munis, it is important to clarify who is licensing the application.
- Tyler has a great reputation for serving public sector agencies, especially those of the size and complexity of Coral Gables, and they have been doing it for a long time and will continue doing it exclusively in that business. If they keep an ongoing relationship with Microsoft, that is going to be very beneficial to their customers.
- The Gartner analyst indicates that the best approach for Coral Gables is to ask "Why Not" going with Tyler Munis with Microsoft Dynamics platform, not only because it is the simplest and easiest thing to do, but because Microsoft Dynamics is a modern platform with a long future to it so is not going to be obsolete in the next years, due to their ongoing R&D, market share and product evolution. It is a good approach to take, but it is also good to get some pricing data points from Oracle and Infor to compare.

Oracle Cloud Suite

- Very robust functionally. Have done a lot of investment lately. They lack in manufacturing, MRP and demand planning, but have developed multiple applications for public sector.
- Their suite functionalities for HR, Finance, Budget and Asset management are very robust.
- Oracle customers interviewed by Gartner have indicated that the new Oracle applications are easy to use. They have modern user interfaces.
- Oracle is focusing on the cloud for the future, even though they still invest in developing their on-premise systems such as JD Edwards, PeopleSoft and others.
- As a related note, SAP is doing the same with their ECC suite, and are moving their applications database from Oracle to Hana in-memory database, which is a disadvantage for a public sector organization of our side, due to its very high costs. Other product that is on the high-cost range is WorkDay, which is like PeopleSoft.
- Gartner considers that Oracle, SAP, and WorkDay, may be too big for a medium-sized public sector organization such as Coral Gables, and their costs are also too high. Since they are all aggressively competing for the customers in the same market, they may reduce costs in the future.

3.2. Government Enterprise Technology Research Data

3.2.1. Source Reference Profiles:

- **Consulting Source: II-a.** e.Republic Public Sector Innovation Group and GovTech Team. 2016 Digital Cities survey.
    - **Credentials:** Established in 1984, e.Republic is the nation's only media and research company focused exclusively on state and local government and education. Early to recognize the impact new digital technologies would have on the public sector, in 1987 it launched Government Technology, the first national magazine covering information technology in state and local government. Other successful media platforms followed, including Public CIO and Emergency Management - all of which have won numerous editorial and design awards. Seeing the need for stronger analysis and research to support public sector innovation, e.Republic launched the Center for Digital Government and Center for Digital Education —the first-of-their-kind research and business intelligence advisory institutes focused exclusively on state and local government and education. The Centers are home to the widely cited Digital States Survey and Digital Government Navigator, a subscription-based market intelligence tool for companies targeting public sector business. In 2009, it acquired Governing from Congressional Quarterly. Governing covers policy and management (insight and analysis on budget and finance; transportation and infrastructure; workforce and economic development; health and human services and more) for state and local government leaders. In 2014, it launched two other new initiatives, e.Republic Labs and e.Republic Ventures. Designed to link state and local government to a new generation of innovative civic-tech solutions, e.Republic Labs serves as a catalyst and connector for the development, deployment and scalability of a new generation of government and civic technologies. It also acquired the regional tech business website Techwire in 2014 and relaunched it as a subscription based news and business intelligence service focused on the nexus of technology and government policy.
    - **Subject Matter Experts (SME's) Credentials:**
        - *Todd Sander,* Vice President of Research and the head of the Center for Digital Government.
        - *Rhiannon Gainor,* Director of Research and Advisory.
        - *Hamed Mahmoud,* Digital Programs Researcher.
    - **Consulting Process:** Calls, Emails, research documentation, free subscription and professional consulting services.
    - **Research Question:** "*What are the most efficient and technologically advanced municipalities in the Country - in the same budget and population range than us - doing for ERP and enterprise systems (core financials, HR and payroll, asset management, permitting and other citizen service areas)? The goal is to research the best available options in the Country, and benchmark with other municipalities that are not limited to our neighbors in Florida*."

3.2.2. Findings, Takeaways and Recommendations:

The timing of our request was good, as e.Republic had just closed their Digital Cities survey.

e.Republic and GovTech teams looked through their 2016 Digital Cities survey and other research data in response to our request, and found the top-five comparable peer cities excelling in ERP enterprise systems. They identified a handful of cities comparable to Coral Gables size, some of which have recently procured ERP systems.

e.Republic provided a high level description of these cities' systems and processes, and included contacts to facilitate our outreach efforts. We researched further by interviewing those organizations.

- *Manassas, VA (pop. 40,000) – Patty Prince, Communications Manager, Communications Department, 703-895-6535, pprince@manassasva.gov*
- *Marana, AZ (pop. 45,000) – Carl Drescher, Technology Services Director, 520-382-1971, cdrescher@maranaaz.gov*
- *Fayetteville, AR (pop. 73,581) – Keith Macedo, Information Technology Director, 479-575-8320, kmacedo@fayetteville-ar.gov*
- *Lynchburg, VA (pop. 79,047) – Mike Goetz, Information Technology Director, 434-455-6002, mike.goetz@lynchburgva.gov*
- *Bloomington, MN (pop. 80,405) – Amy Cheney, Information Systems Manager, 952-563-4877, acheney@bloomingtonmn.gov*
- *Case Study published by GovTech in January 2017: Amarillo, TX New ERP and New Permitting, Licensing and Planning System.*

Please see **Section 3.3, Consulting Source III-a** below for case studies information provided by e.Republic SME's, supplemented with insight and advice shared by the representatives interviewed by CGIT from the cities highlighted for their successful ERP systems rollouts and processes.

3.3. Government Case Studies and Customer Organization Interviews

3.3.1. Source Reference Profiles:

- **Consulting Source:** III-a. Top Government ERP Implementations for Municipalities in the U.S. within Coral Gables' Population and Revenue Range, as per e.Republic's 2016 Digital Cities survey and new 2017 case studies.
    - **Case Studies:**
        - **III-a.1.** City of Manassas, VA (pop. 40,000)
            - **Consulting Source:** City of Manassas Communications Manager *Patty Prince*. e.Republic Public Sector Innovation Group, GovTech Team.
        - **III-a.2.** City of Marana, AZ (pop. 45,000).
            - **Consulting Source:** City of Marana Technology Services Director *Carl Drescher*, e.Republic Public Sector Innovation Group, GovTech Team.
        - **III-a.3.** City of Fayetteville, AR (pop. 73,581).
            - **Consulting Source:** City of Fayetteville Information Technology Director *Keith Macedo*, e.Republic Public Sector Innovation Group, GovTech Team.
        - **III-a.4.** City of Lynchburg, VA (pop. 79,047).
            - **Consulting Source:** City of Lynchburg Information Technology Director *Mike Goetz*, e.Republic Public Sector Innovation Group, GovTech Team.
        - **III-a.5.** City of Bloomington, MN (pop. 80,405).
            - **Consulting Source:** City of Bloomington Information Systems Manager *Amy Cheney*, e.Republic Public Sector Innovation Group, GovTech Team.
        - **III-a.6.** City of Amarillo, TX (pop. 190,000).
            - **Consulting Source:** Amarillo TX ERP Case Study from January 2017.
    - **Consulting Process:** e.Republic Research data and case study reference, case study organizations interviews, calls, emails, research documentation.
    - **Research Question:** "*Could you please share with us some of the key factors that influenced your decision to go with your current ERP provider, and how has your experience with the product been so far? Please include any successes, roadblocks, technical or functional issues, lessons learned, and any advice/recommendation from your ERP implementation and operations*."

- **Consulting Source: III-b**. Smart Cities Council Advanced ERP Case Studies.
    - **Credentials:** The Smart Cities Council is a network of leading companies advised by top universities, laboratories and standards bodies, which serves as a trusted, neutral advisor for cities to help them tap into the transformative power of smart technologies. Their vision is a world where digital technology and intelligent design have been harnessed to create smart, sustainable cities with high-quality living and high-quality jobs. They promote cities that embody three core values: *Livability* - Cities that provide clean, healthy living conditions without pollution and congestion. With a digital infrastructure that makes city services instantly and conveniently available anytime, anywhere. *Workability* - Cities that provide the enabling infrastructure — energy, connectivity, computing, essential services — to compete globally for high-quality jobs. *Sustainability* - Cities that provide services with future generations in mind. They help cities become smarter through a combination of advocacy and action: Readiness Guides - High-level models and metrics against which cities can measure their progress. Financing templates and case studies - Guidance for new financing models now emerging, some of which combine public,

private, philanthropic and development sources. Policy frameworks and case studies - Examples of policies that promote economic development while also safeguarding citizens. Visibility campaigns - Coordinated, joined-voices initiatives to help citizens understand that smart cities represent a path to a better future. These campaigns include awards, events, publishing and research. Regional networking events - High-level, invitation-only events where cities and their citizens can learn directly from some of the world's top experts in the many disciplines that combine to create a smart city.

- **Case Study:** "City of Redmond, WA Meets the Future with Accountability and Efficiency by Deploying Powerful ERP System."
- **Consulting Process:** Research documentation, open data, calls, emails, subscription and free professional consulting services.
- **Research Question:** "*What are the most efficient and technologically advanced Smart Cities in the Country - in the same budget and population range than us – doing for ERP and enterprise systems (core financials, HR and payroll, asset management, permitting and other citizen service areas) to enable their core values of livability, workability, and sustainability, and provide exceptional customer service to their constituents?*"

- **Consulting Source: III-c**. Previous case studies and site visits.
  - **Case Studies:**
    - III-c.1. City of Miami Beach
    - III-c.2. City of Bradenton
    - III-c.3. City of North Miami
    - III-c.4. City of Doral
    - III-c.5. City of Fort Lauderdale
    - III-c.6. City of Sunrise
    - III-c.7. City of Miami
    - III-c.8. Statistics from Tyler Technology EDEN ERP Customers
  - **Consulting Process:** Site visits, events, calls, emails, research documentation, professional consulting services.

3.3.2. Findings, Takeaways and Recommendations:

III-a.1. City of Manassas, VA (pop. 40,000). **Consulting source:** City of Manassas Communications Manager *Patty Prince*, and e.Republic Public Sector Innovation Group and GovTech Team.

- One of the city's goals in their 2016 strategic plan is to enhance the city's sense of place by maintaining an open and transparent government – one of the strategies to meet this goal is to implement a new ERP system
- The contract has been awarded to Tyler Technologies, Inc. for the new ERP system to include MUNIS/EnerGov applications.
- The ERP project has a 3-year rollout. City staff are currently in training for Phase 1 rollout in spring 2017.

III-a.2. City of Marana, AZ (pop. 45,000). **Consulting source:** City of Marana Technology Services Director *Carl Drescher*, and e.Republic Public Sector Innovation Group and GovTech Team.

- The city just completed the implementation of their EMC system with Tyler Technologies. The system is integrated with their ERP solution for document management and workflow.

III-a.3. City of Fayetteville, AR (pop. 83,500). **Consulting source:** City of Fayetteville Information Technology Director *Keith Macedo*, and e.Republic Public Sector Innovation Group and GovTech Team.

- The city contracted with Tyler New World Solutions to implement and upgrade their ERP system in early 2016.
- The system operates on an AS400 platform that was purchased in 1992 and provides software for their core financial systems: general ledger, accounts payable, accounts receivable, HR, payroll, inventory, budgeting, fixed assets and utility billing.
- "2 vendors submitted final RFP's, New World and Tyler Munis." (*CG Note: Tyler acquired New World Systems in 2015*)
- "We are an existing New World customer (AS400 for 25+ years), so we placed a lot of our decision on the ability for our new ERP vendor to understand our current environment."
- "We have customized our AS400 software a lot over the years, so we wanted someone with a lot of knowledge of our current environment (conversion was a huge concern)."
- "Our decision to select New World was a difficult decision with many factors, but when we combined the cost of New World versus Tyler, and our 25+ year track record with New World, we selected New World."
- "We went live with Finance on July 25 and HR/Payroll in September, so far so good. It was a huge amount of work and staff commitment, but we are up and running."
- "As a reference we have 750 employees, 83,500 citizens, and a university of 25,000."
- "I developed our own task list that we tracked issues closely (New World did not do a great job, so we drove this process)."
- "Twice a week meetings with core team to review issues."
- "Engage departments early."
- "Communicate, Communicate, Communicate. We setup a set group of core ERP members and a broad group that we sent out information to on a frequent basis."
- "Experienced project manager on New World side, and stay engaged with them. Have staff funnel all requests to New World PM through City PM."
- "New World has great application experts/consultants, be selective to ensure the staff assigned to your project our senior staff. Make them commit to having the same staff member assigned to your project for the duration of the project."

III-a.4. City of Lynchburg, VA (pop. 79,047). **Consulting source:** City of Lynchburg Information Technology Director *Mike Goetz*, and e.Republic Public Sector Innovation Group and GovTech Team.

- The city went through an ERP upgrade in 2015-16 that included the development of data cubes and deployment of business analytics software.
- With the completion of the implementation of the Tyler New World Systems ERP suite this past year, the city was able to move all applications to .Net
- "The decision to go with New World's .Net suite was made simple because we were already a customer of theirs on an AS400/iSeries platform. I think Lynchburg first implemented their financial system in 1988, so we have a long history with them."
- "Given the complexities of data migration, it was a huge factor in their favor to stay with them. Since they understood the data models in both platforms and had the utilities to handle migrating data, it helped reduce this risk factor."
- "They also gave us credit on the software licensing costs, reflecting our prior investment."
- "And our user base was generally happy with their software's performance and their support. All these things factored together drove our decision to stay with them."

- "Some of the new functionality in the .Net platform was also attractive. Data cubes and business analytics was a positive for our users. We haven't deployed it widely; it's mainly used by a small number of financial analysts and accountants. There's a material learning curve, but they like the tool and the query & reporting functionality overall in .Net is good."
- "The biggest takeaway I could offer from our experience is we had a hard time receiving consistent project management on their end. Our assigned project manager changed several times early on, and once we escalated and got that stabilized, we still had a hard time getting his sustained attention. He was balancing too many implementations."

III-a.5. City of Bloomington, MN (pop. 80,405). **Consulting source:** City of Bloomington Information Systems Manager *Amy Cheney*, and e.Republic Public Sector Innovation Group and GovTech Team.

- The city uses Munis for this ERP and uses the system to automate several processes including purchasing and procurement, contract management, and payroll.
- "We selected Tyler Munis for our ERP solution, because it most closely matched our RFP requirements and had favorable reviews from the references that we contacted."
- "We were pleased with the implementation and it continues to meet or exceed our expectations."
- "We completed the implementation on time and under budget greatly due to our dedicated City staff."
- "It also helped that we hired a project manager to assist with the implementation."

III-a.6. City of Amarillo, TX (pop. 200,100). **Consulting source:** GovTech January 2017 Case Study.

- The city of Amarillo, Texas, has turned to Tyler Technologies for new enterprise resource planning (ERP) software as well as permitting, licensing and planning functions.
- The city has signed a software-as-a-service $3.5M contract with Tyler to use both Munis, the company's government ERP that implements Microsoft Dynamics, and the GIS-based EnerGov package.
- Amarillo will also gain some public information tools through the deal (CRM, 3-1-1, etc.)
- "Amarillo's citizens will benefit from the ease of access to real-time data through the city's 3-1-1 initiatives by leveraging Tyler's citizen-facing products, allowing for seamless coordination between various city departments and automated workflows to boost citizen access, customer service and communication," a Tyler press release reads.
- Per Amarillo City Council documents, the contract includes purchase, implementation and five years of support. Tyler beat out Accela and Infor Public Sector for the contract.
- In council documents, staff emphasized ease of use, the opportunity to better connect with citizens and the availability of real-time data as reasons to buy the software.

III-b. City of Redmond, WA. **Consulting source:** Smart Cities Council, Advanced ERP Case Studies.

Redmond, WA ERP Case Study:

The city of Redmond, Washington implemented Microsoft Dynamics AX for public-sector organizations to streamline operations, empower employees with meaningful data, and provide citizens greater service quality and more effective communications.

Case Study bullet points:

- **Strategic Plan:** City of Redmond is proud of its responsiveness and the wide range of services it offers to constituents. Aiming to take the city into the future, mayor and leadership developed a visionary strategic technology plan. Redmond sought to make its business processes more efficient and transparent, replacing an ERP system that was unable to fit public-sector needs and could not accommodate the way the city's departments and employees work.

- **ERP Solution:** Engaging with Microsoft Gold Certified Partner Tyler Technologies, the City of Redmond implemented Microsoft Dynamics AX for public-sector organizations together with other software tools. Now, with streamlined operations and employees empowered with meaningful data, Redmond can provide citizens greater service quality and more effective communications. The city's work culture is transforming for optimal transparency and accountability.

- **City Profile:** The City of Redmond, Washington, serves a diverse population of close to 54,000 citizens with a staff of approximately 650 people. Redmond, unlike many smaller cities, provides a full range of services, including public safety, human services, business development services, and traffic and transportation services. The city's overall budget for 2011/2012 was just over U.S.$523 million. Redmond is home to the corporate headquarters of Microsoft, many Microsoft partner companies, and thousands of people who work in these organizations.

- **Background history and testimonials:** At the time, the city used a JD Edwards enterprise resource planning (ERP) system to manage its finances, resources, and projects. Mike Bailey, Director of Finance and Information Services at the City of Redmond, had recently joined the city's administration, where his role included responsibility for the IT department and technologies in addition to the finance department. "The city had implemented the JD Edwards system not all that long ago, but it really wasn't working well for what city employees needed to accomplish," he explains. "Access was also limited; only a few people in the finance management group were able to use the system. Our customers —the departments we serve and which need information to provide public services—were asking for better tools." Malisa Files, Financial Planning Manager for the City of Redmond, adds, "When other departments needed financial information, they called us for assistance. Not only was this inefficient, but it also caused a workload issue in the finance group." For most city department managers, real-time budget information was critical in planning and managing projects, but obtaining such information required somebody else to run a report. This also made it difficult to answer questions that the mayor and council members asked. Tracking the finances involved in capital and grant-funded projects also posed difficulties. Managers, having obtained financial details from the finance group, designed their own processes to project expenses, support operations, and pay invoices, most often by using Microsoft Excel spreadsheets. Says Bailey, "We looked for leadership and best efficiency in serving constituents, but our technology tools were unable to support our efforts effectively. For that reason,

developing and maintaining a culture of accountability was also challenging." The city's financial reporting also lacked the desired effectiveness. Sheila Colyer, Accounting Services Manager for the City of Redmond, says, "In my job, I oversee the city's accounting and payroll systems and am responsible for reporting and continuing disclosure for auditors and financial regulators in relation to the city's bonds, revenue, and financial performance. We could only review individual accounts and were unable to perform reliable, meaningful data analysis."

- **Decision Making Strategic Process:** Redmond's implementation of the JD Edwards system took place shortly before PeopleSoft purchased JD Edwards, followed soon thereafter by Oracle acquiring PeopleSoft. The city's IT managers became concerned about the continuing support and enhancements for the system, and reimplementing or upgrading JD Edwards did not look promising to them. Says Bailey, "We wanted to provide the system's resources, in terms of functionality, workflows, and information, to the entire city administration. It became clear that doing so required new technology tools." When Bailey participated in a CIO summit at Microsoft, he learned about Microsoft Dynamics AX, the company's ERP system for larger companies and organizations with complex challenges to meet. After some deliberations, the City of Redmond decided to participate in the Microsoft Technology Adoption Program for Microsoft Dynamics AX within the context of its technology strategy. "Microsoft was looking for a public-sector organization that would provide thorough feedback on the new version of the product, and we wanted to find an ERP system that would help us manage the city's business in the most effective way," says Bailey. "Joining in this effort with Microsoft made sense for everybody involved, and we were excited to have a voice in ensuring that the solution met the needs of public-sector entities." City leadership felt that exploring the partnership with Microsoft and incorporating the strengths of a proven ERP solution was a promising strategy.

- **Technology Integration:** The city engaged with Tyler Technologies, a Microsoft Gold Certified Partner and one of the largest technology vendors in the United States dedicated to serving the public sector. Leadership, business owners, and project managers from Redmond worked closely with public-sector and technology experts from Microsoft and Tyler Technologies to assess the city's requirements for the new ERP system and translate them into solution capabilities. Tyler team members, expertise, and technologies played a multifaceted role in the project. Technologists from Tyler engaged with the city's IT department to implement Microsoft Dynamics AX and provide the needed data migration and user training. Working with Microsoft, the company's developers also cocreated the solution's functionality for public-sector entities, frequently incorporating ideas and requests from Redmond's stakeholders and collaborating closely with the Microsoft product team. In addition, for Redmond, Tyler deployed and integrated its own software tools with Microsoft Dynamics AX, including Eden payroll functionality and cashiering capabilities. Within the implementation project, Tyler provided some additional integrations to the city; for example, Microsoft Dynamics AX connects with the American Express system to make expense management easier.

- **Parallel Initiatives:** In addition to a new ERP system, Redmond's strategic technology plan called for a number of other technology projects to enhance the city's service capabilities and to gain the best value from Microsoft Dynamics AX after its implementation. The city relaunched its website after refreshing content and adding practical functionality for citizens, such as crime and incident statistics based on data from geographical information systems. The city also streamlined its workflow for business licenses, added new service management and fleet maintenance systems, and automated the process of developing and maintaining the city council agenda.

- **Employees Input:** During the development of Microsoft Dynamics AX for public-sector organizations, more than 700 requests and suggestions by Redmond employees turned into functionality that is part of the solution. Discussing one typical example of this collaboration, Files says, "Public-sector organizations typically need project-accounting capabilities that can accommodate grants and grant management. The project-accounting modules in ERP systems are typically tailored for construction and other projects, which tend to be much larger than most projects funded by grants. The solution needed some adjustments for project accounting with grants or it would have been too restrictive. Microsoft and Tyler were wonderful in listening to our ideas and developing them into product features." However, once it came to the implementation of Microsoft Dynamics AX, the city required very few customizations. "We wanted to deploy the solution as closely as possible to the standard version," says Hermanson. "That will make it much easier to manage and upgrade than highly customized technology."

- **Business Process Review:** As city project leaders realized what the new ERP system and other technologies would help employees accomplish, they took advantage of opportunities to revise business processes for greater efficiency and simplicity. Those included a new chart of accounts, workflows and approvals for spending and invoices, budgeting, and other tasks. With the imminent availability of Microsoft Dynamics AX for all the city's business groups, leadership introduced the new technology to many employees during a kick-off event at city hall. Project stakeholders from the city, Microsoft, and Tyler demonstrated such solution capabilities as project accounting, budgeting, employee self-service, and human resources management to people who were seeing the solution for the first time. Attendees included many workers from the city's finance and administrative departments; members of the police force, firefighters, and emergency service providers also took time to learn.

- **Case Study Accomplished Visibility:** By implementing a new ERP system, the City of Redmond has taken a large step forward in its strategic technology plan and is already garnering visibility from municipal and regional governments across the country. "With Microsoft Dynamics AX, we can realize our vision of a full-service city," says Marchione. "Not only will it make our jobs a lot easier, but it will also make jobs in other cities across the nation much easier." Adds Bailey, "We are developing a new mindset and accomplishing a fundamental change in using technology to help us be better at what we do. That is an important, high-level win resulting from a lot of projects, among which the implementation of Microsoft Dynamics AX is the most prominent."

- **Role Centers and Workloads Improvement:** During the kick-off event, many city employees experienced the Role Centers in Microsoft Dynamics AX and saw how they could simplify their lives with this new user experience. Says Files, "I'm very enthusiastic about the Role Centers because they are such a contrast to what we had before. The interface presents the most important financial details we need to be aware of and eliminate a lot of distraction from information that isn't relevant to our jobs." Instead of calling the finance group to ask for information, employees throughout the city can access their Role Centers and easily find what they need. "We want to expose a lot more information to a much broader audience, including elected officials and constituents," states Bailey. "The familiar look of the product will immediately remove barriers that some people might experience when it comes to financial information." By using Microsoft Dynamics AX, the finance group will benefit from more manageable workloads, allowing team members to refocus some of their tasks. "Directors and employees will no longer depend on us to run and provide reports," Colyer comments. "We automate the report generation in the ERP system and make them available on the Role Centers, where people can access them as needed. For me and my colleagues, this means we can play a different, more valuable support role

as we help departments and decision makers consider the data in the right way and take the right analytical steps."

- **Efficiencies and Process Improvement:** Gains in efficiency, accountability, and transparency from eliminating duplicate data entry to replacing disparate tasks with streamlined workflows, Redmond is generating efficiencies by using the financial management capabilities in the new ERP system. "We can now decentralize many functions and assign resources to more important functions or, in some cases, actually reduce the level of full-time employees dedicated to certain tasks," says Marchione. Explaining how new workflows impact the city's operations, Files says, "We can easily build and adjust workflows to include all the right people and steps. For example, we can generate a requisition, turn it into a purchase order, acquire the goods and services, and pay vendors all within one consistent sequence of activities, including all necessary electronic approvals and checks. It's similar when it comes to budgeting and financial planning. We no longer have to keep separate spreadsheets, which were often hard to access, and we stopped generating reams of paperwork and sending it to people." As Bailey points out, the remarkable efficiency gains also help to change the way city employees work and think. "By using Microsoft Dynamics AX, we've become more effective facilitators of public benefit," he says.

- **Business Intelligence:** Redmond's finance department uses Microsoft Dynamics AX for important tasks such as reviewing budgets and accounts in real time, performing efficient fund accounting, and ensuring grant compliance. Finance team members, who found many of their ideas and requests developed into functionalities in the new ERP system, also gained extensive analytical capabilities. Says Files, "We're especially thrilled about the data cubes and Microsoft Office Add-In technology. For my team of financial analysts, who perform budgeting and forecasting, it will become a lot easier to obtain meaningful information and report on it in any way they like." Colyer adds, "With the new self-service functions available to employees in all departments, we will no longer be the clearing house for financial information. Instead, we can become more valuable and strategic in moving the city forward."

- **Responsiveness Improvement:** Redmond expects to improve its responsiveness to elected officials and citizens with the help of the new ERP system and other technologies. Says Marchione, "The government of the future is always looking to better connect with the community and provide improved and more efficient services. Microsoft Dynamics AX 2012 is one great tool that will help us get there." Drawing on financial information from the ERP system, city employees will be able to provide answers to council members faster. The information itself will be current and comprehensive, which was a challenge in the past. "One result of our new productivity and efficiency is that we work with a much greater level of accountability and transparency within the organization and to the citizens and elected officials," explains Bailey. "With Microsoft Dynamics AX, our improved processes will directly impact how well we serve the community and enable people to interact with the city. It will also present new opportunities for service improvements. It's very exciting to see that our new ERP system can reflect the vision of our elected officials who represent our constituents."

III-c.1. City of Miami Beach

- CGIT interviewed members of their staff regarding their Tyler Munis and EnerGov ERP implementation and migration from their previous EDEN ERP and licensing system Permits Plus.
- In 2014 the City of Miami Beach was authorized by commission to upgrade the current ERP from EDEN to MUNIS and Permit Plus to EnerGov. After vetting several software providers, the city found that EnerGov best met their permitting needs and provided the ability to integrate with financial software, Tyler's Munis solution. The city assembled a team that worked closely with Tyler staff to ensure the software integrated departments and avoided operational silos.
- The proposed $7M project had four (4) major project components: Upgrading the City's current ERP from Eden to Munis, upgrading the City's current system for permitting and licensing from Permit Plus to EnerGov, completing a full business process review (BPR) of all business processes impacted by either Munis or EnerGov, prior to implementation of the new systems, Engaging a dedicated project manager to oversee implementation of the new systems.
- The transition from Eden ERP to Munis ERP recommendation was primarily based on: heavily discounted costs proposed by Tyler Technologies; the ability of the Munis ERP to serve the City's needs now and into the foreseeable future; and Tyler's experience in the public sector. The significant discounts proposed by Tyler Technologies made a compelling financial case for the upgrade. Additionally, the City benefited from current and emerging technologies and transitioning from Eden to Munis ERP, given that both systems are owned by Tyler Technologies, is expected to minimize potential problems with-data conversion and other implementation tasks.
- The EnerGov option provided out of the box solutions for Building, Planning, and Code Enforcement without the need for significant scripting. Processes such as Plans Review, lnspections, Code Enforcement and Cashiering are all processed within EnerGov. Additionally, Business License is also managed in EnerGov which facilitates and simplifies the issuance and renewal of Business Tax Receipts. The EnerGov package included a Citizen Access Portal for online BTR submission and renewal, Permit & Plans Submission, lnspection Scheduling, Complaint Submission and the ability to check status. EnerGov provided a seamless interface with Munis and the Tyler Cashiering component provided a continuous interface that allows for real time cashiering in both Munis and EnerGov. All permit applications and board orders are associated to its corresponding address supported through Geographic lnformation Systems (GlS) which creates a historical record of approvals and permits to each parcel.

III-c.2. City of Bradenton

- CGIT learned from their migration from EDEN to Munis and the migration economic incentives.
- City of Bradenton was one of the first cities in Florida to migrate from EDEN to Munis and leverage Tyler's proprietary Eden-Munis migration tools. The City reduced project costs by leveraging migration incentives, discounts, and initial Eden costs reimbursement offers from Tyler.

III-c.3. City of North Miami Beach

- CGIT attended the NMB Tyler Munis session and learned about their Munis implementation and ERP migration from EDEN. Horizontal integration tools and processes were demonstrated to transfer financial data and transactions between different functional areas. They developed automated workflows and business intelligence reports that leverage the capabilities of the Microsoft Dynamics ERP platform. The city of North Miami Beach has 418 full-time employees, 160 part-time/seasonal employees and approximately 42,000 residents.
- Tyler Technologies, Inc. (NYSE: TYL) has signed a contract with the city of North Miami Beach, Florida, for Tyler's EnerGov planning, permitting and licensing and Munis enterprise resources planning (ERP) solutions to replace several of the city's disparate legacy systems. The contract includes software licenses, related professional services, maintenance and support.

- The city's core business applications, including financial management, utility billing, human resources management and payroll, have been administered via legacy systems that required ongoing modifications. To modernize its systems, streamline workflows and better integrate core business functions, the city of NMB conducted a competitive review of municipal software providers, with an emphasis on finding a flexible solution that would grow and evolve with the city well into the future. The city was particularly attracted by Tyler's evergreen model, which includes software updates and upgrades as part of annual maintenance with no additional license fees.

III-c.4. City of Doral

- CGIT attended events and conferences hosted by their IT Department, and their presentation at eMerge 2016, and learned about their Microsoft Dynamics ERP platform implementation.
- Doral issued an RFP for services associated with the development of a Microsoft Dynamics CRM Online (CRMOL) solution for City of Doral Website Portal, 311, Business Intelligence, eServices Refresh, Parks and Recreation, Public Works and Facilities Management.

III-c.5. City of Sunrise.

- Sunrise recently started an RFP for a new ERP system. They are evaluating Sungard, Tyler, and an integrator (Ciber Inc.) that offers mixed solutions including Infor.

III-c.6. City of Fort Lauderdale.

- City of Fort Lauderdale issued an RFP in 2015 for an ERP System Solution & Professional Services. They looked for an integrated ERP system focused on local governments for software applications that will include software licensing, project management, implementation, conversion services, training, and technical support.
- from 2013 to 2014, City employees at all levels of the organization were consulted as subject matter experts through “Technical User Groups” to discuss current challenges and determine requirements of the new system. RFP was advertised in Aug 2014 for an ERP system and professional services, and closed in Oct 2014. Five firms submitted proposals: Ciber Inc., SunGard Public Sector, Tyler Technologies Inc., TriBridge Holdings LLC, and Techno Brain. In Jan 2015, the evaluation committee shortlisted three firms for on-site software demonstrations. Each firm was allotted one week of demonstration time. City employees from all levels of the organization attended the demonstrations and provided feedback to the evaluation committee.
- They created a comprehensive ERP RFP evaluation committee to review and evaluate vendors. Final three vendors from the RFP were: Ciber, Inc, Sungard Public Sector and Tyler Technologies Inc. In June 2015, Best and final offers were received from the three proposers. The committee conducted additional due diligence, rescored the proposals, and ranked the firms per the evaluation criteria. The firms in order of ranking are Ciber Inc., Tyler Technologies Inc., and SunGard Public Sector. On Sep 2016, the committee approved the purchase of Ciber Inc and Infor for an estimated $6.6M for a 12-year contract. Phase I of implementation began Jan 2016.

III-c.7. City of Miami.

- City of Miami implemented an Oracle ERP and e-Permitting robust platform. They developed multiple feature-rich custom applications for functional areas of the organization. They are currently acquiring Tyler EnerGov for e-Permitting.

III-c.8. Tyler EDEN Customer Statistics.

- Information shared by Tyler technology indicate that many of their EDEN customer government agencies throughout the country have migrated to Tyler Munis (powered by Microsoft Dynamics ERP platform), which is consistent with the research data compiled in this report from different sources such as Gartner inc., e.Republic/GovTech, and other cities interviewed.

3.4. Academic and Scientific Research on Enterprise Systems and Operations

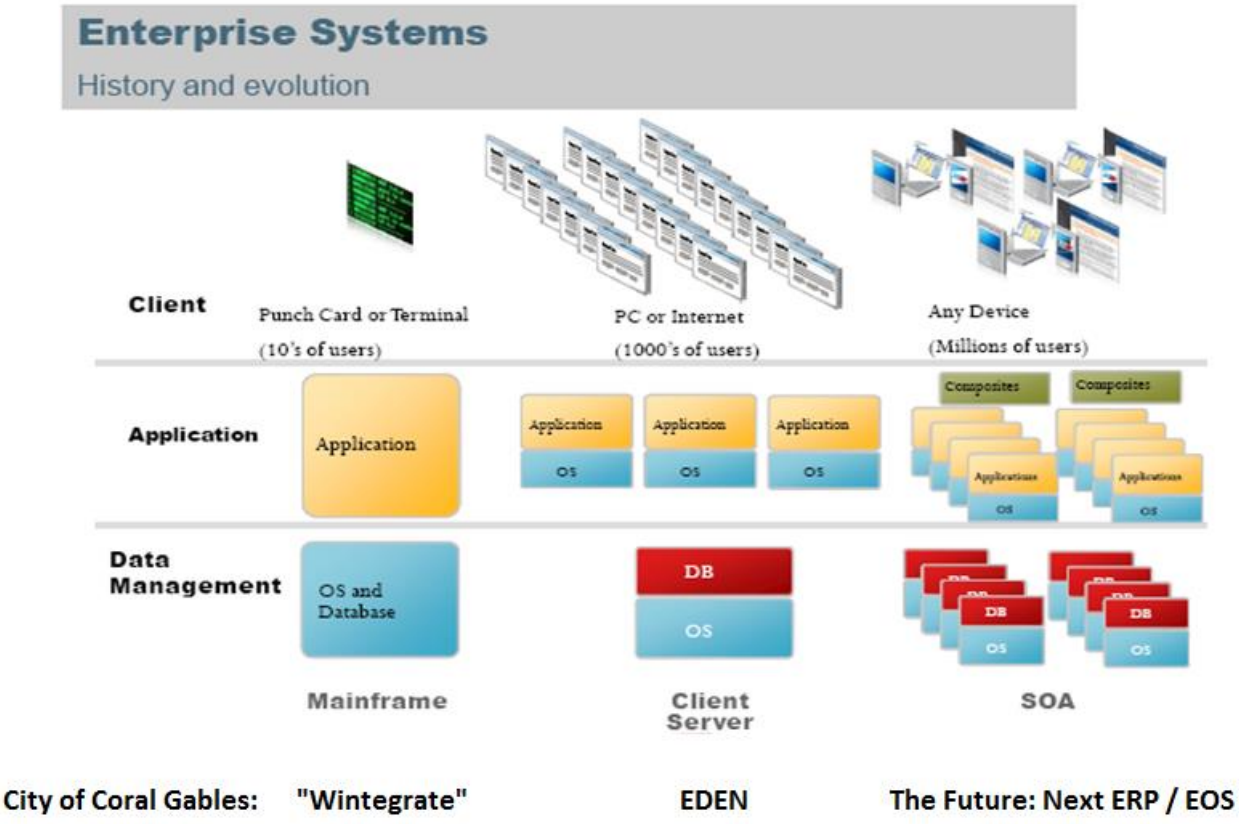
3.4.1. Source Reference Profiles:

- **Consulting Sources: IV-a.** Florida International University (FIU) Engineering Management Graduate Program – Research and Curriculum on Enterprise Systems and Advanced Production Planning. **IV-b.** Institute of Electrical and Electronic Engineers (IEEE) Smart Cities group. **IV-c.** University of Miami (UM) ERP Framework of Best Practices.
    - **Credentials:** The ***FIU College of Engineering and Computing*** is South Florida's leading engineering education resource. It offers a complete range of fully accredited engineering baccalaureate, master's and doctoral degree programs in multiple disciplines. With close to $20M of external funding, research is an integral part of the college's mission and its success, and is supported by centers of excellence, where faculty and students work with cutting edge technology, funded by major federal agencies corporations. | The ***IEEE*** is the world's largest association of technical professionals with more than 400,000 members in chapters around the world. Its objectives are the educational and technical advancement of electrical and electronic engineering, telecommunications, computer engineering and allied disciplines. | The **UM,** located in Coral Gables, is a private research university with more than 16,000 students from around the world. It ranks 37 out of more than 1,000 public and private institutions on the Wall Street Journal/Times Higher Education Ranking of U.S. colleges and universities. UM has approached a well planned and executed multi-year ERP initiative in three phases, based on an ERP framework of best practices.
    - **Subject Matter Experts (SME's) Credentials:**
        - *Dr. Chin-Sheng Chen, Ph.D.,* Program Director and Professor. Dr. Chen is a full professor and the director of the Engineering Management Program in the College of Engineering and Computing at Florida International University (FIU) in Miami. Prior to the appointment, Dr. Chen was a professor and the graduate programs director of Industrial and Systems Engineering (ISE) Department at FIU for twenty years. His education includes a Ph.D. in Industrial and Systems Engineering from Virginia Polytechnic Institute and State University (Virginia Tech). His specialties and research fields include Enterprise Systems Engineering, Engineering Project Management, Business Process Modeling and Reengineering, Sustainable Manufacturing, and Product and Production Systems Design Methodology.
    - **Consulting Process:** FIU Engineering Management Graduate Program – Research and Curriculum on Enterprise Systems and Advanced Production Theory. **Research Subject:** "*Academic and Scientific Research and Curriculum on Enterprise Systems and Operations*."
    - **Programs:** ***Enterprise Systems Integration (EGS 5622)*** covers enterprise architectures, work flow modeling and design, systems integration methodology, vertical and horizontal integration, master data analysis; enterprise systems integration and implementation in a contemporary business environment; modeling and integration concepts and techniques, enterprise resources planning (ERP) system architectures, modules, functions, integration**.** ***Advanced Production Planning and Control (EIN 6336)*** covers enterprise-wide operations planning, scheduling, enterprise systems, major operation functions, ERP systems design, implementation and deployment, forecasting, capacity planning, master scheduling, material requirements and inventory planning, scheduling, shop floor control, strategic planning, logistics, supply chain management, product and process design, facility planning and layout design, analytical and algorithmic planning methodologies, planning and scheduling technologies, sequencing rules, control strategies, line balancing methods.

3.4.2. Findings, Takeaways and Recommendations:

IV-a. The enterprise systems have evolved from MRP I (Material Requirements planning) in the 70's to MRP II (Manufacturing Resources Planning) in the 80's, to ERP I and II (Enterprise Resource Planning) in the 90's and 2000's, and now we reached a new paradigm for enterprise systems in this decade of 2010's: Enterprise Operations System (EOS), with a full horizontal and vertical integration between all functional areas of the organization and stakeholders, including MRP, SCM, MIS, CRM, SOP, SCR, CRP, PLM, and BI. The EOS paradigm is part of Dr. Chen post-doctoral research in Industrial Engineering and Enterprise Systems at FIU.

See below where the City of Coral Gables is situated in the history and evolution of enterprise systems:

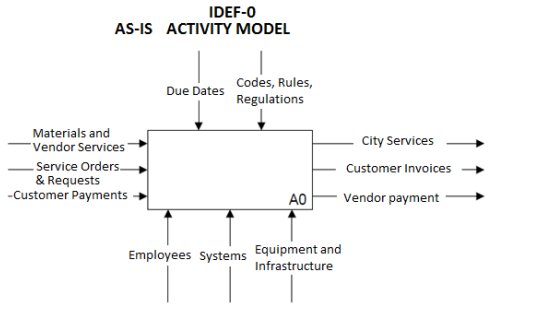


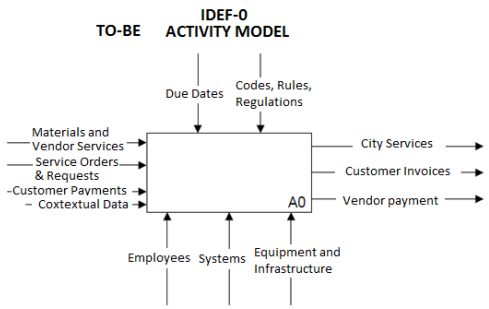
Evolution: MRP I & MRP II (1970's & 1980's) → ERP I & ERP II (1990's & 2000's) → **EOS** (2010's…)

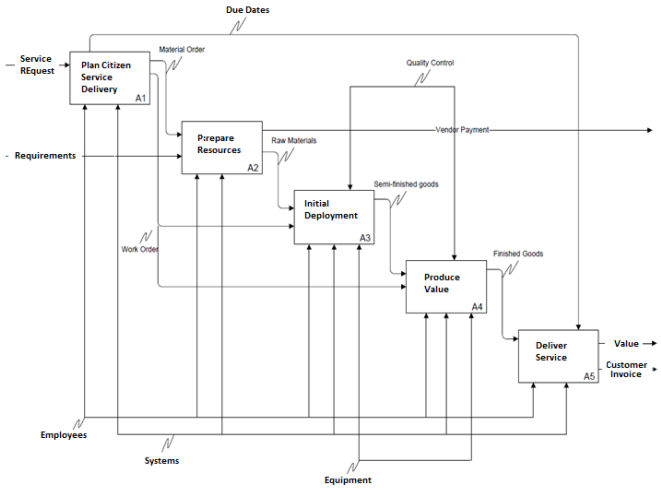
The biggest ERP systems in the world are, in order of market share:

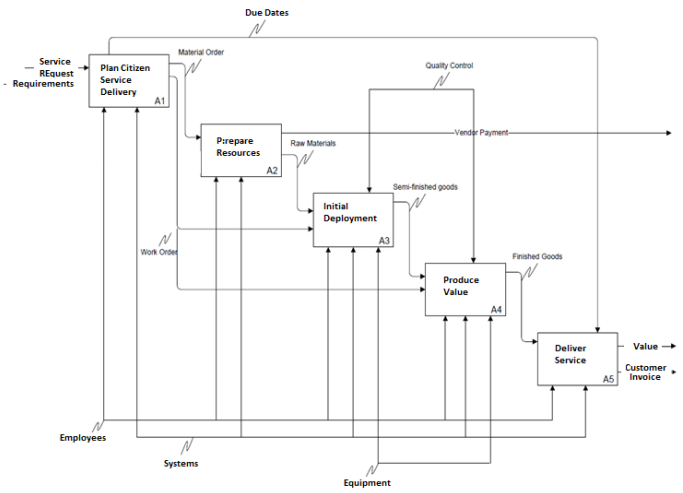
1. SAP (Systems, Applications, & Products in Data Processing) - #1 Market Share in Enterprise Applications (ERP, CRM, SCM, PLM, SRM)
2. Oracle Applications - Oracle, JD Edwards, PeopleSoft, Siebel (CRM), Retek (Retail)
3. Microsoft Business Solutions - Dynamics (ERP & CRM): Tyler, Great Plains, Navision, Axapta.
4. Solomon (powered by Microsoft Dynamics) - Project-driven small- and medium-sized enterprises
5. The Sage Group - Sage Software, Accpac ERP (Accounting, CRM), PeachTree
6. Infor Global Solutions of Atlantas - BAAN (for mid-range companies)

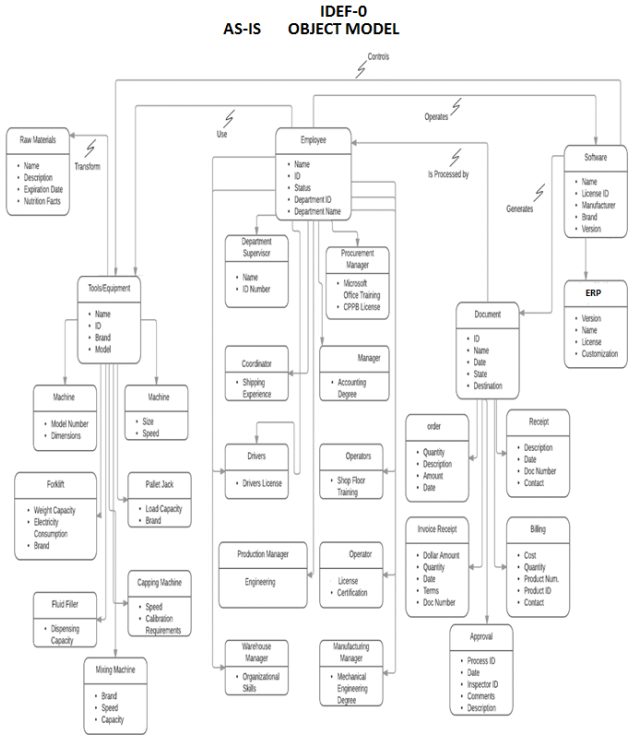
Enterprise Systems Engineering Modeling Approach:
The following is an enterprise systems engineering simplified example of IDEF modeling technique applied to the implementation of a new ERP/EOS system for the City (recommended systematic approach):

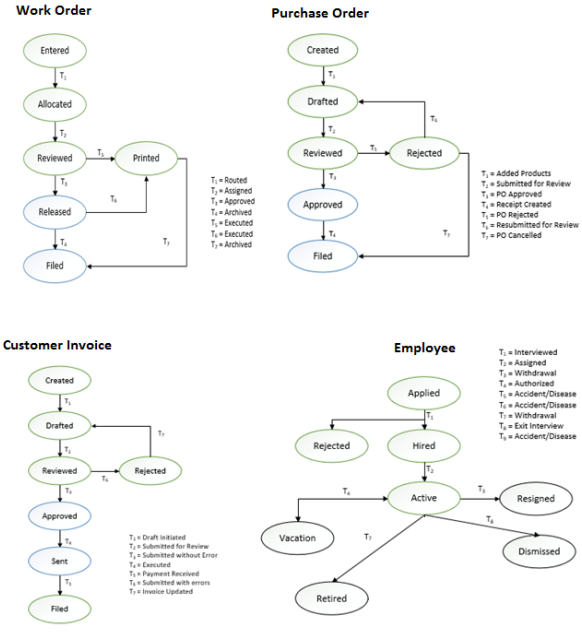












Some of the basic functional areas of ERP are (some don't directly apply to the public sector):

- Accounting/Finance - A central component of most ERP systems. It provides a range of financial reports, including general ledger, accounts payable, accounts receivable, payroll, income statements, and balance sheets.
- Human Resources - Maintains a complete data base of employee information such as date of hire, salary, contact information, performance evaluations, and other pertinent information.
- Purchasing - Facilitates vendor selection, price negotiation, purchasing decisions, bill payment.
- Production Planning - Integrates information on forecasts, orders, production capacity, on-hand inventory quantities, bills of material, work in process, schedules, and production lead times.
- Inventory Management - Identifies inventory requirements, inventory availability, replenishment rules, and inventory tracking.
- Distribution - Information on third-party shippers, shipping/delivery schedules, delivery tracking.
- Sales (Citizen services/utilities) - Information on orders, invoices, order tracking, and shipping.
- Marketing - Supports lead generation, target marketing, direct mail, and sales.
- Supply Chain Management - Facilitates supplier and customer management, supply chain visibility, and event management.

The ERP Project Organization:

- The 'big bang': Companies cast off all their legacy systems at once and implement a single ERP system across the entire company. The most ambitious and difficult implementation approach.
- Franchising strategy: Independent ERP systems are installed in each business unit of the enterprise while linking common processes across the enterprise. Suits large or diverse companies that do not share many common processes across business units.
- Slam Dunk: ERP dictates the process design where the focus is on a few key processes. More appropriate for smaller companies expecting to grow into ERP.

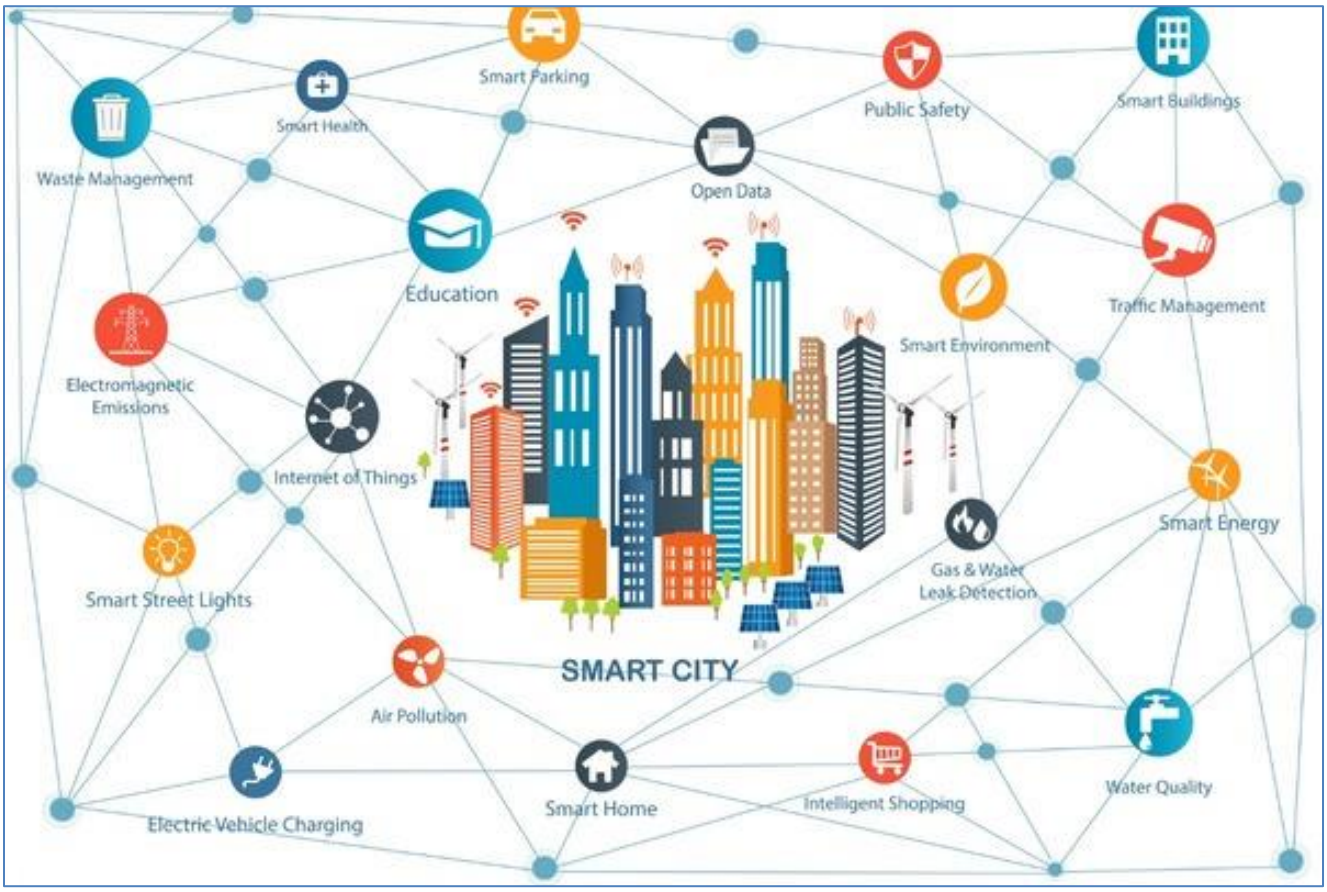
FIU Recommendations:

- A new ERP project must be broken down in consecutive functional milestones (i.e.: procurement, core financial, HR, payroll) to conquer achievable successes along the road.
- ERP projects frequently fail when trying to accomplish all at once.
- Advanced Project Management is the key to success for complex ERP projects.
- For a medium-sized organization like City of Coral Gables, follow a hybrid between the "Slam Dunk" and the "Franchising strategy" project organization approaches, with achievable milestones aligned with common processes and business units, and horizontal integration among those.
- Analyze and determine these considerations during the ERP project initiation and planning phases:
    - How can ERP improve an organization's business performance?
    - How long will an ERP implementation project take?
    - How will ERP affect current business processes?
    - What is the ERP total cost of ownership?
    - What are the hidden costs of ERP ownership?

IV-b. From the Institute of Electrical and Electronic Engineers (IEEE) Smart Cities research papers:

- Enterprise resource planning systems (ERP): ERP components support a variety of business functions and are precious tools to manage the flow of information across a complex organization, such as a city administration. Interfacing ERP components with database management systems that collect the data generated by the Internet of Things (IoT) allows for a simpler management of the potentially massive amount of data gathered by the IoT, making it possible to separate the information flows based on their nature and relevance and easing the creation of new services.
- This will allow real-time data exchange between ERP systems and environmental information.

Smart City Enterprise Operations System:



Key Characteristics of a Smart City Enterprise Operations Systems:

- ERP/EOS systems components must support a variety of business functions and provide precious tools to manage the flow of information across a complex organization, such as a city administration.
- Interfacing ERP components with database management systems that collect the data generated by the Internet of Things (IoT) and Smart City connected systems.
- Assisted by edge computing, allowing for a simpler management of the potentially massive amount of data gathered by the IoT, making possible to separate the information flows based on their nature and relevance and easing the creation of new services. Allow real-time data exchange between ERP systems and environmental information. Business Intelligence, Big Data, Data Mining, and Predictive Analytics. Advanced data visualization integrated with GIS.
- Artificial Intelligence (AI) and Automation. Case studies show how real-time environmental data from IoT sensors is aggregated on a Smart City Enterprise Operations System and then distributed to cloud-based outsourced AI engines such as IBM Watson, and then analyzed and processed with algorithms that produce actionable information that can be used as decision triggers, alert and awareness notifications, or even controls for IoT actuators on fully automated systems. For example, using live data from traffic sensors to control traffic lights, or using live data from energy sensors to adjust smart tariff fees in the ERP/EOS system for utility billing purposes.
- Linked Open Government Data (LOGD) services. Digital Agility and Transparency Tools.

IV-c. University of Miami (UM) ERP Framework:

Definition: ERP (Enterprise Resource Planning) software applications act as the central organization-wide information system. ERP systems integrate all of an organization's departments, divisions, lines of business and geographical locations into a single, shared, unified and enterprise-wide information system. The organization is an "enterprise" and an ERP solution integrates all functions — employee and stakeholder's information, human resources, and financial systems — into one administrative system.

Executive Steering Committee: Chief Financial Officer, CEO, CIO, VP of Budget and Planning, Controller, VP of HR, VPs of key functional areas and core competencies.

Executive Sponsors: Working with the Managing Director, Executive Director, and Executive Steering Committee, Executive Sponsors set the strategic direction of the project, make decisions on critical issues, and resolve escalated issues in a timely manner.

ERP Project Leadership: Overall PM, CIO/CDO or Technical Lead, IT Applications Manager, Finance ERP leadership, Change Management Lead, Reporting Lead.

Benefits of an ERP System: ERP represents a multi-year initiative that will:

- Align and integrate mission critical enterprise data, information and business processes to support the strategic mission
- Transform business processes through adoption of "Best Practices"
- Enable enhanced self-service capabilities for employees and constituents
- Reduce the number of old/outdated systems
- Eliminate shadow systems
- Integrate systems across the organization
- Eliminate manual and paper processes
- Limit access to processes
- Unify policy interpretation
- Enhance service delivery
- Improve:
    - Reporting
    - Transparency
    - Visibility
    - Accountability
    - Audit history
- ERP facilitates the realization of our Common Purpose through:
    - Empowerment
    - Transparency
    - Efficiency
    - Improved management of enterprise resources

ERP Security: Granting users the appropriate security level access is very important to the success of maintaining data security within the system. It is the responsibility of every employee to ensure that data security is achieved within the system. The legitimacy and accuracy of data within the system relies heavily on preventing unauthorized users access to sensitive data, and making sure authorized users have consistent access to the data needed to perform tasks. Data security comprises the following elements:

- Privacy – Keeping data hidden from unauthorized parties.
- Integrity – Keeping transmitted data intact.
- Authentication – Verification of the identity of an entity that's transferring data.

- Access – Providing the user with appropriate menus and ability to select pages (components) from those menus.
- Authorization – Providing users with access to the data they are allowed to access.
- Non-repudiation – Capability to assert that updates or modifications were performed by a particular user based on the user's certificate.

ERP Guiding Principles: The ERP project phases are guided by the following principles that were developed by the Executive Steering Committee:

- The ERP will be the primary system for all administrative functions of the organization.
    - Implementation will be "vanilla" – we will change our business processes in order to achieve a vanilla implementation (without applied customizations or updates).
    - Legacy systems, which tend to operate as silos, will be replaced with an integrated system where data can be seamlessly shared thus improving the quality and timeliness of information.
    - New systems and/or bolt-ons will only be considered if the purchased ERP is unable to provide critical functionality.
    - Existing systems will be retired as the ERP takes their place.
    - The need for shadow systems will be significantly reduced if not eliminated by the ERP.
    - The ERP will enable us to be more insightful about workforce planning opportunities by giving insight into the organization and the related workforce implications.
- The ERP will strive to maintain an optimal balance between internal controls, security, legal requirements, and efficient and effective business process. Technology is the tool by which we will achieve this.
    - Access rights with the ERP system will be granted based upon the principle of least privilege whereby only the minimum necessary rights will be assigned to users accessing the system.
    - All administrative access to the ERP will be authenticated via the organization's Single Sign-On (SSO) credential set.
    - Segregation of duties will be monitored through the system.
    - The workflow enabled system will eliminate the need for paper based processes and duplicate data entry.
    - Data will be integrated throughout the system and redundancies will be eliminated.
    - The system will facilitate high standards for fiscal accountability.
- Employees will be continuously trained to use the system and to keep current with changes.
    - Validations and data checks will be embedded in the system to assure transactions and events are accurate.
    - Employee experience metrics will help to drive employee effectiveness and efficiency.
    - All systems will be web-enabled with anytime/anywhere access.
- While transaction processing is critical, even more important is the need for robust, timely, and accurate management information.
    - Dashboards will be designed to meet management need for information.
    - Drill down capability will be enabled to connect management level information to related operational details.
    - The majority of users will be able to retrieve useful and accurate information easily without the need for advanced technical training.
    - Data within the system will have the highest degree of integrity and timeliness.
    - Where appropriate, real-time processing of events will be preferred over batch processing
    - Create a collaborative, flexible, intuitive environment where a consistent "look and feel" provides users secure and well understood access to their data.

4. Conclusions, Best Practices and Recommendations:

The intersection of all the research sources consulted for the previous comprehensive report points to a few top systems as the best fit solution for the City's Core Financial ERP/EOS upgrade project. Recommendations include Tyler Munis ERP supplemented by Microsoft Dynamics 365 ERP Cloud Platform, followed by Infor and Oracle (*Oracle was last in the top three options due to its high costs, complexity and customization requirements.*) It was also found in several instances and case studies throughout the comprehensive report that the Tyler EnerGov product is a commonly recommended product for e-permitting and licensing for the Munis ERP (*after a thorough review and evaluation process of multiple e-Permitting applications, the City is already in the process of implementing Tyler EnerGov for e-permitting and land management*.)

It is important to validate that Tyler and Microsoft will continue their strategic partnership for years to come, and determine the licensing model for all the layers of the product and the platform.

An ERP cloud infrastructure is the best option to provide elasticity, reliability and expandability to the ERP, to avoid additional physical infrastructure costs, to allow embedding analytics and algorithms in the applications for more actionable dashboards with less data export, and facilitate integration with other platforms and applications.

Horizontally integrating the ERP modules with other applications is a key strategic decision factor, to allow platform, API's and API management tools to manage integration to the ERP core system in the cloud. Also, citizen interfacing capabilities are necessary, through CRM packages to allow Web/mobile access.

For the ERP investment, besides getting a list of functional requirements, we must consider where is the vendor investing their R&D in the next three to five years, what is their platform, their out-of-the-box integration capabilities, and out-of-the-box algorithms and analytics.

The top three vendors that Gartner recommended, differentiate from other vendors in the same space, in that they are all committed to the public sector. As things evolve and so do the capabilities and demands from public sector, these ones below are the products that will continue to evolve in terms of the capabilities that the citizenry expect. They are 1. Tyler Munis with Microsoft Dynamics, 2. Infor, and 3. Oracle Cloud Services. Oracle and Infor were initially deemed by Gartner as too big and expensive for the City's organization characteristics. The Gartner analyst indicated that the best approach for Coral Gables is to ask "Why Not" going with Tyler Munis with Microsoft Dynamics platform, not only because it is the simplest and easiest thing to do, but because Microsoft Dynamics is a modern platform with a long future to it so is not going to be obsolete in the next years, due to their ongoing R&D, market share and product evolution. It was a good approach to take, but it was also good approach to get some pricing data points from Oracle and Infor to compare. ***2021 Note:*** This initial assessment changed over subsequent years during the enterprise system evaluation process by the City's executive steering team, and based on Infor competitive advantages as described in the 2019 and 2020-2021 updates below.

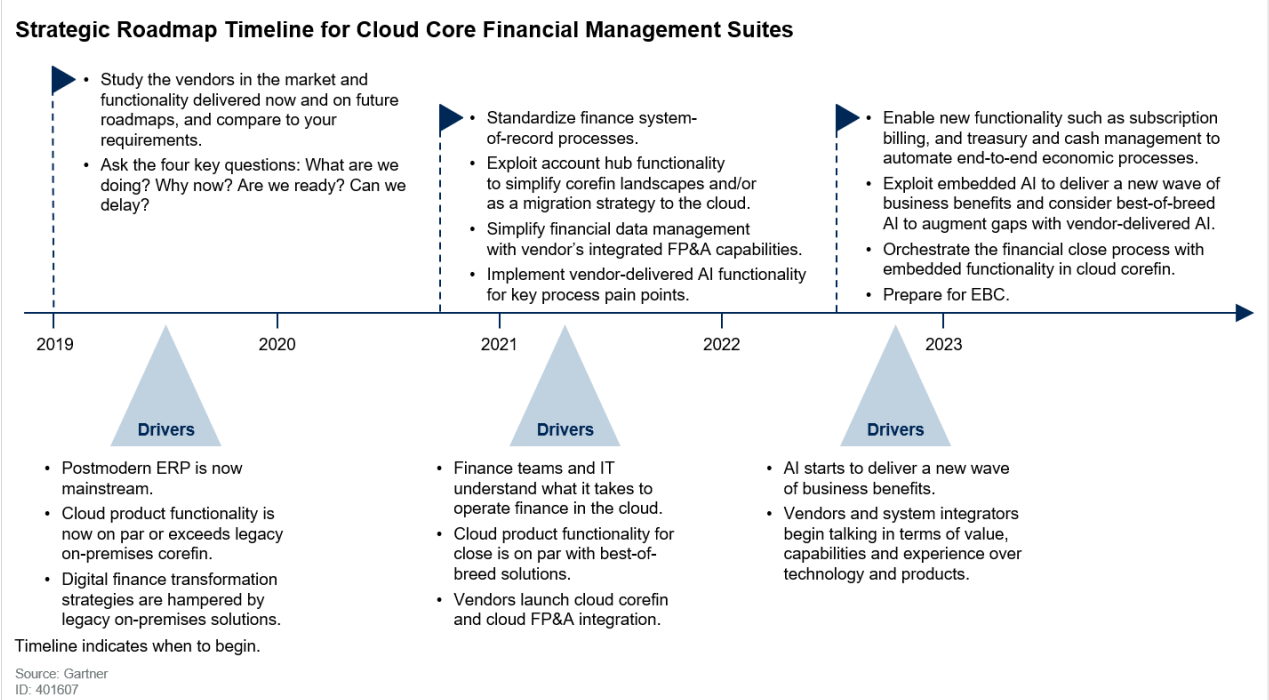
2019 Update: *In recent years, Gartner has featured Infor multiple times in the enterprise systems magic quadrant and in their market analysis reports, with a growing position as a leader in the market with robust features and significant investment in product growth, R&D and innovation*. *In parallel, Tyler has acquired a significant number of government technology solutions for a wide range of functions and has been consolidating its position as the top government-only software provider.*

2020-2021 Update: The execution and rollout of the City's new CoreFin/HR enterprise system is well-aligned with Gartner's strategic roadmap timeline for Cloud Financial Management Suites (figure below). The industry roadmap timeline starts in 2020 with Post-Modern ERP adoption and digital finance transformation and evolves over a period of three years towards an AI-driven Enterprise Business

Capabilities (EBC) paradigm, where AI delivers a new wave of business benefits. That timeline is perfectly aligned with our Cit's CoreFin/HR enterprise system project timeline (Infor EBC AI-driven Suite), as follows:

After completing research, analysis, evaluation, and selection in 2019 and 2020, our City is now starting procurement in 2021, and then will continue executing the project in alignment with this strategic roadmap timeline, to successfully go live in 2023 with an AI-driven Cloud EBC Suite, followed by an "evergreen" EBC production cycle production program. As planned, there will be phased cutovers along the way, with some modules and business capabilities projected to go live before than others.

This project plan demonstrates a good strategic alignment with the innovation roadmap in the industry. Executing in parallel with this timeline will put our public sector organization at the same speed of innovation of the private sector in the space of enterprise business capabilities and applied AI. Business processes and old paradigms will also be transformed along the way, as part of an organizational transformation driven by EBC best practices, operational excellence benchmarking, and continuous improvement cycles.



Digital government and digital business, which includes smart city concepts, intelligence analytics and algorithms, is a key area of investment for any City future ERP. It is important to know: what can you do with all the data that is coming in? and: how can you provide services, reporting and features to constituency and stakeholder's population? Also, for smart city Internet of Things (IoT) applications, advance ERP components may interface with database management systems that collect the data generated by the IoT using edge computing and allowing for a simpler management of the potentially massive amount of data gathered by the sensors and actuators, making it possible to separate the information flows based on their nature and relevance and easing the creation of new services. This will allow real-time data exchange between ERP systems and environmental information.

Understanding the complexity of this project and to prevent complications, we must understand some of the reasons why many implementations fail and what we need to do to prevent those causes, some of which include:

- Prevent poor change management processes: The goal of an ERP implementation, insofar as practical, is to assure that business processes are fitted to the system and not the reverse. Even though there will be some processes that will require system modifications; however, these should be the exception and not the rule. The change management process must be carefully controlled to engage leadership, as necessary, to make decisions between possible costly modifications to the system or enact the necessary changes in business processes to accommodate system design.
- Prevent lack of ownership and accountability: If team members do not understand their role and the degree to which they are accountable for the success of the project, it's difficult to succeed.
- Prevent getting distracted too much by daily responsibilities: Without dedicated project management empowered by leadership, it is all too easy for stakeholders to get distracted too much by daily responsibilities rather than completing implementation tasks. This may result in project delays and escalation of costs.
- Avoid lack of communication: Clear communications and understanding between internal and external stakeholders, including project staff, implementation staff, software developers and leadership, is a critical component for successful project implementation. Project communications must also assure that system configuration is considered through a holistic perspective rather than through functional silos.
- Avoid underestimating the magnitude of the project: It is all too often that organizations feel that "we can do it all ourselves" and fail to secure the necessary resources to successfully complete major system implementations. The Administration understands the magnitude of a project such as this and wants to assure that the resources necessary for success are allocated from the start. Dedicated project management is necessary for the success of a project of this magnitude.

Steering Committee and Stakeholders Commitment: Create an ERP project steering committee with key stakeholders and decision makers representing the different functional areas in the organization. Engage leadership and departments early. Make departments commit to having the same staff member assigned for the duration of the ERP project. Ensure high-level sponsorship and support for the project in the organization.

Project Management: Hire an experienced project manager from outside the organization for the duration of the project (who may become a permanent City staff once the project is completed), and have staff funnel all requests to the vendor's PM through the City PM. Follow Project Management best practices (PMI PMBOK) for a project of this magnitude and complexity. The biggest takeaway most case studies offer from their experience is to ensure consistent project management on both ends. It is paramount to have dedicated and capable project managers on both sides that don't not change during the project, and provide sustained attention, without having to balance too many implementations at once. A new ERP project must be broken down in consecutive functional milestones (i.e.: procurement, core financial, HR, payroll) to conquer achievable successes along the road. ERP projects frequently fail when trying to accomplish all at once. Advanced Project Management is the key to success for complex ERP projects. For a medium-sized organization like City of Coral Gables, follow a hybrid between the "Slam Dunk" and the "Franchising strategy" project organization approach, with achievable milestones aligned with common processes and horizontal integrated business units.

Analyze and determine these considerations during the ERP project initiation and planning phases:

- How can ERP improve a company's business performance?
- How long will an ERP implementation project take?
- How will ERP affect current business processes?
- What is the ERP total cost of ownership?
- What are the hidden costs of ERP ownership?

Communication: Communicate, Communicate, Communicate. Set up a set group of core ERP members and a broad group that you send out information to on a frequent basis (effective communications plan.) Leverage the vendor's experienced application experts/consultants and business analysts.

Data Migration: Given complexities of data migration, it is a huge factor to stay with a solution provider that understands the data models in both platforms and has the utilities to handle migrating data, to reduce this risk factor. For cost savings, identify potential credits on software licensing costs, reflecting prior investment. Enable data cubes and business analytics for users reporting needs.

Technology Strategic Plan: Develop a visionary strategic technology plan to take the city into the future, making the City's business processes more efficient and transparent, enhancing responsiveness and the wide range of services the City offers to constituents, replacing ERP system instances that are unable to fit public-sector needs and cannot accommodate the way the city's departments and employees work. The ERP upgrade project that way becomes a part of a bigger strategic technology plan.

Coordinated Technology Implementation: Work closely with the vendor's technology experts to assess the city's requirements for the new ERP system and translate them into solution capabilities. Their team members, expertise, and technologies played a multifaceted role in the project. Technologists engage with the city's IT department to implement the technology solution and provide the needed data migration and user training, incorporating ideas and requests from City stakeholders and integrating payroll functionality and cashiering capabilities, e-Commerce and other functionalities.

Consider parallel Initiatives, in addition to a new ERP system, as part of the City strategic technology plan, for a number of other technology projects to enhance the city's service capabilities and to gain the best value from the ERP platform after its implementation. For example: relaunch the City's website after refreshing content and adding practical functionality for citizens, streamline the workflow for business licenses, add new service management and fleet maintenance systems, automate the process of developing and maintaining the city council agenda, and other improvements.

Request and incorporate employees input during the project. Listening to their ideas and develop them into product features. Once it comes to the implementation of the ERP, the city will require fewer customizations. Deploy the solution as closely as possible to the standard version, since that will make it much easier to manage and upgrade than a highly customized technology. Create an implementation team that includes departmental subject matter experts that are assigned to the project and are fully used, and will avoid the need to reassign staff permanently and backfill with temporary positions.

Perform a comprehensive Business Process Review. As the city project leaders realize what the new ERP system and other technologies would help employees accomplish, take advantage of opportunities to revise business processes for greater efficiency and simplicity prior and during the implementation (i.e.: chart of accounts, workflows and approvals for spending and invoices, budgeting, identify cumbersome or outdated processes, etc.)

Kick-off Event: Leadership should introduce the new ERP technology to many employees during a kick-off event. Project stakeholders from the city and the vendor can demonstrate such solution capabilities as project accounting, budgeting, employee self-service, and human resources management to people who were seeing the solution for the first time. Attendees should include many workers from the city's finance and administrative departments; public safety, and all city functional areas.

Foster Role Centers and Workloads Improvement: Have city employees experience the Role Centers in the platform and see how they could simplify their work with this new user experience. Automate the report generation in the ERP system and make them available on the Role Centers, where people can access them as needed.

Efficiencies and Process Improvement: Achieve gains in efficiency, accountability, and transparency from eliminating duplicate data entry to replacing disparate tasks with streamlined workflows, generate efficiencies by using the financial management capabilities in the new ERP system. Decentralize many functions and assign resources to more important functions. Build and adjust workflows to include all the right people and steps.

BI: Leverage the ERP extensive analytical and Business Intelligence capabilities. For teams of financial analysts, who perform budgeting and forecasting, it will become a lot easier to obtain meaningful information and report on it in any way they like. Implement new self-service functions available to employees in all departments."

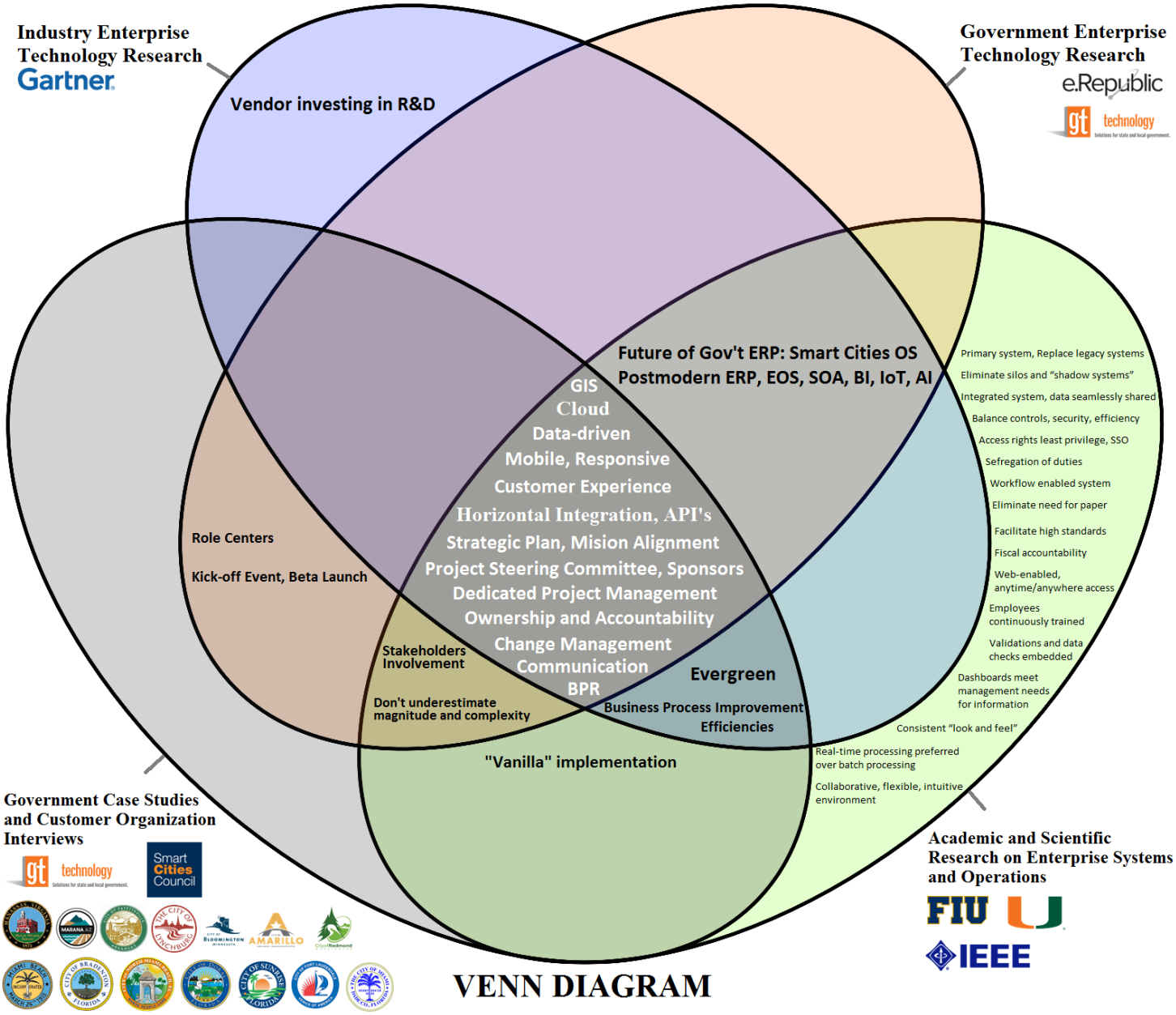
Improve the responsiveness to elected officials and citizens with the help of the new ERP system and other technologies. The government of the future is always looking to better connect with the community and provide improved and more efficient services. Drawing on financial information from the ERP system, enable the city employees to provide answers to council members faster. The information itself will be current and comprehensive, to work with a much greater level of accountability and transparency within the organization and to the citizens and elected officials, with new opportunities for service improvements. Make the new ERP system reflect the vision and mission of the City, and the elected officials who represent its constituents.

Evergreen Philosophy: The ERP solution must include software updates and upgrades as part of annual maintenance with no additional license fees.

ERP Guiding Principles: The ERP project phases should be guided by Executive Steering Committee's principles, such as:

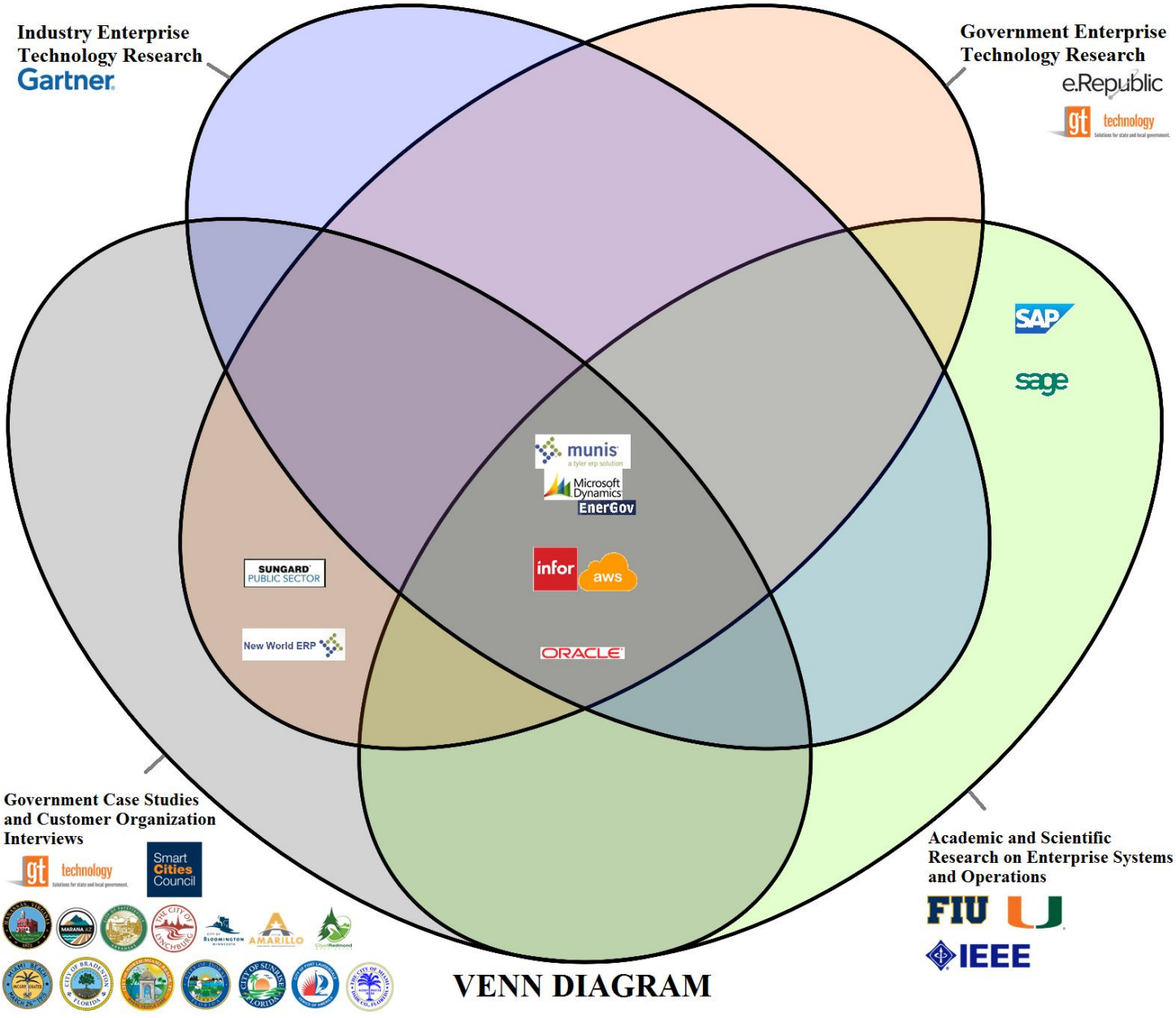
- The ERP will be the primary system for all administrative functions of the organization. Implementation will be "vanilla" – change business processes to achieve a vanilla implementation. Replace legacy systems, which tend to operate as silos, with an integrated system where data can be seamlessly shared thus improving the quality and timeliness of information. New systems and/or bolt-ons only to be considered if the purchased ERP is unable to provide critical functionality. Retire existing systems as the ERP takes their place. Eliminate "shadow systems."
- The ERP should strive to maintain an optimal balance between internal controls, security, legal requirements, and efficient and effective business process. Technology is the tool to achieve this. Access rights with the ERP system must be granted based upon the principle of least privilege whereby only the minimum necessary rights will be assigned to users accessing the system. All administrative access to the ERP must be authenticated via the organization Single Sign-On (SSO) credential set. Segregation of duties must be monitored through the system. A workflow enabled system must eliminate the need for paper-based processes and duplicate data entry. Data must be integrated throughout the system and redundancies eliminated. The system must facilitate high standards for fiscal accountability.
- Employees should be continuously trained to use the system and to keep current with changes. Validations and data checks must be embedded in the system to assure transactions and events are accurate. All systems must be web-enabled with anytime/anywhere access. Use employee experience metrics to help drive employee effectiveness and efficiency.
- Dashboards should be designed to meet management need for information. Drill down capability should be enabled to connect management level information to related operational details. Most users should be able to retrieve useful and accurate information easily without the need for advanced technical training. Data within the system must have the highest degree of integrity and timeliness. Where appropriate, real-time processing of events should be preferred over batch processing. Create a collaborative, flexible, intuitive environment where a consistent "look and feel" provides users secure and well understood access to their data.

Venn Diagram compiling **vendor-agnostic conclusions and recommendations** form all the subject matter experts (SME) and research data sources consulted for this study report:



VENN DIAGRAM

Venn Diagram compiling **technology solution recommendations** form all the subject matter experts (SME) and research data sources consulted for this study report:



5. Preliminary Concurrent Project Plan:

	FY16 -Q4			FY17-Q1			FY17-Q2			FY17-Q3			FY17 Q4		
PROJECT DESCRIPTION	Jul-16	Aug-16	Sep-16	Oct-16	Nov-16	Dec-16	Jan-17	Feb-17	Mar-17	Apr-17	May-17	Jun-17	Jul-17	Aug-17	Sep-17
Parks and Recreation System	Procurement and Planning									Implementation					
Facility Management System	* Procurement * Planning * Requirements * Kickoff Meeting						Implementation			Test Validation Acceptance Change Management	Go Live		Post Live		
Permits, Inspections, E-Plan Review, Land Management and Property Management System	* Action Plan Worksheet Review * Project Initiation * Project Plan and Project Charter * Electronic Plan Review Mockup Station and File Submittal System						* Form Permit System Project Committee (DS, PW, FIN, P&R, FIRE,ED) * Start Demo Presentation			* Requirement List and Strategic Plan * Final Demos and Site Visits * Selection Process			* Finalize Selection Process * Funding approval		
Core Financial System	* Initiation and Project Charter * Discovery Research * Benchmark and Success Stories * ERP Study						* Project Presentation with case studies * Discovery and Research * Form ERP Project Committee (ACM, FIN, HR, LR, DS, PW, ED, FIRE, PD)			* Overall Requirement List and Strategic Plan * Tentative list of options Demos * Evaluation bi-weekly meetings			* Demos and Site Visits * Evaluation bi-weekly meetings		

FY18-Q1			FY18-Q2			FY18-Q3			FY18-Q4			FY19-Q1			FY19-Q2			FY19-Q3		
Oct-17	Nov-17	Dec-17	Jan-18	Feb-18	Mar-18	Apr-18	May-18	Jun-18	Jul-18	Aug-18	Sep-18	Oct-18	Nov-18	Dec-18	Jan-19	Feb-19	Mar-19	Apr-16	May-16	Jun-16
* Test * Validation * Acceptance * Change Management			Go Live	Post Live																
Procurement			Implementation Planning			Implementation											* Test * Validation * Acceptance * Change Management	Go Live		Post Live	
Selection Process			Procurement			Implementation Planning			* Implementation for GL, AP, AR Modules * Implementation Plan and Preparation for HR and Payroll **(GL Test, Validation, Acceptance and Change Management Through Sep 2019)** **(GL - Go Live Oct 1, 2019)** **(HR and Payroll Test, Validation, Acceptance and Change Management from Nov - Dec 2019)** **(HR and Payroll Go Live - Jan 1, 2020)**											

Project Planning Briefings to the Executive Steering Team (2019-2020):

February 2019 Executive Briefing:

Quick recap on previous milestones completed for this project:

1. Enterprise System Research Study was completed in FY 2017 (**1st Attachment**: study executive summary, updated in 2019).
2. Project Executive Steering Team was formed in FY 2018.
3. Executive Steering Team kick-off meeting was held in FY 2018.
4. First project survey was completed in FY 2018: creating the sub-committees working groups, appointed by the members of the Executive Steering Team (**2nd Attachment**: Executive Steering Team and workgroups designated by members).
5. First system evaluation demo was held in FY 2018: Tyler Munis. Members of the Executive Steering Team and the sub-committee workgroups attended the demo. They were given system evaluation surveys afterward.
6. Second project survey was completed in FY 2019: Munis demo evaluation survey, by members of the Executive Steering Team and the sub-committee workgroups (**3rd Attachment**: System evaluation matrix, updated with survey results from the 1st system demo: Tyler Munis).
7. In parallel: New Land Management, Permitting and Electronic Plan Review enterprise system project (EnerGov) procurement was completed in FY 2018, and implementation started in FY 2019. This system is replacing the EDEN legacy land management, permitting and inspection modules.

Next steps:

1. **Action Item -** Executive Steering Team members, **please review the 3 attached documents** (1. Research study; 2. Committee and workgroups designated members; and 3. Evaluation matrix with demo and survey results) and send us any change or recommendation.
2. **Next system demo:** Infor. We are coordinating with the Executive Steering Team and the vendor for a day on the first or second week of March 2019. We will check with the respective administrative assistants of the Executive Steering Team members (CMO, CAO, CCO, Finance, HR, LR, IT) to find a convenient timeframe for this demo. The demo will take 1 day, divided in a morning session (system functions demo, Finance & HR) and an afternoon session (Q&A, ERP functions follow-up demo, and executive summary for CM, ACM and the Committee). The attendance from members of the Executive Steering Team and the designated workgroups is very important in this evaluation process. Like before, we will send surveys to all attendees after the demo, to continue populating the attached evaluation matrix document. Members of the Executive Steering Team who may not be able to attend the whole day, will be able to attend the executive summary with the vendor at the end of the session. Workgroup members and Finance/HR/LR/IT directors are needed to attend for the entire session.
3. **Final system demo:** Microsoft Dynamics 365 ERP. The demo is being planned for April 2019.
4. **Following steps:** The Executive Steering Team to finalize evaluation and make a decision this fiscal year 2019 ? The City can start the preliminary contract/pricing review process next fiscal year 2020, while the EnerGov implementation is completed in parallel.

May 2019 Executive Briefing:

Phase 1 and Phase 2 of solution research and evaluation have been completed. Please see attached ERP Demo Evaluation Matrix with the results of Phase 2.

This is a summary of Phases 2 and 1 and their results:

- **Phase 2** (February-May 2019) **–** System Demos and Initial Evaluation. **Results:** Demo evaluation surveys with analysis by members of the Executive Steering Team and the sub-committee workgroups. **1st Attachment**: System evaluation matrix with survey results from the demos of 3 systems: Tyler Munis, Infor, and Microsoft Dynamics. Two solutions were rated at the end of this phase as Excellent/Good, and one solution as Deficient (see survey response section of the evaluation matrix).
- **Phase 1** (2018) **-** Enterprise System Research Study. **Results:** Study report with insight, analysis and recommendations from subject matter experts from Industry, Science, Academia, Government Technology, and nationwide case studies. It recommended to focus on a short list of solutions in the market that fit the City's vision, needs and requirements. **2nd Attachment**: Study executive summary, updated in 2019. Link to full report in SharePoint was provided as well.

Next Phases:

- **Phase 3** (June-July 2019) – Hands-on product usage tests of the two top rated products from Phase 2 (Munis and Infor) by members of the Executive Steering Team and the sub-committee workgroups (with focus groups distributed by function). Hands-on usage test survey results will be added to the Evaluation Matrix.
- **Phase 4** (August 2019) – Site visits to municipalities that have been using the two top rated products from Phase 2 (Munis and Infor) by members of the Executive Steering Team and the sub-committee workgroups, to learn from their staff customer experience and citizen service experience at those government entities. Site visit survey results will be added to the Evaluation Matrix.
- **Phase 5** (September 2019): The Executive Steering Team to finalize evaluation and make a decision this fiscal year 2019.
- **Project Planning and Execution** (2020-2022): The City can start the preliminary contract/pricing review process next fiscal year 2020, while the EnerGov implementation is completed in parallel.

November 2019 Executive Briefing:

All phases of solution research and evaluation have been completed. **Please see attached ERP Demo Evaluation Matrix with the final results (1st Attachment)**.
I.T. will schedule a meeting of the Executive Steering Team on the second week of December to review these results and make a collective decision.

This is a summary of the analysis phases completed and their results:

- **Phase 3** (June-October 2019) – Hands-on product usage tests of the two top-rated products from Phase 2 (Munis and Infor) by members of the Executive Steering Team and the sub-committee workgroups, with focus groups distributed by function (see list in the **6th Attachment**). **Results:** Demo evaluation surveys with analysis by members of the Executive Steering Team and the sub-committee workgroups. System evaluation matrix updated with survey

results from the demos of the top 2 systems: Munis and Infor. In the final matrix, one solution was collectively rated Excellent (Infor), one solution was collectively rated Good (Munis), and one solution was already rated Insufficient (Microsoft Dynamics). Please see survey results captured on the survey response section of the evaluation matrix (**1st Attachment**)

- **Phase 2** (February-May 2019) **–** System Demos and Initial Evaluation. **Results:** Demo evaluation surveys with analysis by members of the Executive Steering Team and the sub-committee workgroups. System evaluation matrix updated with survey results from the demos of 3 systems: Tyler Munis, Infor, and Microsoft Dynamics. Two solutions were rated at the end of this phase as Excellent/Good (Infor and Munis), and one solution was rated as Deficient (ERP application built on Microsoft Dynamics). Survey results were captured on the survey response section of the evaluation matrix (**1st Attachment**).
- **Phase 1** (2018) **-** Enterprise System Research Study. **Results:** Study report with insight, analysis and recommendations compiled from subject matter experts from Industry, Science, Academia, Government Technology, and nationwide case studies. The study recommended us to focus on a short list of solutions in the market that fit the City's vision, needs and requirements. Study executive summary, updated in 2019 (**5th Attachment**). Link to full report in SharePoint was provided as well.

We also attached three recent cloud enterprise system market analysis reports from IT consulting leading firm Gartner Inc. (**2nd-3rd-4th attachments**), which features Infor multiple times in the leadership position as a visionary product in the market. Infor has been in this leadership position on the Gartner Magic Quadrant for three consecutive years, and its company has received a multibillion-dollar investment to continue growth and R&D of their software products in this market space. Infor has also grown in R&D and adoption in the public sector as an enterprise system for smart cities and e-government, with Industry 4.0 differentiating features such as Artificial Intelligence (AI), Machine Learning (ML), Intuitive User Experience (UX), Internet of Things (IOT) integration, Robotic Process Automation (RPA), Application Programming Interfaces (APIs) for horizontal integration, Supply Chain Management (SCM) vertical integration, cloud platforms and data analytics, mobility, and other advanced features and functionalities.

Next Phase:

- I.T. will schedule two calls early in December with the Finance/HR/IT leadership of other municipalities that have been using the top-rated product (Infor). Coral Gables Finance and HR senior staff will hear from their counterparts in those entities about their customer experience and citizen service experience with the Infor product. Other calls can be scheduled with users of the lower-rated product, if deemed necessary.
- **Phase 4 (December 2019, second week):** The Executive Steering Team to meet and make an informed decision using the research, evaluation results and information presented.
- **Project Planning and Execution** (2020-2022): The City to start the preliminary contract/pricing review process on fiscal year 2020, while the EnerGov implementation is completed in parallel.

December 2019 Executive Briefing:

Please find below for your review a follow up action plan, with the next ten steps of the Core Financial & HR Enterprise System project:

1. IT reviews software licensing package scope and pricing with Infor reps: December 2019.
2. IT prepares preliminary project charter and sends it to the Executive Steering Team (EST) for review and feedback: December 2019-January 2020.

3. Reps from the EST hold a conference call with Cumberland County, PA, an Infor municipality customer referred by Gartner: January 2020.
4. Reps from the EST conduct a site visit to Greensboro, NC (an Infor municipal customer for more than 6 years) and/or other potential site(s), TBD: January-February 2020.
5. CM and members of the EST meet Infor's VP and HQ/local reps at CMO: February 2020.
6. IT meets with CMO and Finance to review existing funding and to plan the budget for this project: March 2020.
7. IT prepares project implementation Scope of Work (SOW) and sends it to the EST for review and feedback: March-April 2020.
8. Project charter completed with SOW and EST revisions and routed electronically to the EST for approval: April 2020.
9. IT meets with Finance / Procurement to review SOW for implementation services options (analyze bidding process), review software licensing options (analyze piggyback contracts), and to discuss Preliminary contract/pricing review process: December 2020.
10. Preliminary contract/pricing review process: December 2020.

The goal is to start the preliminary contract/pricing review process of the Infor system in 2020 while the City finishes the EnerGov system implementation and go-live launch; and, start the 2-year implementation of Infor in 2021, to go live in 2022-2023.

February 2020 Executive Briefing:

Please find below a status update on the Core Financial & HR Enterprise System Project action items from last project steering team meeting:

Completed:

1. IT reviews software licensing package scope and pricing with Infor reps: December 2019. **Status: COMPLETED**

In Progress:

2. IT prepares preliminary project charter and sends it to the Executive Steering Team (EST) for review and feedback: December 2019-February 2020. **Status: In Progress.**
3. Reps from the EST hold a conference call with Cumberland County, PA, an Infor municipality customer referred by Gartner: January 2020. **Status: Conference Call tentatively scheduled with Cumberland County and Coral Gables Finance/HR/IT staff for February 19 at 11am. Invite will follow shortly. Also, IT met with two Gartner ERP VP research subject matter experts in January to review the status of the project and validate project strategies and plans.**
4. Reps from the EST conduct a site visit to Greensboro, NC (an Infor municipal customer for more than 6 years) and/or other potential site(s), TBD: January-February 2020. **Status:** The Site Visit was scheduled for Monday March 16. From the City will attend: Diana, Sally, Celeste (Finance), Karla, Maria (HR) and Lemay, Raimundo (IT). Travel arrangements are being made under project funding and planning and coordinated with Greensboro IT and Coral Gables Finance/HR staff.

Coming Next:

5. CM and members of the EST meet Infor's VP and HQ/local reps at CMO: March 2020.
6. IT meets with CMO and Finance to review existing funding and to plan the budget for this project: March 2020.
7. IT prepares project implementation Scope of Work (SOW) and sends it to the EST for review and feedback: March-April 2020.

8. Project charter completed with SOW and EST revisions and routed electronically to the EST for approval: April 2020.
9. IT meets with Finance / Procurement to review SOW for implementation services options (analyze bidding process), review software licensing options (analyze piggyback contracts), and to discuss preliminary contract/pricing review process in 2020.
10. Preliminary contract/pricing review process: December 2020.

September 2020 Update: Site visit to Greensboro, NC completed.

December 2020 Update: Project Scope Session with Infor and City stakeholders completed.

January 2021 Update: Final proposal submitted by Infor.