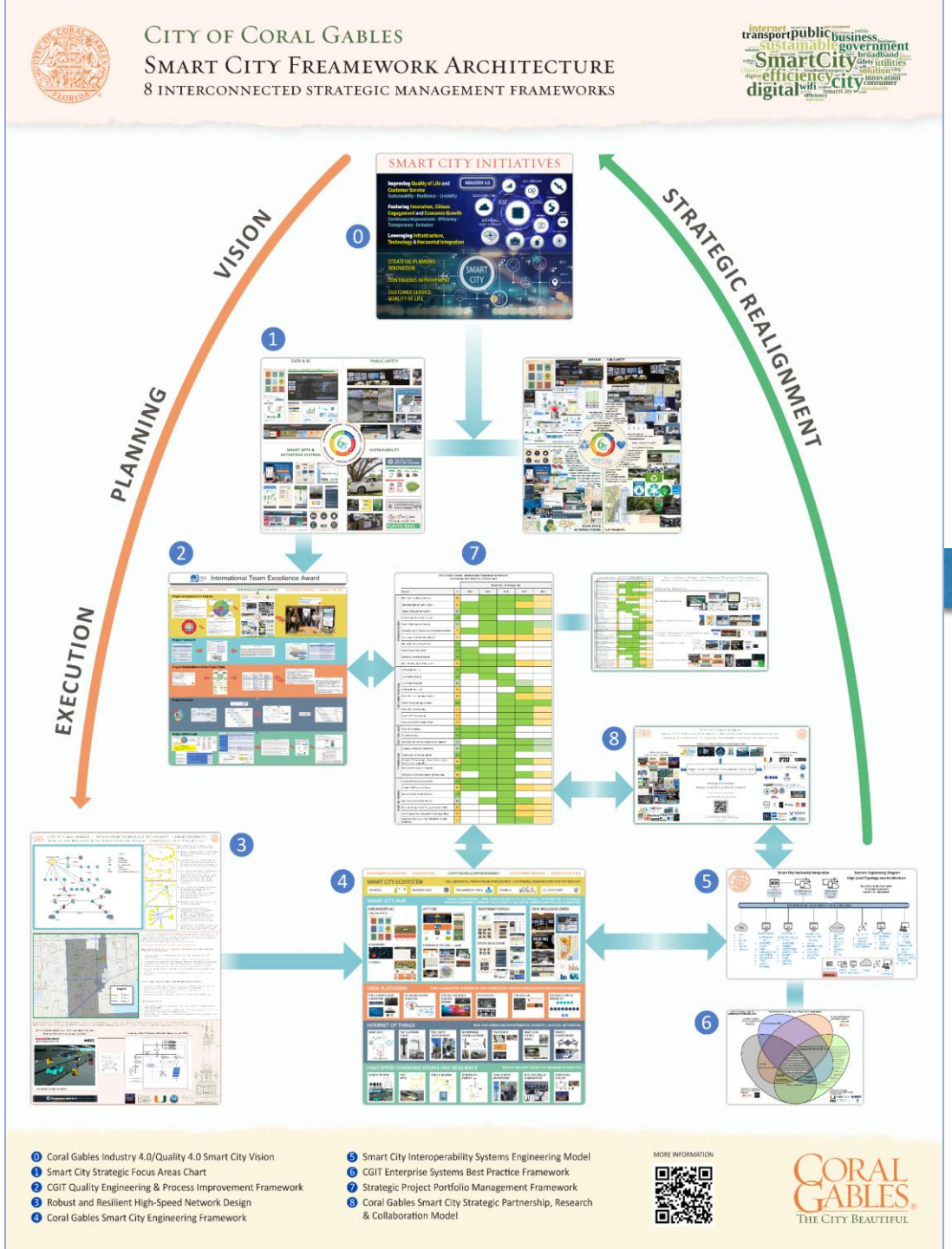
City of Coral Gables Digital Transformation and Smart City and Initiatives and Awards

Sustainability, Resilience, Workability, Livability

RAIMUNDO RODULFO, P.E., MSEM, PMP, CSSBB
DIRECTOR OF INFORMATION TECHNOLOGY / CHIEF INNOVATION OFFICER

MAY 2021

CORAL GABLES®
THE CITY BEAUTIFUL



CORAL GABLES
THE CITY BEAUTIFUL

Smart City Strategic Management Framework Architecture

Sustainability, Resilience, Workability, Livability → Mission-Driven Alignment

Continuous Improvement of Customer Service and Quality of Life
Fostering Innovation, Digital Inclusion, Citizen Engagement, Economic Growth
Synergy, Agility, Composability, Visibility, Hyper-Connectivity

0. **Industry 4.0 / Quality 4.0 Smart City Vision**
   Exponential Quality → Safe, Resilient & Productive Communities
1. **Smart City Strategic Focus Areas Chart**
   Applied STEM → Holistic Strategies, Focus on Service, Quality of Life – **Strategic Alignment**
2. **Quality Engineering & Process Improvement Framework**
   Total Quality Management → Industry Best Practices, Efficiencies – **Customer Satisfaction**
3. **Robust and Resilient High-Speed Network Design**
   Robust and Resilient Foundation → Engineering for Hyper-connectivity and Capacity
4. **Smart City Engineering Framework**
   Value-Driven Cyberinfrastructure Stack →
   Multi-layered Presence, Value & Trust for the Smart City Ecosystem
5. **Smart City Interoperability Systems Engineering Model**
   Complex, Data Rich Environment → Cohesive Governance and **Service Delivery Strategies**
6. **Enterprise Systems Best Practice Framework**
   Digital Transformation and IIoT → **Enterprise Business Capabilities**
7. **Strategic Project Portfolio Management Framework**
   Smart City Project Alignment → In-depth Planning and Integration
   Full-cycle Management: Idea/Plan/Design/Production
8. **Strategic Partnership, Research & Collaboration Model**
   Smart City Solutions → **Synergetic Approach**, Continuous Learning and Cross-pollination
   Developing and Organically Growing a Smart City Ecosystem that Fosters Innovation

CITY OF CORAL GABLES
SMART CITY FREAMEWORK ARCHITECTURE
8 INTERCONNECTED STRATEGIC MANAGEMENT FRAMEWORKS

0 Coral Gables Industry 4.0/Quality 4.0 Smart City Vision
1 Smart City Strategic Focus Areas Chart
2 CGIT Quality Engineering & Process Improvement Framework
3 Robust and Resilient High-Speed Network Design
4 Coral Gables Smart City Engineering Framework
5 Smart City Interoperability Systems Engineering Model
6 CGIT Enterprise Systems Best Practice Framework
7 Strategic Project Portfolio Management Framework
8 Coral Gables Smart City Strategic Partnership, Research & Collaboration Model

MORE INFORMATION

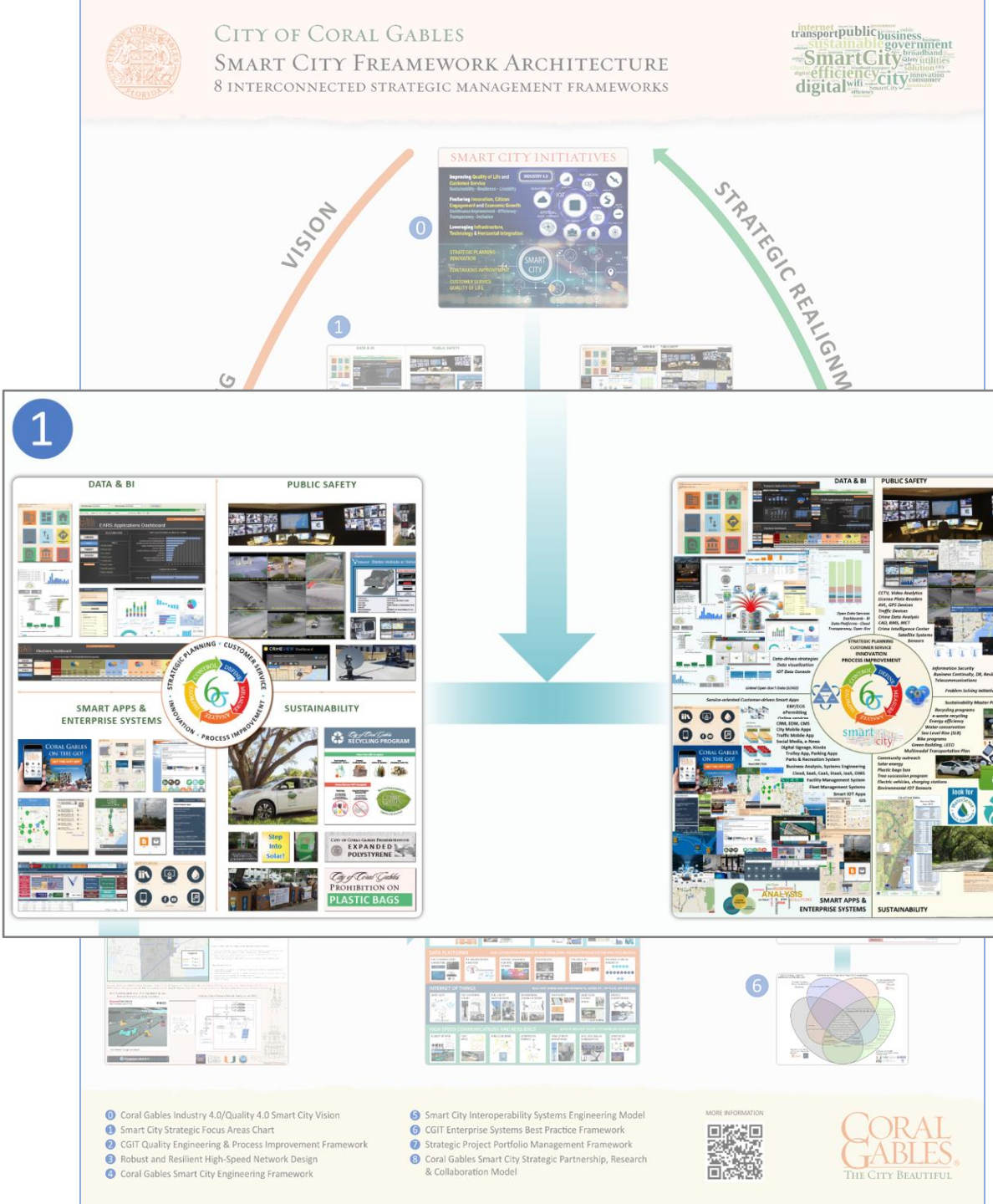
CORAL GABLES
THE CITY BEAUTIFUL

Smart City Strategic Management Framework Architecture

Sustainability, Resilience, Workability, Livability → Mission-Driven Alignment

Continuous Improvement of Customer Service and Quality of Life
Fostering Innovation, Digital Inclusion, Citizen Engagement, Economic Growth
Synergy, Agility, Composability, Visibility, Hyper-Connectivity

0. **Industry 4.0 / Quality 4.0 Smart City Vision**
   Exponential Quality → Safe, Resilient & Productive Communities
1. **Smart City Strategic Focus Areas Chart**
   Applied STEM → Holistic Strategies, Focus on Service, Quality of Life – **Strategic Alignment**
2. **Quality Engineering & Process Improvement Framework**
   Total Quality Management → Industry Best Practices, Efficiencies – **Customer Satisfaction**
3. **Robust and Resilient High-Speed Network Design**
   Robust and Resilient Foundation → Engineering for Hyper-connectivity and Capacity
4. **Smart City Engineering Framework**
   Value-Driven Cyberinfrastructure Stack →
   Multi-layered Presence, Value & Trust for the Smart City Ecosystem
5. **Smart City Interoperability Systems Engineering Model**
   Complex, Data Rich Environment → Cohesive Governance and **Service Delivery Strategies**
6. **Enterprise Systems Best Practice Framework**
   Digital Transformation and IIoT → **Enterprise Business Capabilities**
7. **Strategic Project Portfolio Management Framework**
   Smart City Project Alignment → In-depth Planning and Integration
   Full-cycle Management: Idea/Plan/Design/Production
8. **Strategic Partnership, Research & Collaboration Model**
   Smart City Solutions → **Synergetic Approach**, Continuous Learning and Cross-pollination
   Developing and Organically Growing a Smart City Ecosystem that Fosters Innovation



CORAL GABLES
THE CITY BEAUTIFUL

Smart City Strategic Management Framework Architecture

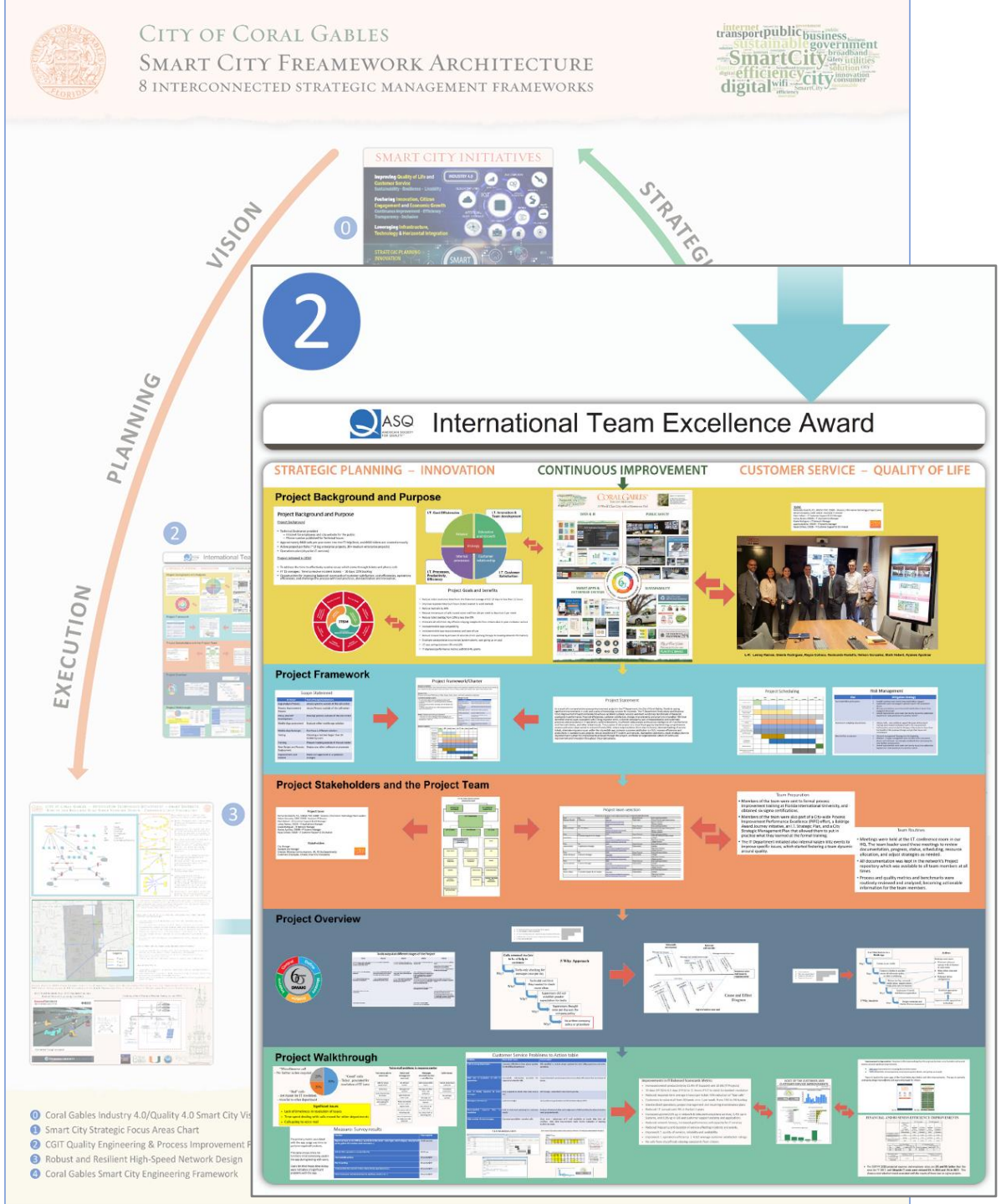
Sustainability, Resilience, Workability, Livability → Mission-Driven Alignment

Continuous Improvement of Customer Service and Quality of Life

Fostering Innovation, Digital Inclusion, Citizen Engagement, Economic Growth

Synergy, Agility, Composability, Visibility, Hyper-Connectivity

0. **Industry 4.0 / Quality 4.0 Smart City Vision**
   Exponential Quality → Safe, Resilient & Productive Communities
1. **Smart City Strategic Focus Areas Chart**
   Applied STEM → Holistic Strategies, Focus on Service, Quality of Life – **Strategic Alignment**
2. **Quality Engineering & Process Improvement Framework**
   Total Quality Management → Industry Best Practices, Efficiencies – **Customer Satisfaction**
3. **Robust and Resilient High-Speed Network Design**
   Robust and Resilient Foundation → Engineering for Hyper-connectivity and Capacity
4. **Smart City Engineering Framework**
   Value-Driven Cyberinfrastructure Stack →
   Multi-layered Presence, Value & Trust for the Smart City Ecosystem
5. **Smart City Interoperability Systems Engineering Model**
   Complex, Data Rich Environment → Cohesive Governance and **Service Delivery Strategies**
6. **Enterprise Systems Best Practice Framework**
   Digital Transformation and IIoT → **Enterprise Business Capabilities**
7. **Strategic Project Portfolio Management Framework**
   Smart City Project Alignment → In-depth Planning and Integration
   Full-cycle Management: Idea/Plan/Design/Production
8. **Strategic Partnership, Research & Collaboration Model**
   Smart City Solutions → **Synergetic Approach**, Continuous Learning and Cross-pollination
   Developing and Organically Growing a Smart City Ecosystem that Fosters Innovation



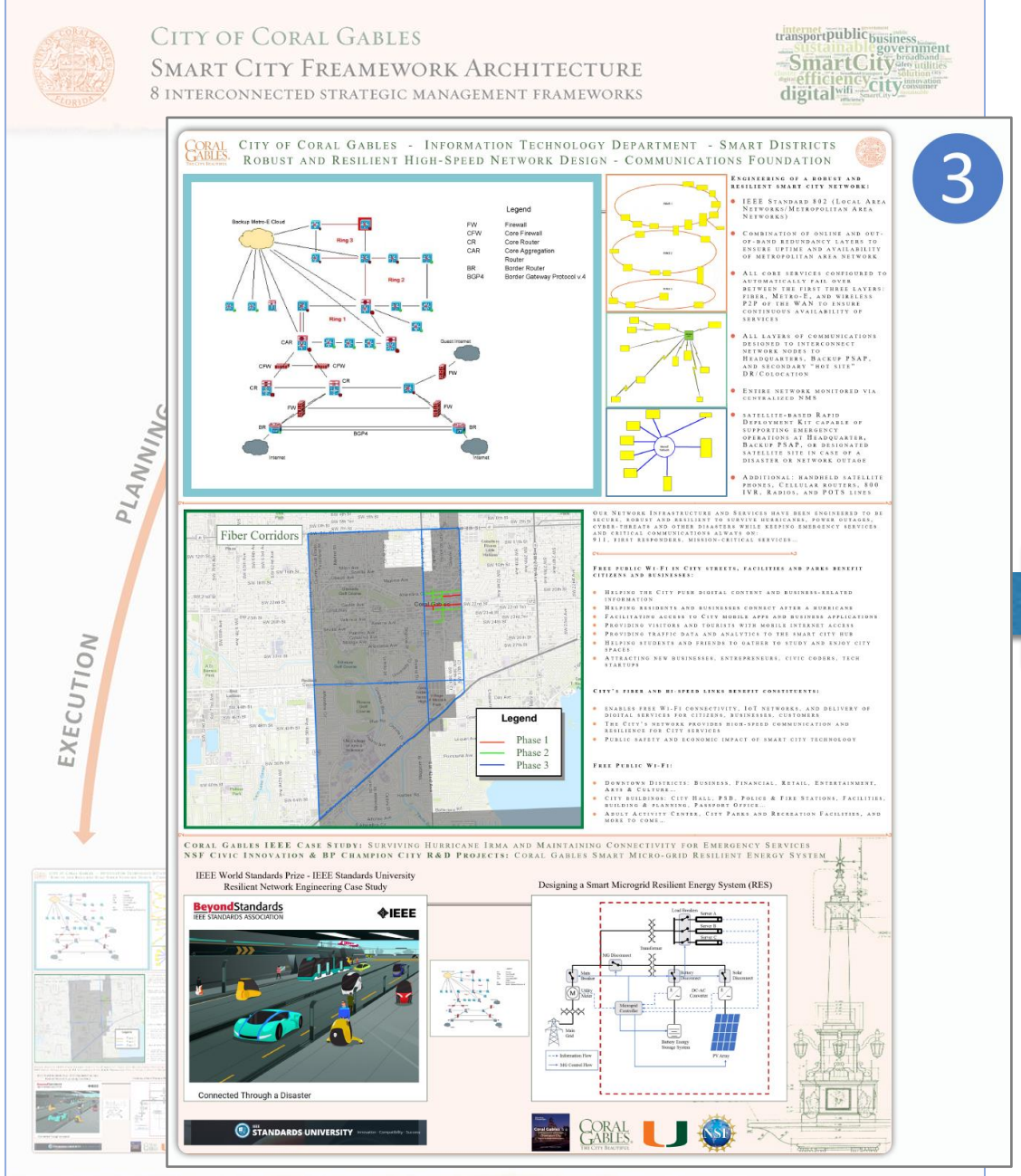
CORAL GABLES
THE CITY BEAUTIFUL

Smart City Strategic Management Framework Architecture

Sustainability, Resilience, Workability, Livability → Mission-Driven Alignment

Continuous Improvement of Customer Service and Quality of Life
Fostering Innovation, Digital Inclusion, Citizen Engagement, Economic Growth
Synergy, Agility, Composability, Visibility, Hyper-Connectivity

0. **Industry 4.0 / Quality 4.0 Smart City Vision**
   Exponential Quality → Safe, Resilient & Productive Communities
1. **Smart City Strategic Focus Areas Chart**
   Applied STEM → Holistic Strategies, Focus on Service, Quality of Life – **Strategic Alignment**
2. **Quality Engineering & Process Improvement Framework**
   Total Quality Management → Industry Best Practices, Efficiencies – **Customer Satisfaction**
3. **Robust and Resilient High-Speed Network Design**
   Robust and Resilient Foundation → Engineering for Hyper-connectivity and Capacity
4. **Smart City Engineering Framework**
   Value-Driven Cyberinfrastructure Stack →
   Multi-layered Presence, Value & Trust for the Smart City Ecosystem
5. **Smart City Interoperability Systems Engineering Model**
   Complex, Data Rich Environment → Cohesive Governance and **Service Delivery Strategies**
6. **Enterprise Systems Best Practice Framework**
   Digital Transformation and IIoT → **Enterprise Business Capabilities**
7. **Strategic Project Portfolio Management Framework**
   Smart City Project Alignment → In-depth Planning and Integration
   Full-cycle Management: Idea/Plan/Design/Production
8. **Strategic Partnership, Research & Collaboration Model**
   Smart City Solutions → **Synergetic Approach**, Continuous Learning and Cross-pollination
   Developing and Organically Growing a Smart City Ecosystem that Fosters Innovation



0 Coral Gables Industry 4.0/Quality 4.0 Smart City Vision
1 Smart City Strategic Focus Areas Chart
2 CGIT Quality Engineering & Process Improvement Framework
3 Robust and Resilient High-Speed Network Design
4 Coral Gables Smart City Engineering Framework
5 Smart City Interoperability Systems Engineering Model
6 CGIT Enterprise Systems Best Practice Framework
7 Strategic Project Portfolio Management Framework
8 Coral Gables Smart City Strategic Partnership, Research & Collaboration Model

MORE INFORMATION

Smart City Strategic Management Framework Architecture

Sustainability, Resilience, Workability, Livability → Mission-Driven Alignment

Continuous Improvement of Customer Service and Quality of Life

Fostering Innovation, Digital Inclusion, Citizen Engagement, Economic Growth

Synergy, Agility, Composability, Visibility, Hyper-Connectivity

0. **Industry 4.0 / Quality 4.0 Smart City Vision**
   Exponential Quality → Safe, Resilient & Productive Communities
1. **Smart City Strategic Focus Areas Chart**
   Applied STEM → Holistic Strategies, Focus on Service, Quality of Life – **Strategic Alignment**
2. **Quality Engineering & Process Improvement Framework**
   Total Quality Management → Industry Best Practices, Efficiencies – **Customer Satisfaction**
3. **Robust and Resilient High-Speed Network Design**
   Robust and Resilient Foundation → Engineering for Hyper-connectivity and Capacity
4. **Smart City Engineering Framework**
   Value-Driven Cyberinfrastructure Stack →
   Multi-layered Presence, Value & Trust for the Smart City Ecosystem
5. **Smart City Interoperability Systems Engineering Model**
   Complex, Data Rich Environment → Cohesive Governance and **Service Delivery Strategies**
6. **Enterprise Systems Best Practice Framework**
   Digital Transformation and IIoT → **Enterprise Business Capabilities**
7. **Strategic Project Portfolio Management Framework**
   Smart City Project Alignment → In-depth Planning and Integration
   Full-cycle Management: Idea/Plan/Design/Production
8. **Strategic Partnership, Research & Collaboration Model**
   Smart City Solutions → **Synergetic Approach**, Continuous Learning and Cross-pollination
   Developing and Organically Growing a Smart City Ecosystem that Fosters Innovation

CORAL GABLES
THE CITY BEAUTIFUL

Smart City Strategic Management Framework Architecture

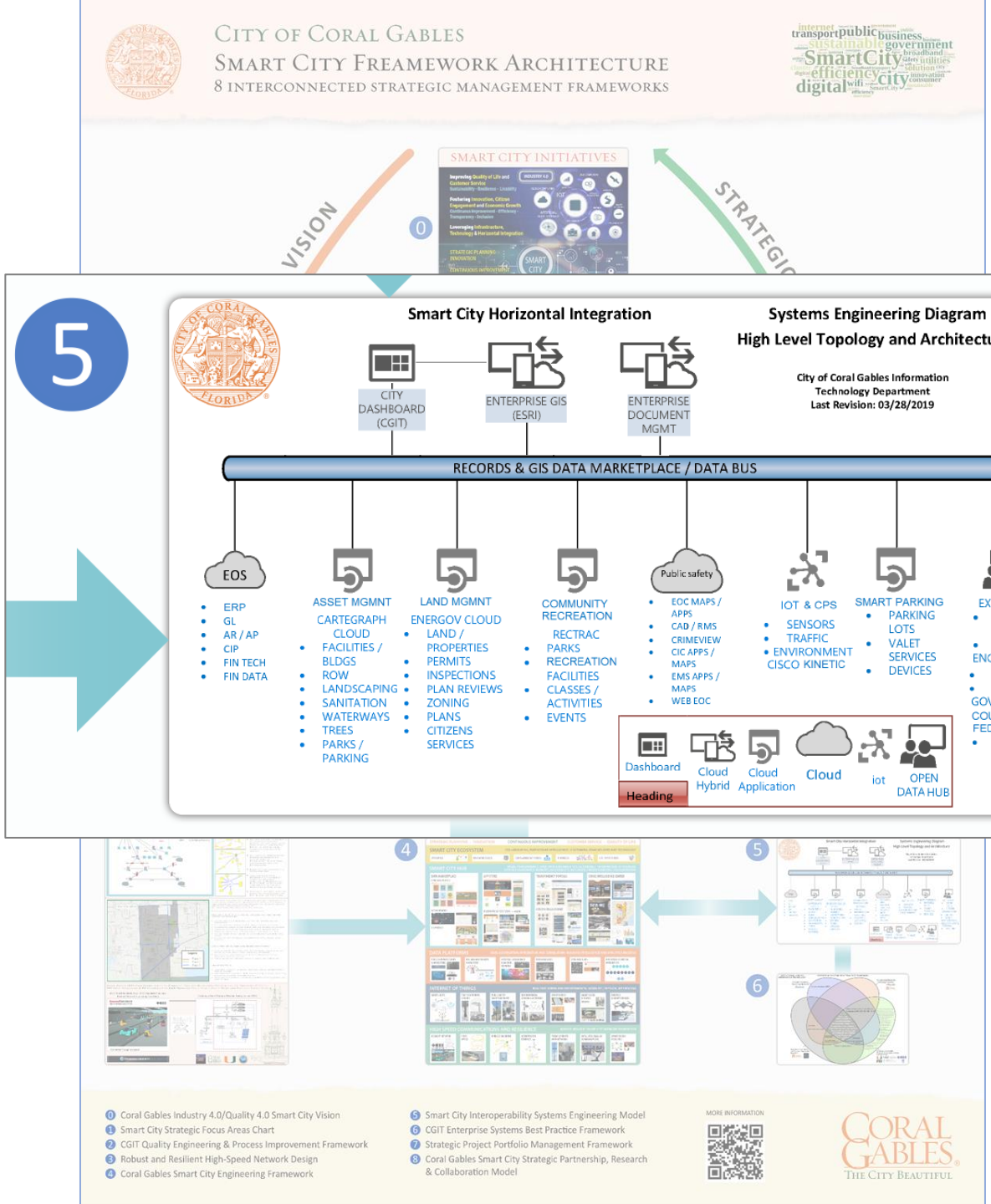
Sustainability, Resilience, Workability, Livability → Mission-Driven Alignment

Continuous Improvement of Customer Service and Quality of Life

Fostering Innovation, Digital Inclusion, Citizen Engagement, Economic Growth

Synergy, Agility, Composability, Visibility, Hyper-Connectivity

0. **Industry 4.0 / Quality 4.0 Smart City Vision**
   Exponential Quality → Safe, Resilient & Productive Communities
1. **Smart City Strategic Focus Areas Chart**
   Applied STEM → Holistic Strategies, Focus on Service, Quality of Life – **Strategic Alignment**
2. **Quality Engineering & Process Improvement Framework**
   Total Quality Management → Industry Best Practices, Efficiencies – **Customer Satisfaction**
3. **Robust and Resilient High-Speed Network Design**
   Robust and Resilient Foundation → Engineering for Hyper-connectivity and Capacity
4. **Smart City Engineering Framework**
   Value-Driven Cyberinfrastructure Stack →
   Multi-layered Presence, Value & Trust for the Smart City Ecosystem
5. **Smart City Interoperability Systems Engineering Model**
   Complex, Data Rich Environment → Cohesive Governance and **Service Delivery Strategies**
6. **Enterprise Systems Best Practice Framework**
   Digital Transformation and IIoT → **Enterprise Business Capabilities**
7. **Strategic Project Portfolio Management Framework**
   Smart City Project Alignment → In-depth Planning and Integration
   Full-cycle Management: Idea/Plan/Design/Production
8. **Strategic Partnership, Research & Collaboration Model**
   Smart City Solutions → **Synergetic Approach**, Continuous Learning and Cross-pollination
   Developing and Organically Growing a Smart City Ecosystem that Fosters Innovation



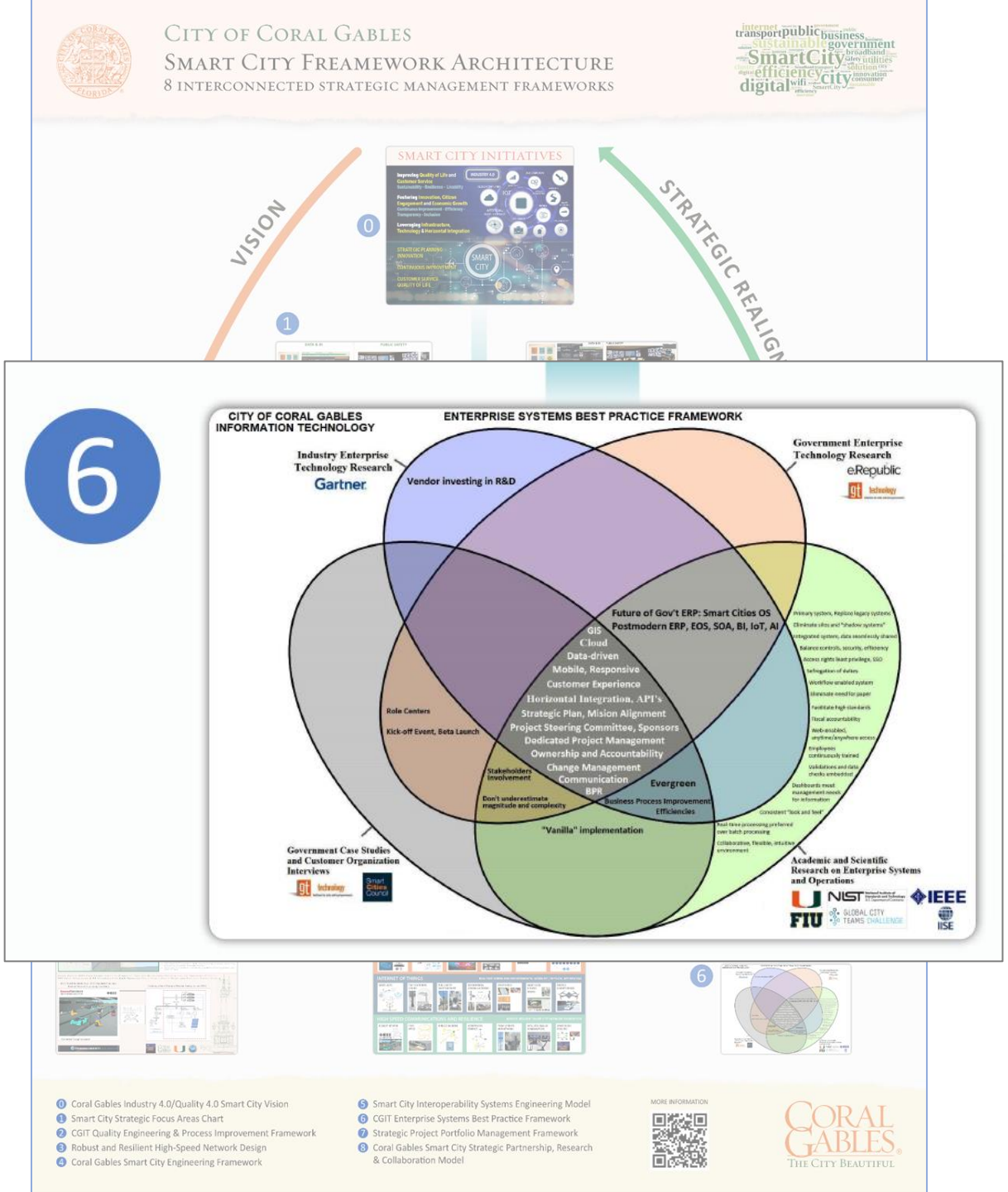
CORAL GABLES
THE CITY BEAUTIFUL

Smart City Strategic Management Framework Architecture

Sustainability, Resilience, Workability, Livability → Mission-Driven Alignment

Continuous Improvement of Customer Service and Quality of Life
Fostering Innovation, Digital Inclusion, Citizen Engagement, Economic Growth
Synergy, Agility, Composability, Visibility, Hyper-Connectivity

0. **Industry 4.0 / Quality 4.0 Smart City Vision**
   Exponential Quality → Safe, Resilient & Productive Communities
1. **Smart City Strategic Focus Areas Chart**
   Applied STEM → Holistic Strategies, Focus on Service, Quality of Life – **Strategic Alignment**
2. **Quality Engineering & Process Improvement Framework**
   Total Quality Management → Industry Best Practices, Efficiencies – **Customer Satisfaction**
3. **Robust and Resilient High-Speed Network Design**
   Robust and Resilient Foundation → Engineering for Hyper-connectivity and Capacity
4. **Smart City Engineering Framework**
   Value-Driven Cyberinfrastructure Stack →
   Multi-layered Presence, Value & Trust for the Smart City Ecosystem
5. **Smart City Interoperability Systems Engineering Model**
   Complex, Data Rich Environment → Cohesive Governance and **Service Delivery Strategies**
6. **Enterprise Systems Best Practice Framework**
   Digital Transformation and IIoT → **Enterprise Business Capabilities**
7. **Strategic Project Portfolio Management Framework**
   Smart City Project Alignment → In-depth Planning and Integration
   Full-cycle Management: Idea/Plan/Design/Production
8. **Strategic Partnership, Research & Collaboration Model**
   Smart City Solutions → **Synergetic Approach**, Continuous Learning and Cross-pollination
   Developing and Organically Growing a Smart City Ecosystem that Fosters Innovation



CORAL GABLES
THE CITY BEAUTIFUL

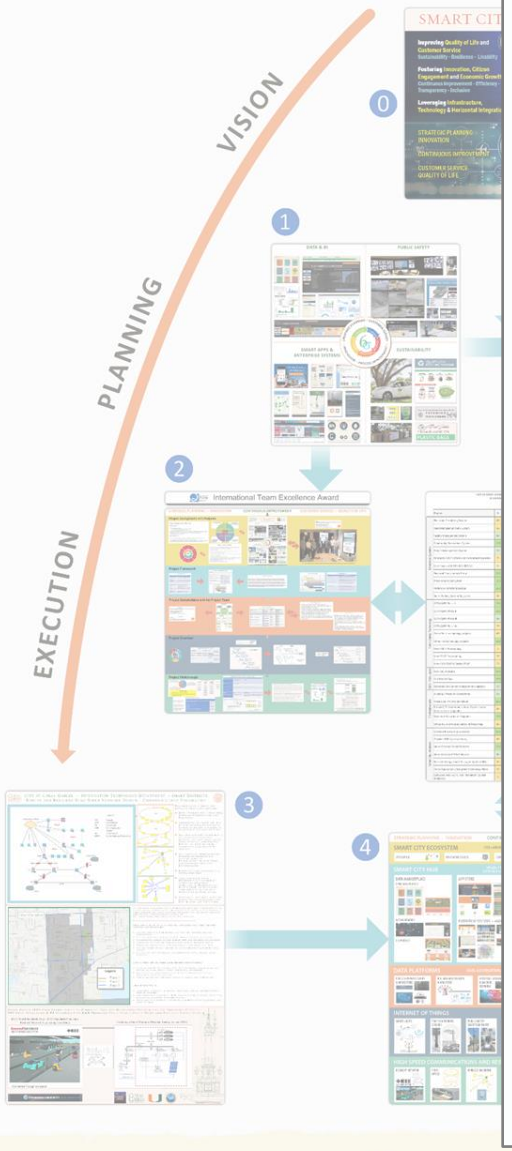
Smart City Strategic Management Framework Architecture

Sustainability, Resilience, Workability, Livability → Mission-Driven Alignment

Continuous Improvement of Customer Service and Quality of Life
Fostering Innovation, Digital Inclusion, Citizen Engagement, Economic Growth
Synergy, Agility, Composability, Visibility, Hyper-Connectivity

0. **Industry 4.0 / Quality 4.0 Smart City Vision**
   Exponential Quality → Safe, Resilient & Productive Communities
1. **Smart City Strategic Focus Areas Chart**
   Applied STEM → Holistic Strategies, Focus on Service, Quality of Life – **Strategic Alignment**
2. **Quality Engineering & Process Improvement Framework**
   Total Quality Management → Industry Best Practices, Efficiencies – **Customer Satisfaction**
3. **Robust and Resilient High-Speed Network Design**
   Robust and Resilient Foundation → Engineering for Hyper-connectivity and Capacity
4. **Smart City Engineering Framework**
   Value-Driven Cyberinfrastructure Stack →
   Multi-layered Presence, Value & Trust for the Smart City Ecosystem
5. **Smart City Interoperability Systems Engineering Model**
   Complex, Data Rich Environment → Cohesive Governance and **Service Delivery Strategies**
6. **Enterprise Systems Best Practice Framework**
   Digital Transformation and IIoT → **Enterprise Business Capabilities**
7. **Strategic Project Portfolio Management Framework**
   Smart City Project Alignment → In-depth Planning and Integration
   Full-cycle Management: Idea/Plan/Design/Production
8. **Strategic Partnership, Research & Collaboration Model**
   Smart City Solutions → **Synergetic Approach**, Continuous Learning and Cross-pollination
   Developing and Organically Growing a Smart City Ecosystem that Fosters Innovation

City of Coral Gables
Smart City Framework Architecture
8 Interconnected Strategic Management Frameworks



7

CITY OF CORAL GABLES - INFORMATION TECHNOLOGY DEPARTMENT
IT STRATEGIC PLAN PROJECTS, FY's 2016-2020

	Project	%	Fiscal Years - IT Strategic Plan 2016	2017	2018	2019	2020
Enterprise Systems	Electronic Permitting System	60					
	Fleet Management GPS System	60					
	Facility Management System	90					
	Community Recreations System	100					
	Project Management System	90					
	Enterprise GIS Platform and horizontal integration	75					
	Core Financial & HR EBC/ERP/EOS	15					
	Financial Transparency Portal	100					
	Procurement Bid System	100					
	Parking e-Permitting System	100					
	Smart Parking System Upgrades	40					
Public Safety Technology	CCTV/ALPR Phase I	100					
	CCTV/ALPR Phase II	100					
	CCTV/ALPR Phase III	90					
	CCTV/ALPR Phase IV	75					
	Other Police technology projects	60					
	Other Fire technology projects	100					
	New PSB IT Provisioning	75					
	New FS2 IT Provisioning	75					
	New e911 PSAP & Backup PSAP	75					
CMS, Web, Apps	New City Websites	100					
	City Mobile Apps	100					
	Electronic Document Management Upgrades	90					
IT Infrastructure	Public & Private Wi-Fi Networks	90					
	Voice over IP Citywide Rollout	100					
	Network, Telecommunications, Cybersecurity Infrastructure Upgrades	80					
	Systems Infrastructure Upgrades	100					
	Office 365 Citywide & Central BI/Reporting	80					
Smart City Initiatives	Citywide Process Improvement	100					
	Citywide SOP System/Library	60					
	Smart City Hub Public Platform	100					
	Smart Districts CPS IoT Sensors	90					
	Resilient Energy Smart Microgrid System (RES)	30					
	Other Exponential/Disruptive Technology Pilots	50					
	DataGovs, NIST GCTC, and Innovation Council Initiatives	75					

0 Coral Gables Industry 4.0/Quality 4.0 Smart City Vision
1 Smart City Strategic Focus Areas Chart
2 CGIT Quality Engineering & Process Improvement Framework
3 Robust and Resilient High-Speed Network Design
4 Coral Gables Smart City Engineering Framework
5 Smart City Interoperability Systems Engineering Model
6 CGIT Enterprise Systems Best Practice Framework
7 Strategic Project Portfolio Management Framework
8 Coral Gables Smart City Strategic Partnership, Research & Collaboration Model

MORE INFORMATION

Coral Gables — The City Beautiful

Smart City Strategic Management Framework Architecture

Sustainability, Resilience, Workability, Livability → Mission-Driven Alignment

Continuous Improvement of Customer Service and Quality of Life
Fostering Innovation, Digital Inclusion, Citizen Engagement, Economic Growth
Synergy, Agility, Composability, Visibility, Hyper-Connectivity

0. **Industry 4.0 / Quality 4.0 Smart City Vision**
   Exponential Quality → Safe, Resilient & Productive Communities
1. **Smart City Strategic Focus Areas Chart**
   Applied STEM → Holistic Strategies, Focus on Service, Quality of Life – **Strategic Alignment**
2. **Quality Engineering & Process Improvement Framework**
   Total Quality Management → Industry Best Practices, Efficiencies – **Customer Satisfaction**
3. **Robust and Resilient High-Speed Network Design**
   Robust and Resilient Foundation → Engineering for Hyper-connectivity and Capacity
4. **Smart City Engineering Framework**
   Value-Driven Cyberinfrastructure Stack →
   Multi-layered Presence, Value & Trust for the Smart City Ecosystem
5. **Smart City Interoperability Systems Engineering Model**
   Complex, Data Rich Environment → Cohesive Governance and **Service Delivery Strategies**
6. **Enterprise Systems Best Practice Framework**
   Digital Transformation and IIoT → **Enterprise Business Capabilities**
7. **Strategic Project Portfolio Management Framework**
   Smart City Project Alignment → In-depth Planning and Integration
   Full-cycle Management: Idea/Plan/Design/Production
8. **Strategic Partnership, Research & Collaboration Model**
   Smart City Solutions → **Synergetic Approach**, Continuous Learning and Cross-pollination
   Developing and Organically Growing a Smart City Ecosystem that Fosters Innovation

Smart City Strategic Management Framework Architecture

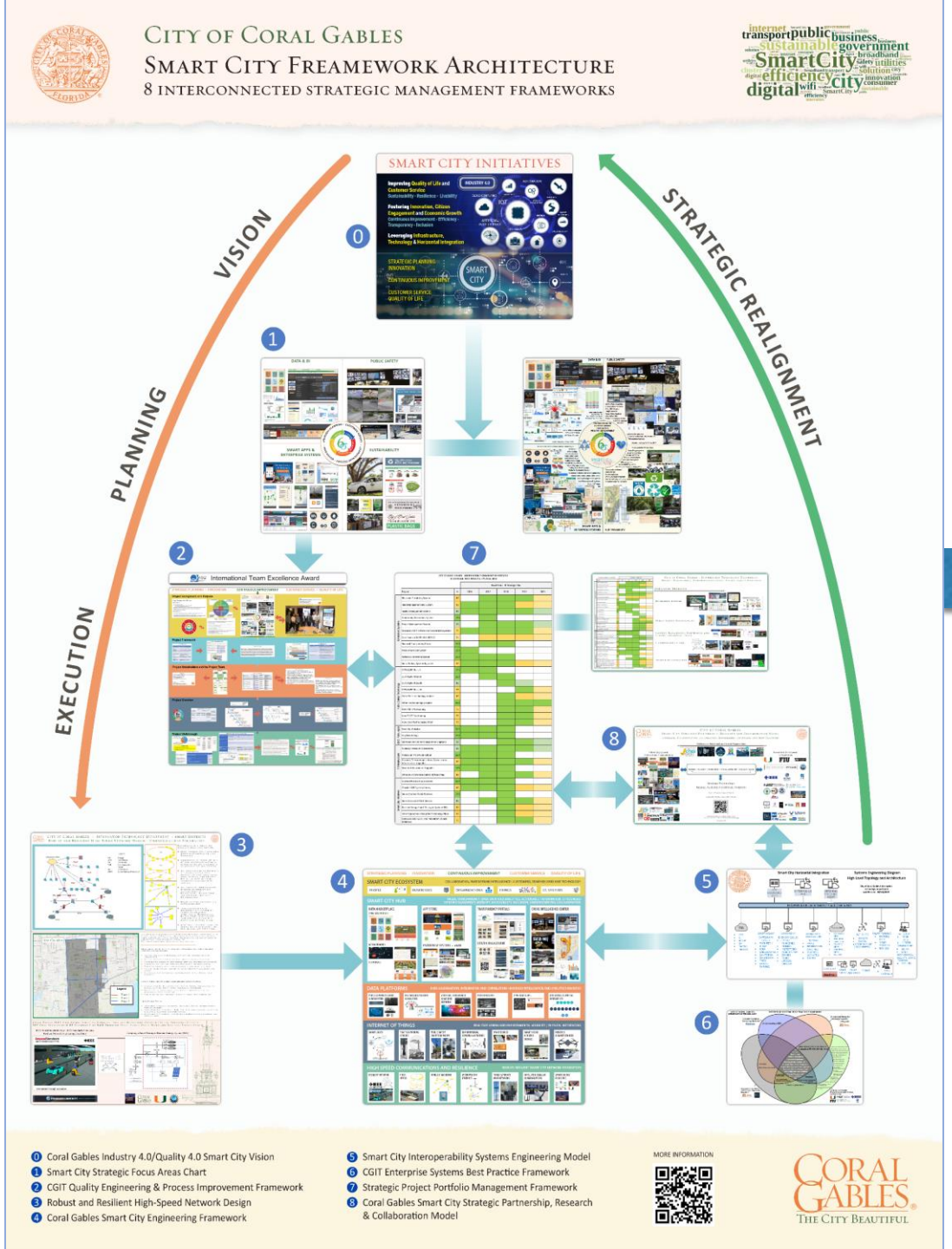
Sustainability, Resilience, Workability, Livability → Mission-Driven Alignment

Continuous Improvement of Customer Service and Quality of Life

Fostering Innovation, Digital Inclusion, Citizen Engagement, Economic Growth

Synergy, Agility, Composability, Visibility, Hyper-Connectivity

0. **Industry 4.0 / Quality 4.0 Smart City Vision**
   Exponential Quality → Safe, Resilient & Productive Communities
1. **Smart City Strategic Focus Areas Chart**
   Applied STEM → Holistic Strategies, Focus on Service, Quality of Life – **Strategic Alignment**
2. **Quality Engineering & Process Improvement Framework**
   Total Quality Management → Industry Best Practices, Efficiencies – **Customer Satisfaction**
3. **Robust and Resilient High-Speed Network Design**
   Robust and Resilient Foundation → Engineering for Hyper-connectivity and Capacity
4. **Smart City Engineering Framework**
   Value-Driven Cyberinfrastructure Stack →
   Multi-layered Presence, Value & Trust for the Smart City Ecosystem
5. **Smart City Interoperability Systems Engineering Model**
   Complex, Data Rich Environment → Cohesive Governance and **Service Delivery Strategies**
6. **Enterprise Systems Best Practice Framework**
   Digital Transformation and IIoT → **Enterprise Business Capabilities**
7. **Strategic Project Portfolio Management Framework**
   Smart City Project Alignment → In-depth Planning and Integration
   Full-cycle Management: Idea/Plan/Design/Production
8. **Strategic Partnership, Research & Collaboration Model**
   Smart City Solutions → **Synergetic Approach**, Continuous Learning and Cross-pollination
   Developing and Organically Growing a Smart City Ecosystem that Fosters Innovation



Smart City Strategic Management Framework Architecture

Sustainability, Resilience, Workability, Livability → Mission-Driven Alignment

Continuous Improvement of Customer Service and Quality of Life
Fostering Innovation, Digital Inclusion, Citizen Engagement, Economic Growth
Synergy, Agility, Composability, Visibility, Hyper-Connectivity

0. **Industry 4.0 / Quality 4.0 Smart City Vision**
   Exponential Quality → Safe, Resilient & Productive Communities
1. **Smart City Strategic Focus Areas Chart**
   Applied STEM → Holistic Strategies, Focus on Service, Quality of Life – **Strategic Alignment**
2. **Quality Engineering & Process Improvement Framework**
   Total Quality Management → Industry Best Practices, Efficiencies – **Customer Satisfaction**
3. **Robust and Resilient High-Speed Network Design**
   Robust and Resilient Foundation → Engineering for Hyper-connectivity and Capacity
4. **Smart City Engineering Framework**
   Value-Driven Cyberinfrastructure Stack →
   Multi-layered Presence, Value & Trust for the Smart City Ecosystem
5. **Smart City Interoperability Systems Engineering Model**
   Complex, Data Rich Environment → Cohesive Governance and **Service Delivery Strategies**
6. **Enterprise Systems Best Practice Framework**
   Digital Transformation and IIoT → **Enterprise Business Capabilities**
7. **Strategic Project Portfolio Management Framework**
   Smart City Project Alignment → In-depth Planning and Integration
   Full-cycle Management: Idea/Plan/Design/Production
8. **Strategic Partnership, Research & Collaboration Model**
   Smart City Solutions → **Synergetic Approach**, Continuous Learning and Cross-pollination
   Developing and Organically Growing a Smart City Ecosystem that Fosters Innovation

SMART CITY ALIGNMENT, STRATEGIC PLANNING, ENGINEERING & DESIGN

Our smart city plan implements **several interconnected and interoperable elements** that include:

- A Smart City Hub
- Data Platforms
- Internet of Things
- Horizontal Integration
- A robust and resilient technology infrastructure with high-speed communications.
- Smart Mobility Technology, Cyberphysical Infrastructure, Citizen Services, and hyper-connectivity.

CITY OF CORAL GABLES - INFORMATION TECHNOLOGY DEPARTMENT

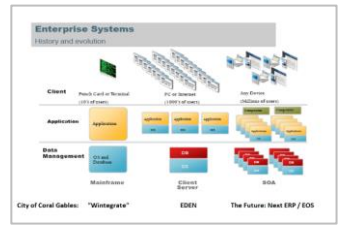
PROJECT MANAGEMENT, CYBERINFRASTRUCTURE, DIGITAL EQUITY PORTFOLIO

CITY OF CORAL GABLES - INFORMATION TECHNOLOGY DEPARTMENT
IT STRATEGIC PLAN PROJECTS, FY's 2016-2020

	Project	%	Fiscal Years - IT Strategic Plan 2016	2017	2018	2019	2020
Enterprise Systems	Electronic Permitting System	60					
	Fleet Management GPS System	60					
	Facility Management System	90					
	Community Recreations System	100					
	Project Management System	90					
	Enterprise GIS Platform and horizontal integration	75					
	Core Financial & HR EBC/ERP/EOS	15					
	Financial Transparency Portal	100					
	Procurement Bid System	100					
	Parking e-Permitting System	100					
	Smart Parking System Upgrades	40					
Public Safety Technology	CCTV/ALPR Phase I	100					
	CCTV/ALPR Phase II	100					
	CCTV/ALPR Phase III	90					
	CCTV/ALPR Phase IV	75					
	Other Police technology projects	60					
	Other Fire technology projects	100					
	New PSB IT Provisioning	75					
	New FS2 IT Provisioning	75					
	New e911 PSAP & Backup PSAP	75					
CMS, Web, Apps	New City Websites	100					
	City Mobile Apps	100					
	Electronic Document Management Upgrades	90					
IT Infrastructure	Public & Private Wi-Fi Networks	90					
	Voice over IP Citywide Rollout	100					
	Network, Telecommunications, Cybersecurity Infrastructure Upgrades	80					
	Systems Infrastructure Upgrades	100					
	Office 365 Citywide & Central BI/Reporting	80					
Smart City Initiatives	Citywide Process Improvement	100					
	Citywide SOP System/Library	60					
	Smart City Hub Public Platform	100					
	Smart Districts CPS IoT Sensors	90					
	Resilient Energy Smart Microgrid System (RES)	30					
	Other Exponential/Disruptive Technology Pilots	50					
	DataGovs, NIST GCTC, and Innovation Council Initiatives	75					

STRATEGIC PROJECTS

- ENTERPRISE SYSTEMS

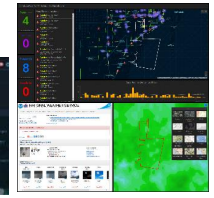


- PUBLIC SAFETY TECHNOLOGIES

- CONTENT MANAGEMENT, WEB/MOBILE APPS, DXP, CITIZEN ENGAGEMENT/UX

- CYBERINFRASTRUCTURE

- SMART CITY INITIATIVES



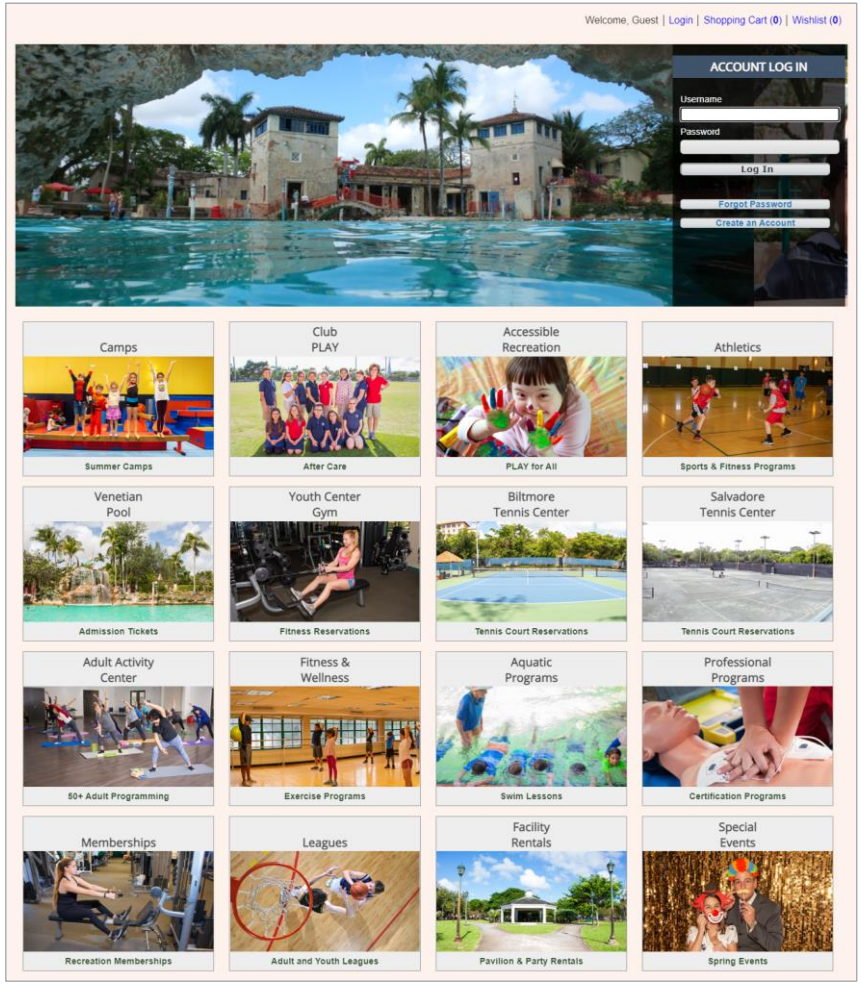
City of Coral Gables

Enterprise Systems – Digital Transformation – Efficiencies – Paperless Processes

RecTrac – Community Recreation Programs, Classes, Programs, Booking, Registrations

Cartegraph – Enterprise Asset Management, Operations Management, Facilities, Right of Way, Sanitation, Landscaping, Utilities, Parks Facilities, Properties

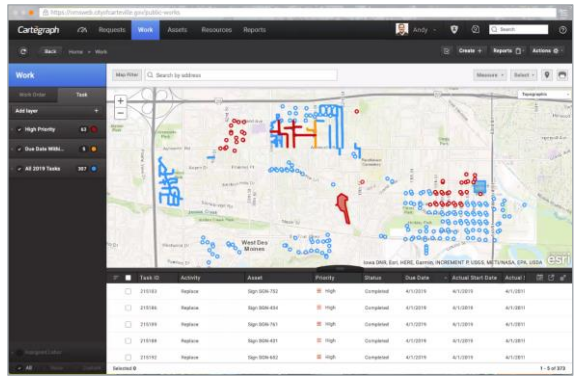
RecTrac – Went Live in 2017

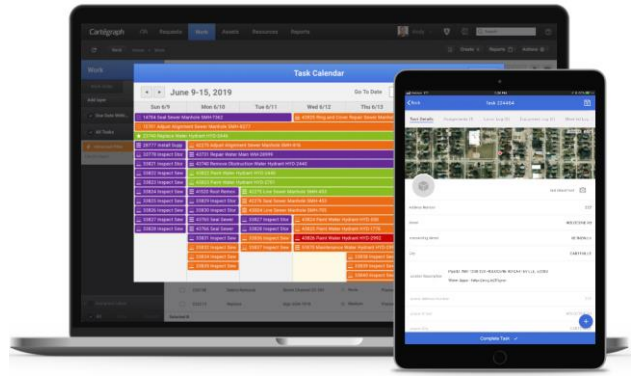


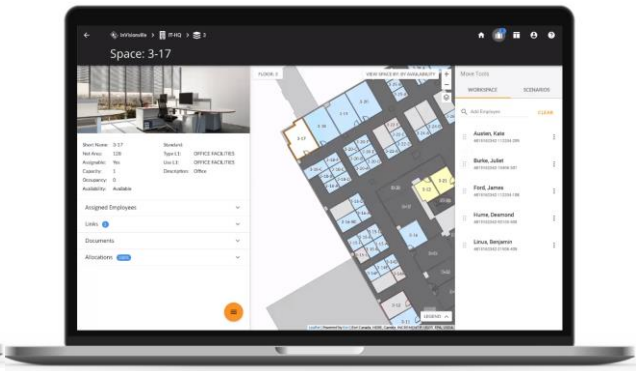
CarteGraph Cloud Suite

- **Facility Management**: Went Live in 2018
- **Landscaping, Trees, Sanitation**: Went Live in 2019
- **Utilities**: Went Live in 2020
- **Community Recreation / Parks** : Went Live in 2021

New: Property Management: Starts FY'21, Go-Live FY'22





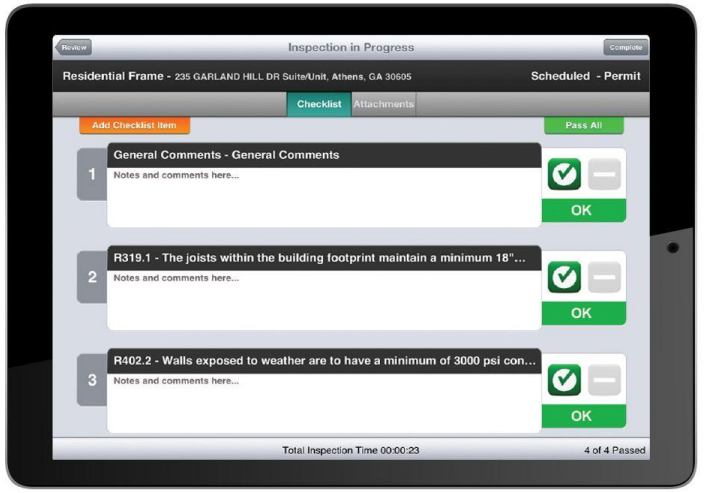


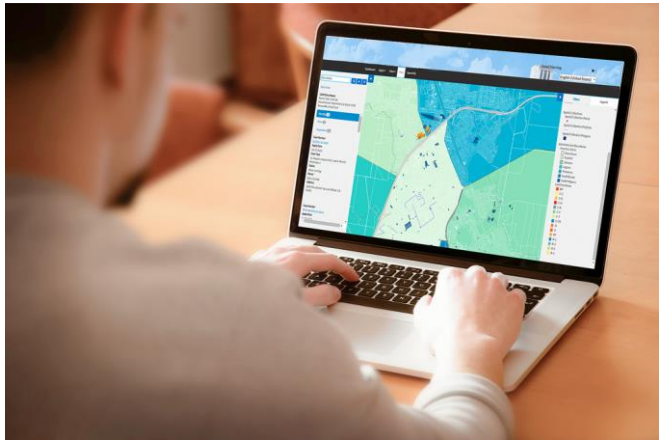
CITY OF CORAL GABLES

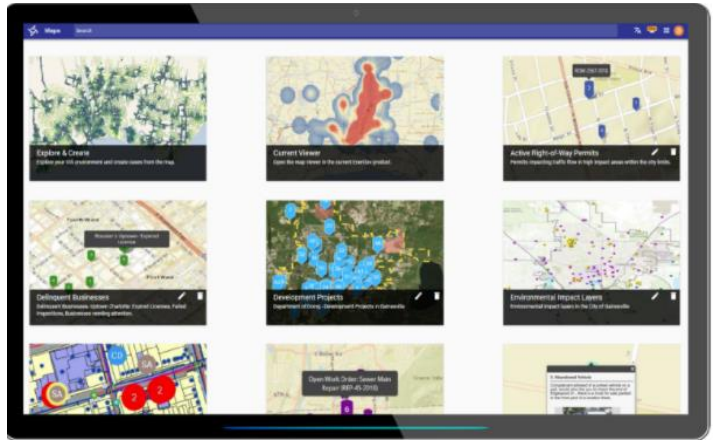
ENTERPRISE SYSTEMS – DIGITAL TRANSFORMATION – EFFICIENCIES – PAPERLESS PROCESSES

ENERGOV – ELECTRONIC PERMIT / PLAN REVIEW / LAND MANAGEMENT / LICENSING

AT IMPLEMENTATION PHASE (GO-LIVE IN 2021)







ELECTRONIC PLAN REVIEW MOCKUP STATION:

1. WACOM INTUOS PRO CAD GRAPHIC TABLET or higher model
2. HIGH-SPECS WINDOWS 2-IN-1 LAPTOP/TABLET (eg: 8-core i7 CPU, 16 GB RAM, FAST GPU, 4K 17" display, built-in Mic, HD Webcam, speakers, fastest USB ports...)
3. MULTIPORT DOCKING STATION + KBD AND MOUSE
4. DUAL 32" HD MONITORS
5. HEADSET FOR VIRTUAL MEETINGS

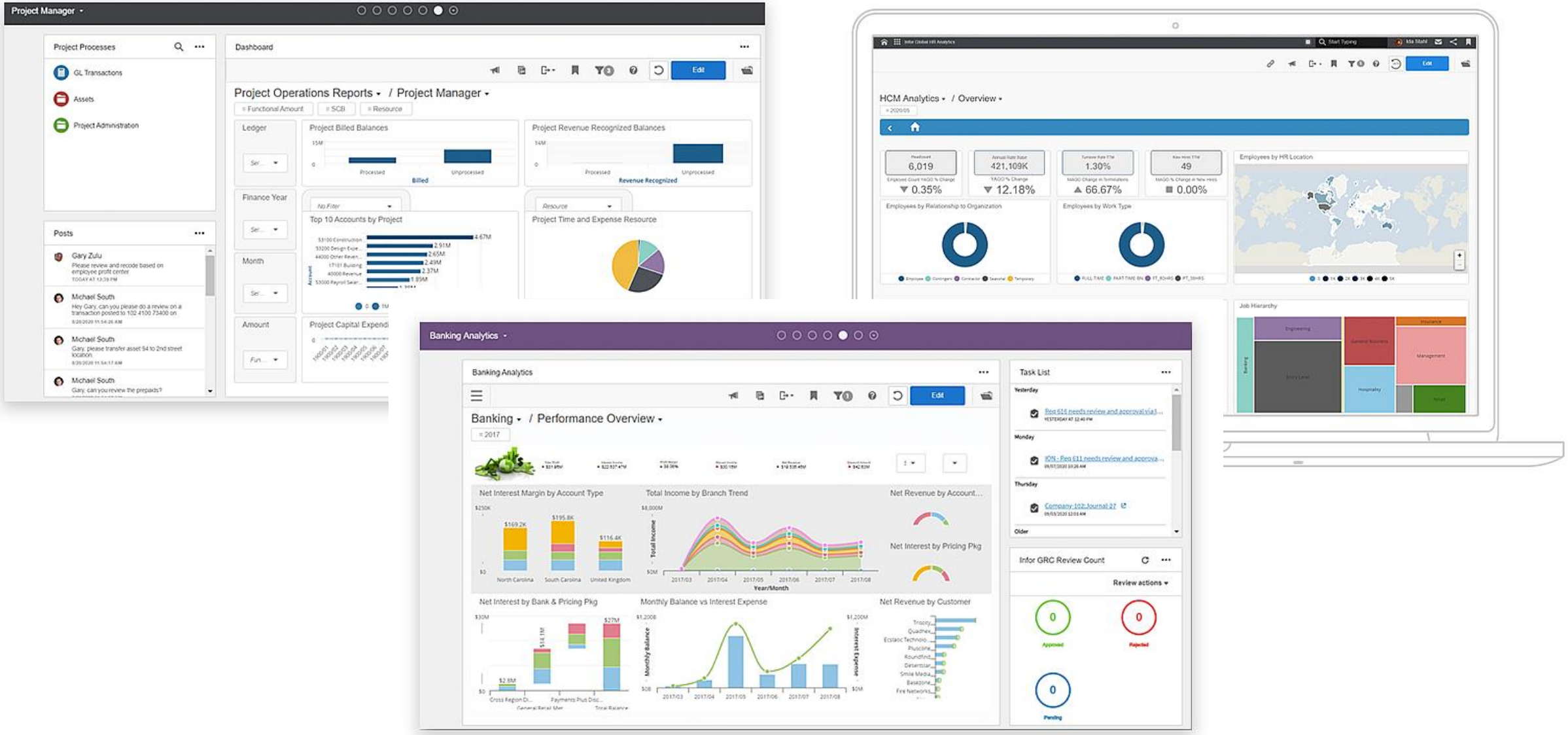
SOFTWARE:
WINDOWS 10 PRO LATEST OS VERSION, WITH NATIVE HAPTIC CONTROLS AND VOICE COMMANDS
- ENERGOV (CLOUD NATIVE) and BLUEBEAM (integrated)
- LASERFICHE and CRM (CLOUD BASED), City and County GIS and open data portals, Cartegraph, etc.
OTHER TOOLS: ADOBE PRO (CLOUD), ESRI ArcGIS 3D, etc.

CITY OF CORAL GABLES

ENTERPRISE SYSTEMS – DIGITAL TRANSFORMATION – EFFICIENCIES – PAPERLESS PROCESSES

INFOR CLOUDSUITE – CORE FINANCIAL / HR / SUPPLY CHAIN MANAGEMENT

AT IMPLEMENTATION PHASE (GO-LIVE IN 2022)



Infor Deployment Method (IDM)

Kickoff

Live

Inception

Project Kickoff
Scope Definition
IA Workshops
GL Workshops
Executive Summary

Elaboration

System Design
To-Be Processes
Business Blueprint
Core Team Training
Conference Room Pilot (CRP)

Construction

Application Configuration
Technical Design/Development
Testing (SIT) & Documentation
Interface Testing

Transition

Acceptance Testing (UAT)
End User Training (EUT)
Production Environment
Cut-over / LIVE

Optimize

Copyright © 2020. Infor. All Rights Reserved. Infor.com

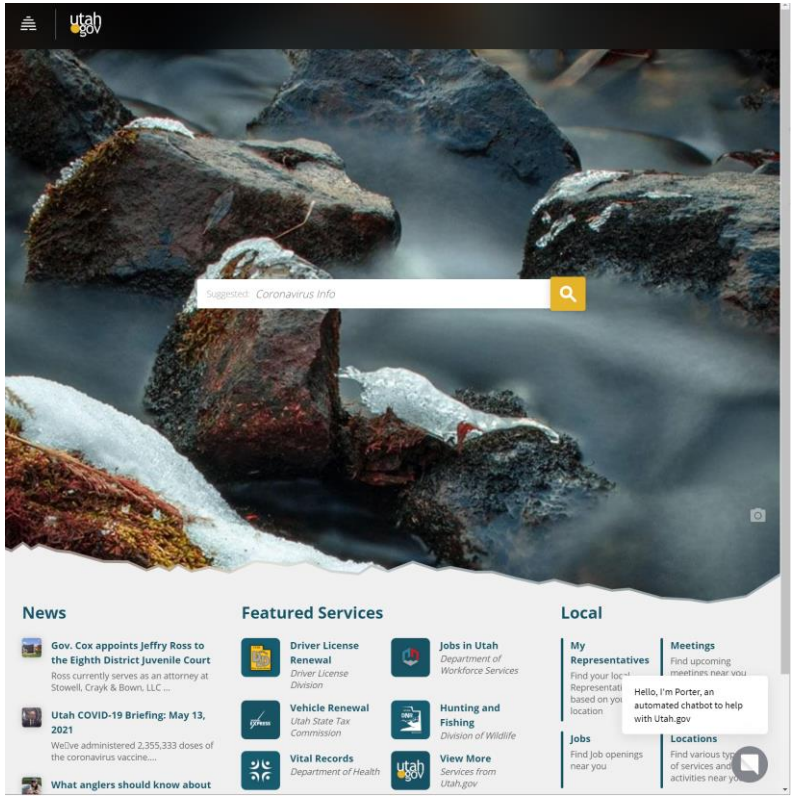
CITY OF CORAL GABLES

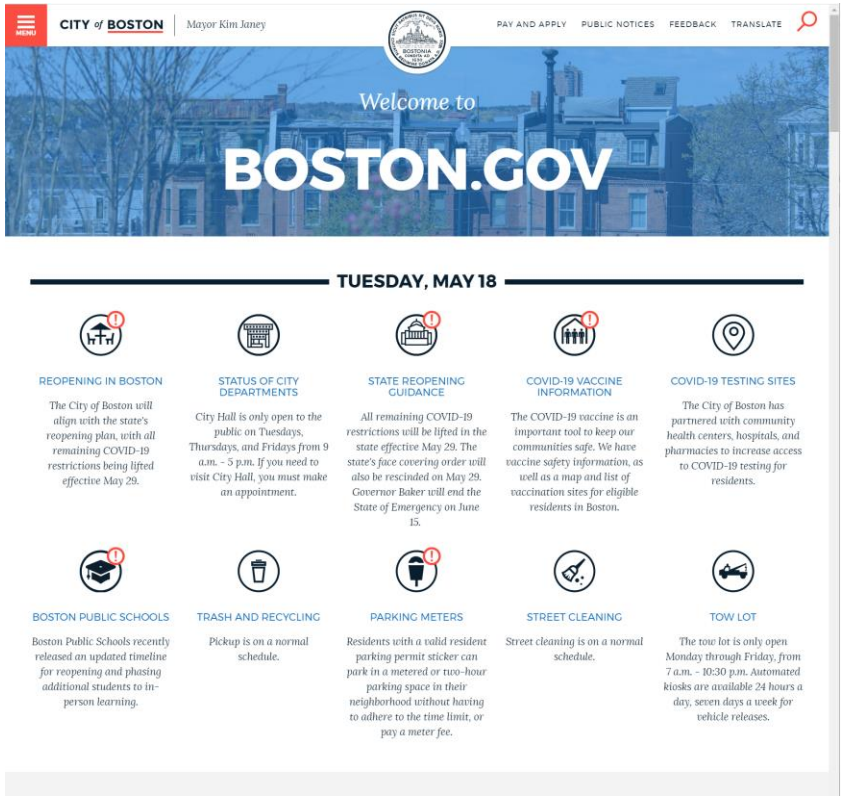
ENTERPRISE SYSTEMS – DIGITAL TRANSFORMATION – EFFICIENCIES – PAPERLESS PROCESSES

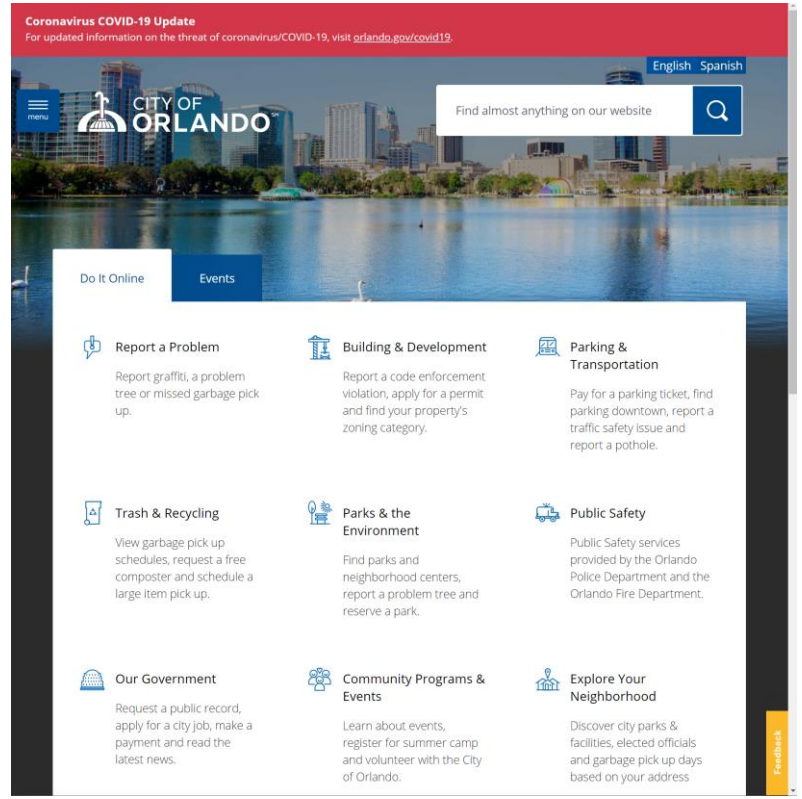
DIGITAL EXPERIENCE PLATFORM (DXP) / NEW CITY WEBSITE

AT INITIATION PHASE (GO-LIVE IN FY 2022)

UX EXAMPLES:





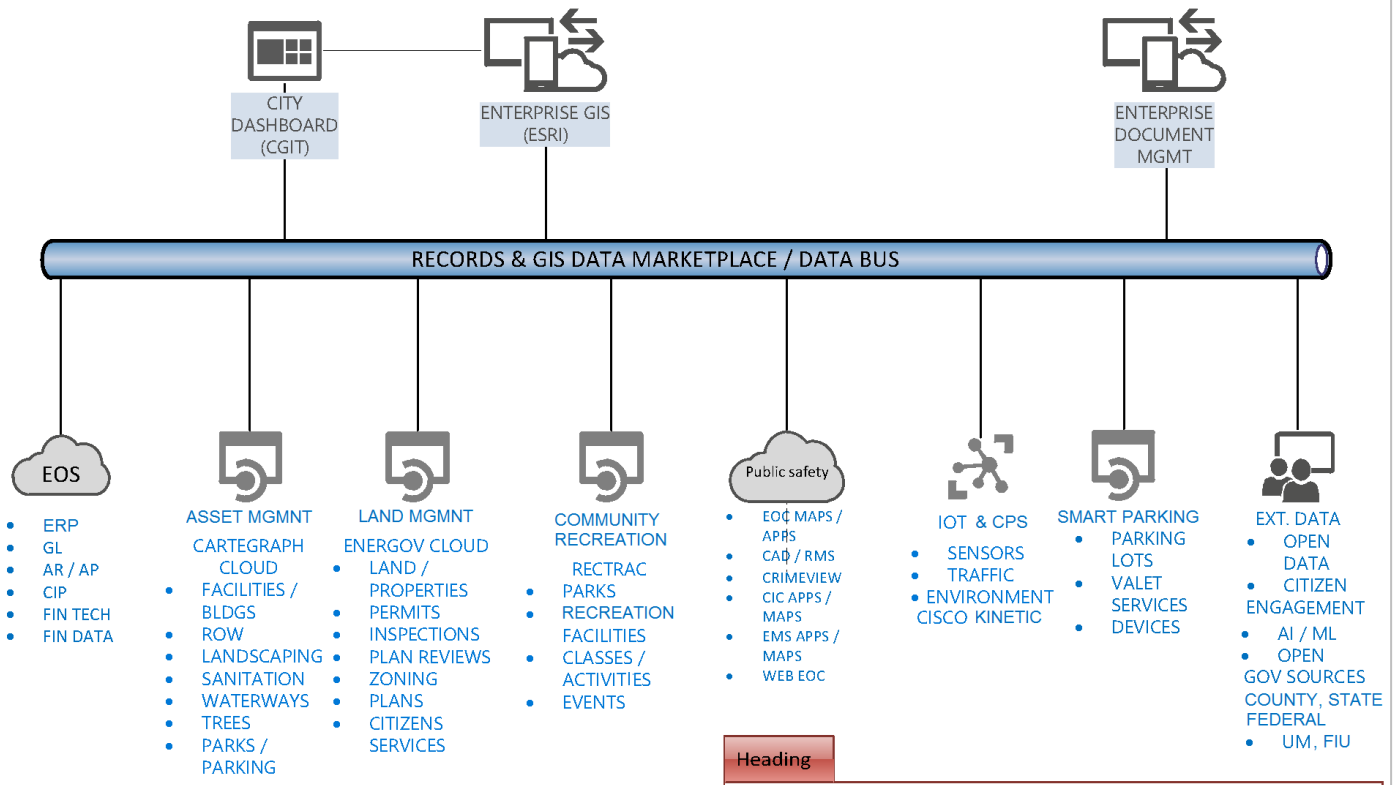


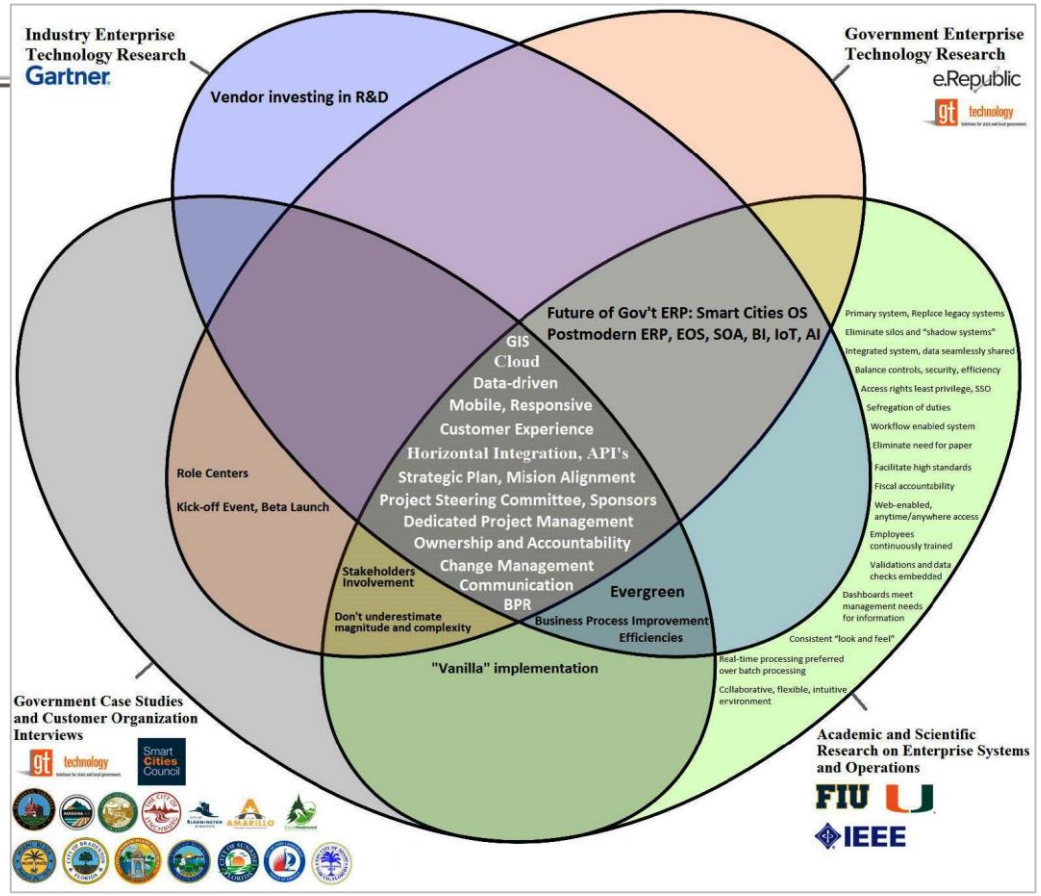
CITY OF CORAL GABLES - INFORMATION TECHNOLOGY DEPARTMENT

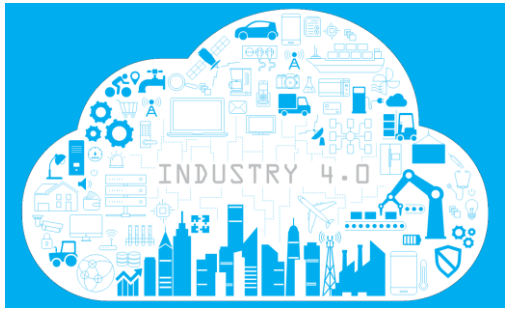
BEST PRACTICES – ENTERPRISE SYSTEMS & SMART CITY HORIZONTAL INTEGRATION

City of Coral Gables Information Technology Department
Last Revision: 03/28/2019

Smart City Horizontal Integration
Systems Engineering Diagram
High Level Topology and Architecture

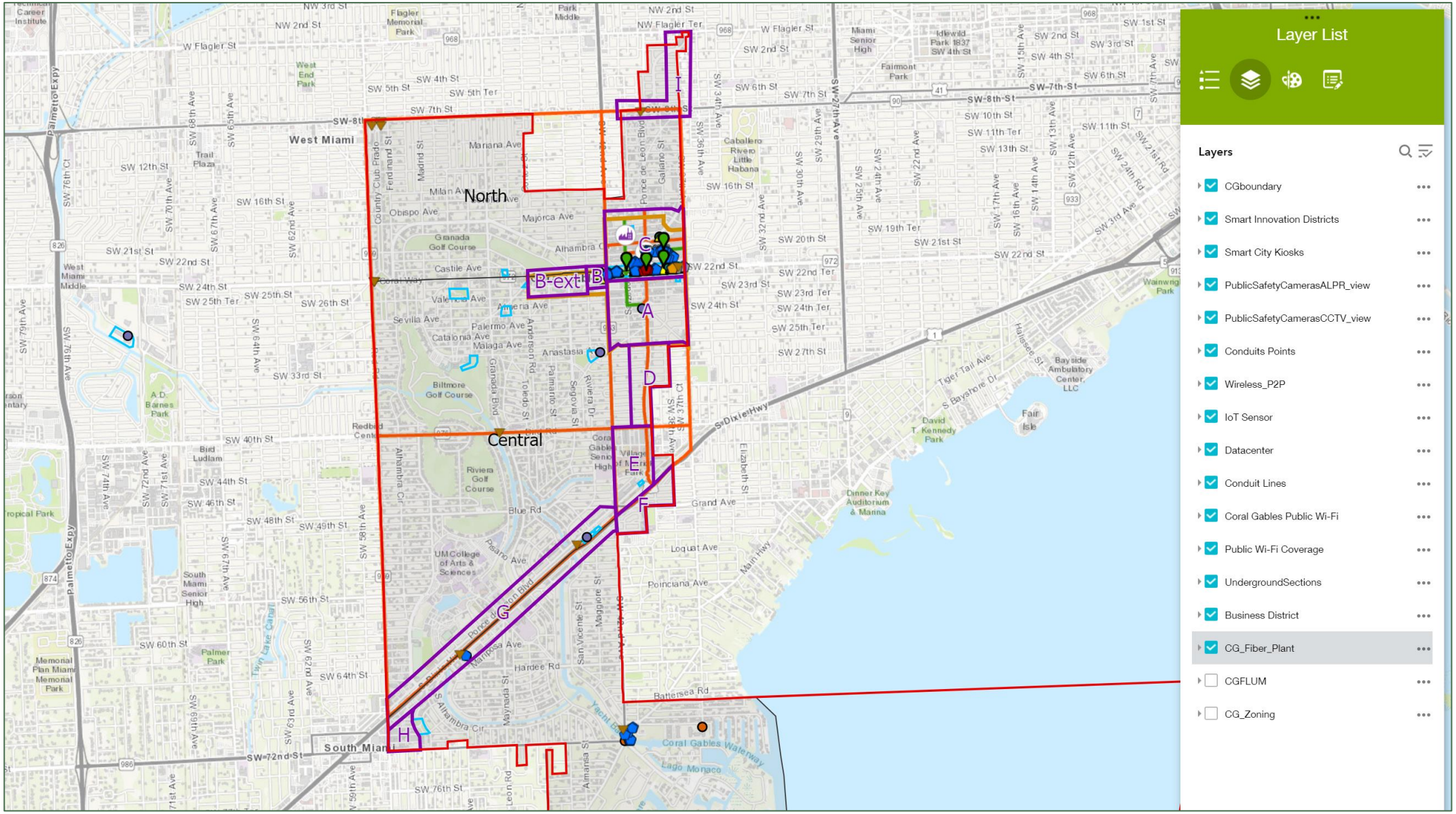






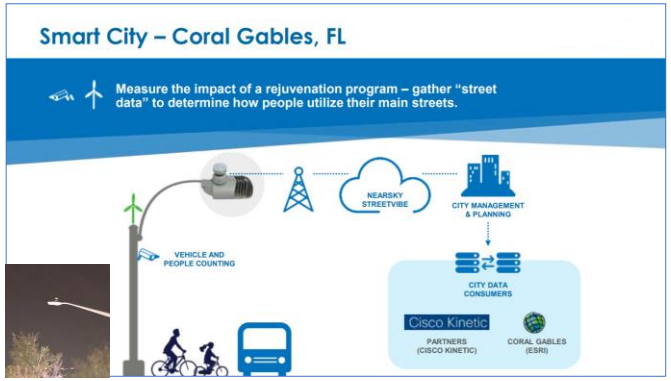
CITY OF CORAL GABLES

SMART DISTRICTS, INNOVATION DISTRICTS - STRATEGIC PLANNING, ENGINEERING & DESIGN



City of Coral Gables - Smart City Cyber-Physical Systems – Value-driven IoT – Mobility Data, etc.

- CCTV cameras, ALPR, and public safety smart devices
- **Traffic sensors**: pedestrians, vehicles, bicycles, visitors, RF
- Environmental sensors (waterways, air quality, noise)
- **Smart Parking sensors** (counting available/busy spots)
- Smart Lighting controllers & IoT network / Smart Poles
- Smart City Digital Kiosks; Smart Building SHM sensors
- Telemetry sensors and actuators; **Fleet Management**, etc.
- IoT and Urban Analytics AI Platforms

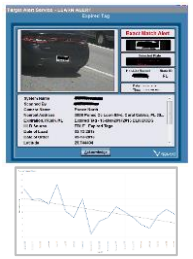


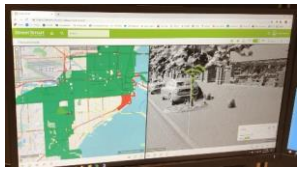
- IoT sensor data is strategic and becomes actionable information (traffic engineers, public safety officers, urban planners, city management, researchers, businesses, public in general)
- Open IoT data aggregated in the smart city hub and private IoT data is studied by researchers, marketing and city analysts and used by businesses, planners, public safety officials, traffic engineers, city officials and constituents that are part of the smart city ecosystem
- Constituents benefit from actionable sensor data with dashboards visualization and statistics by hour/day/week/month
- Used for urban planning and design, for traffic and civil engineering to design better and safer roads and infrastructure
- Used by businesses to design strategies (retail, service), grow sales, understand market and consumer needs.

Smart City Hub Public Platform:

www.CoralGablesSmart.City - www.CoralGables.com/SmartCity

City of Coral Gables - Smart City AI Use Cases – Smart Mobility, Traffic Safety, Automation, etc.

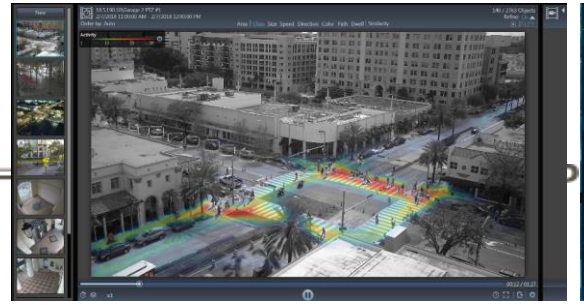


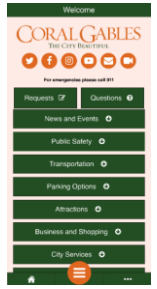


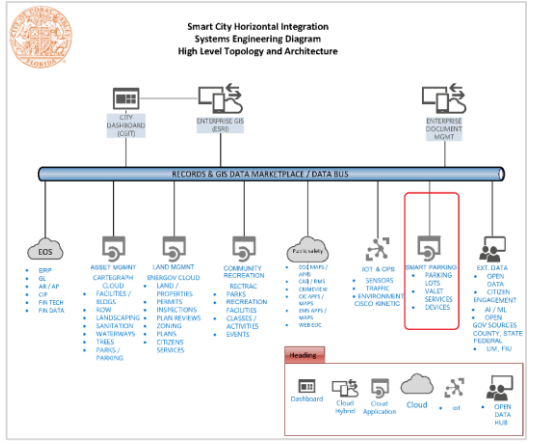
City of Coral Gables Artificial Intelligence Use Cases:

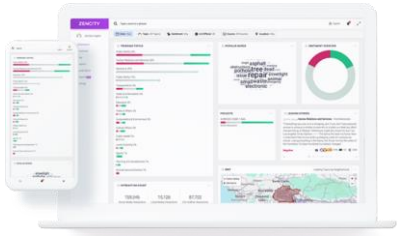
1. Computer vision, AI & ML for IOT/CPS applications.
2. Producing & sharing actionable AI analytics on the smart city hub public platform: www.coralgables.com/smartcity
3. Predictive crime analytics using machine learning algorithms. Traffic accidents and crime prevention/reduction.
4. Public sentiment analytics
5. LiDAR photonics Right of Way analytics.
6. Cybersecurity AI applications (behavior analytics, heuristics).
7. Situational awareness and traffic analytics at our Community Intelligence Center (use case: using AI our analysts found a missing child in the middle of a crowded event in Miracle Mile.)
8. Smart City Hub AI Virtual Assistant Chatbot pilot, Robotic Process Automation and other hyper-automation cases.
9. NIST Data Supercluster co-chair; open AI framework, platform

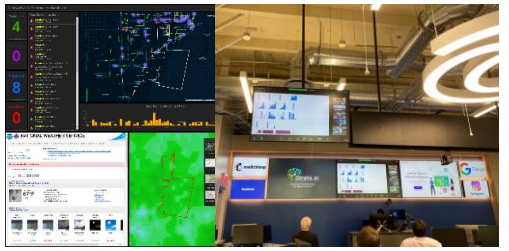
- End users: drivers and commuters, researchers, marketing and city analysts, businesses, planners, public safety officials, first responders, traffic engineers, city officials and all members of the smart city ecosystem.
- Constituents benefit from actionable data, predictive analytics and insight generated and processed by AI/ML-capable engines with dashboard visualization in the Smart City Hub public platform.
- High visibility, predictability and automation drive efficiencies and enhance operations and effectiveness.
- Used for situational awareness, urban planning, traffic & civil engineering to design safer roads and infrastructure.
- Used by businesses to design strategies (retail, service), grow sales, understand market and consumer needs.



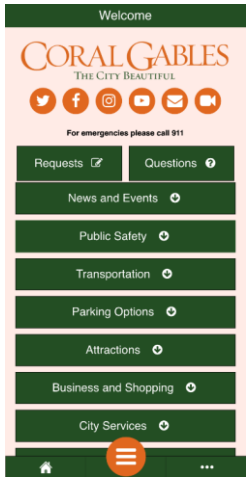


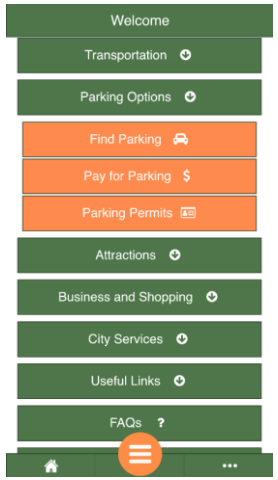


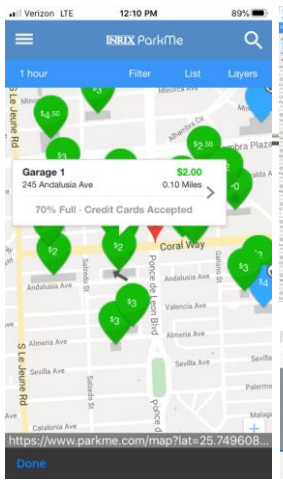


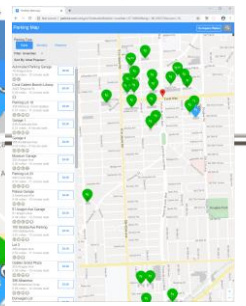


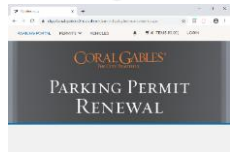
CITY OF CORAL GABLES - SMART PARKING AND SMART MOBILITY TECHNOLOGIES (1)

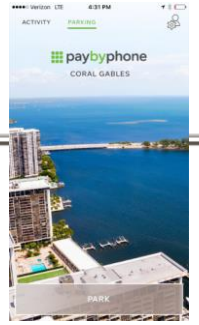


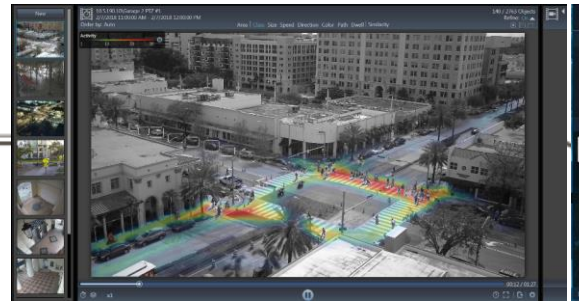


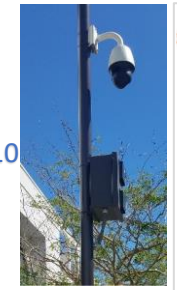


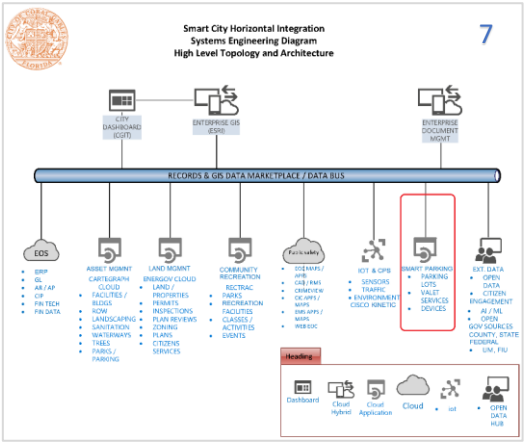












Smart Parking and Mobility Platforms, Portals and Apps:

1. Inrix/ParkMe smart parking mobile/web app, cloud platform: Finding parking (GIS, GPS), cost information/comparison, real-time occupancy
2. Pay by Phone parking payment app & cloud platform: Pay for parking
3. T2 Parking Permit portal: Renew, manage parking permits
4. GIS parking facility management data layers
5. Coral Gables Mobile App: aggregates all parking apps
6. Coral Gables Smart City Hub public platform: aggregates all parking apps and open data
7. Horizontal Integration of Smart Parking Systems and Data
8. WIP: Automated Gateless Parking Guidance Systems Cloud Data Platforms (next page)

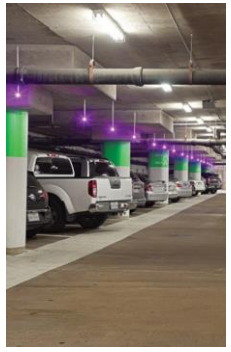
- **Smart Mobility:** Trolley app, Freebee app, AVL, connected vehicles, Transit platform, GTFS transit data integration, AV pilots, Waze CCP platform, Mobility Hubs projects, Micro-mobility data platforms…

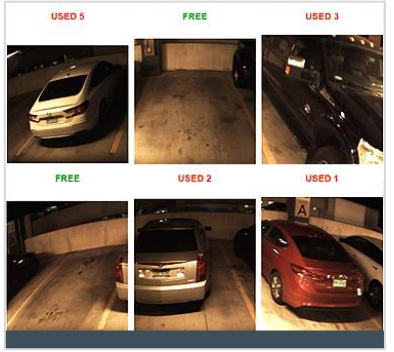
Smart Parking and Mobility IoT (Internet of Things) and Data Analytics:

9. Parking Sensors: Pilot in Downtown. City IoT Platform and dashboards.
10. Computer Vision and Artificial Intelligence: Pilot in Downtown, detecting and analyzing used/occupied street parking in Miracle Mile and other streets
11. Connected gate systems: Garage occupancy data API interface on the City's app
12. ALPR (Automated License Plate Readers): in Parking Garages and Parking enforcement vehicles
13. Connected parking devices: Parkeon and other devices
14. Community Intelligence Center (CIC): aggregates all video analytics for parking locations and sensors. Video management systems, ALPR systems, server analytics backend. CIC cmd room.
15. Automated Gateless Parking Guidance IoT Systems

SMART CITY HUB PUBLIC PLATFORM:
WWW.CORALGABLESSMART.CITY - WWW.CORALGABLES.COM/SMARTCITY

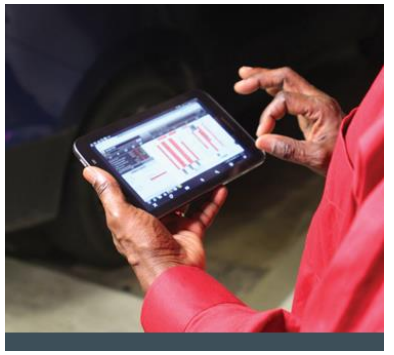
CITY OF CORAL GABLES - SMART PARKING AND SMART MOBILITY TECHNOLOGIES (2)





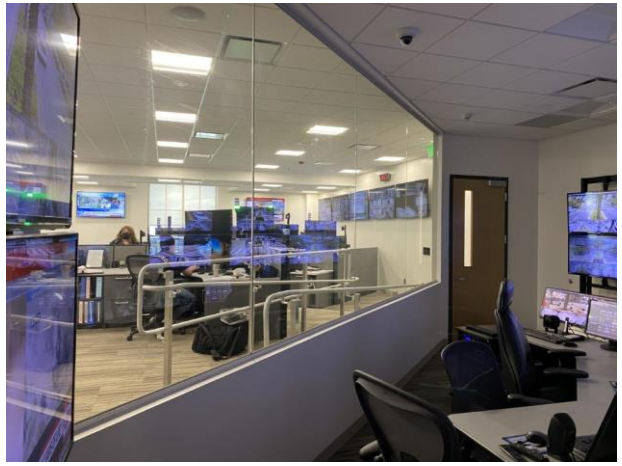
Automated Parking Guidance Systems
WIP in PG7, New PSB and other City buildings:

- Automated Gateless Parking Guidance Systems (planned for PG7, New PSB, and others)
- Real time, accurate Parking Space Counting
- Wayfinding signage; Color-coded guidance lighting; Parking signage
- User interfaces; Enhances Customer Parking Experience; Customers can park faster and safer
- Car finder/locator; Electronic parking kiosks
- Security Features; Camera-based multi-function sensor system
- Maximizes garage parking efficiency; Speeds up parking process.
- User Interface software, cloud data platform, mobile apps

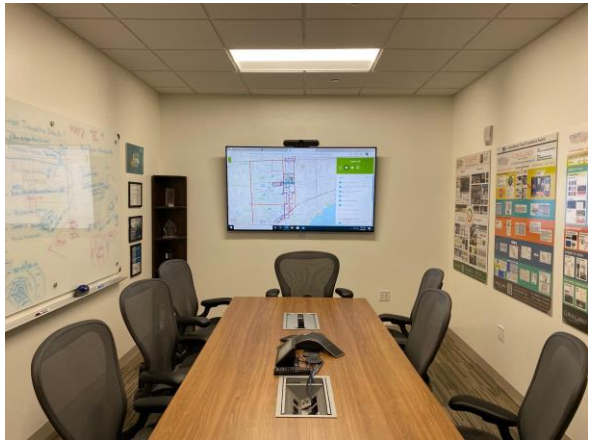


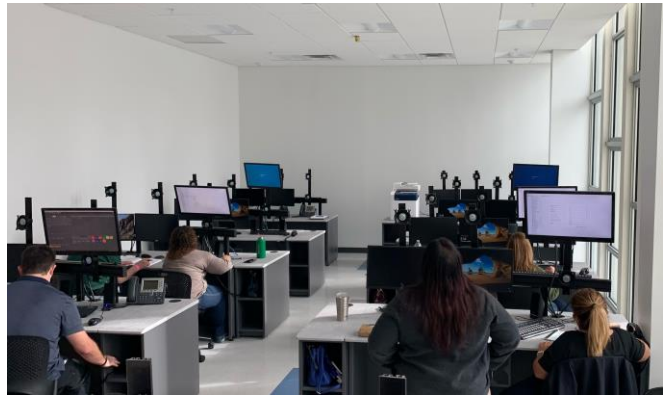
SMART CITY HUB PUBLIC PLATFORM:
WWW.CORALGABLESSMART.CITY
WWW.CORALGABLES.COM/SMARTCITY

CITY OF CORAL GABLES – SMART BUILDINGS - PUBLIC SAFETY HQ BUILDING – EOC – CIC – E911 COMCTR

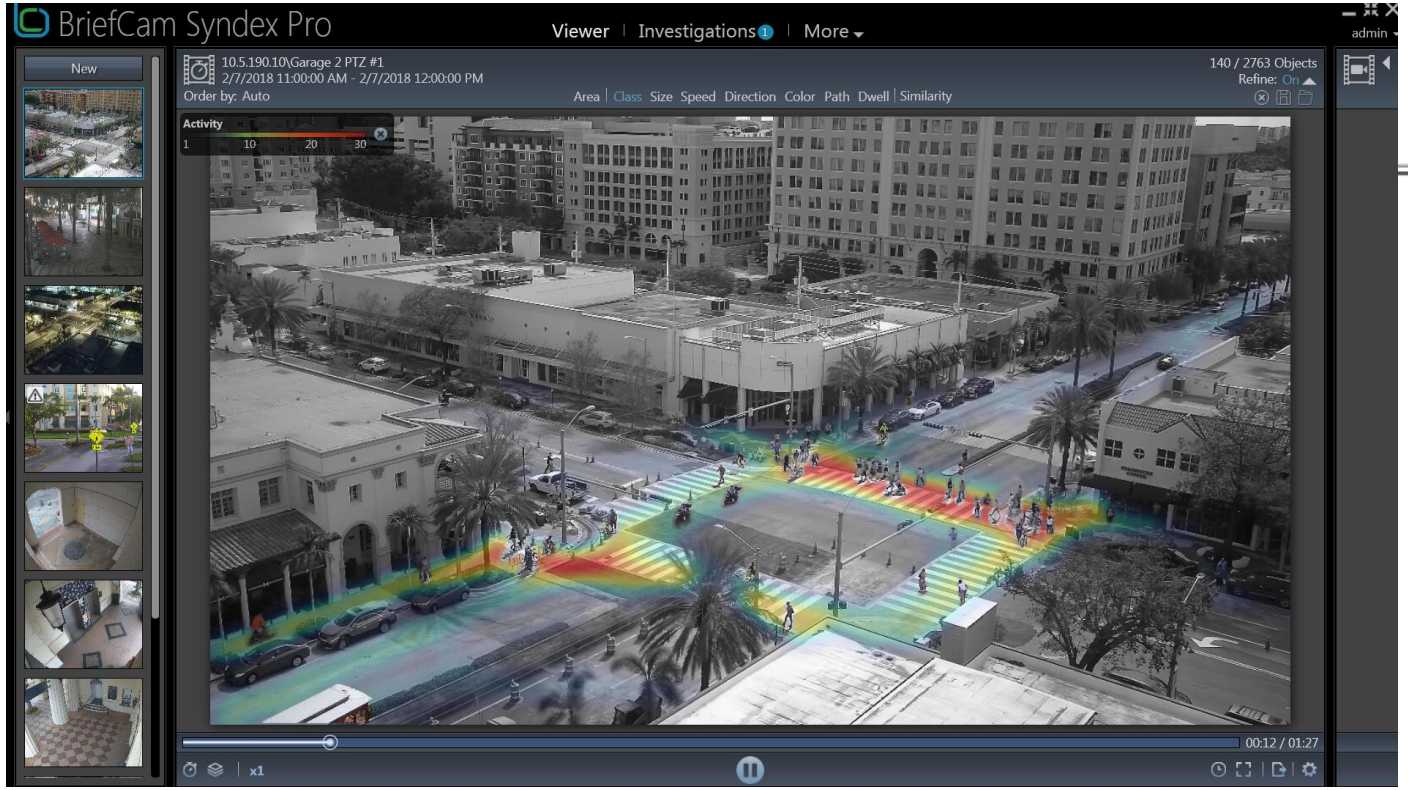


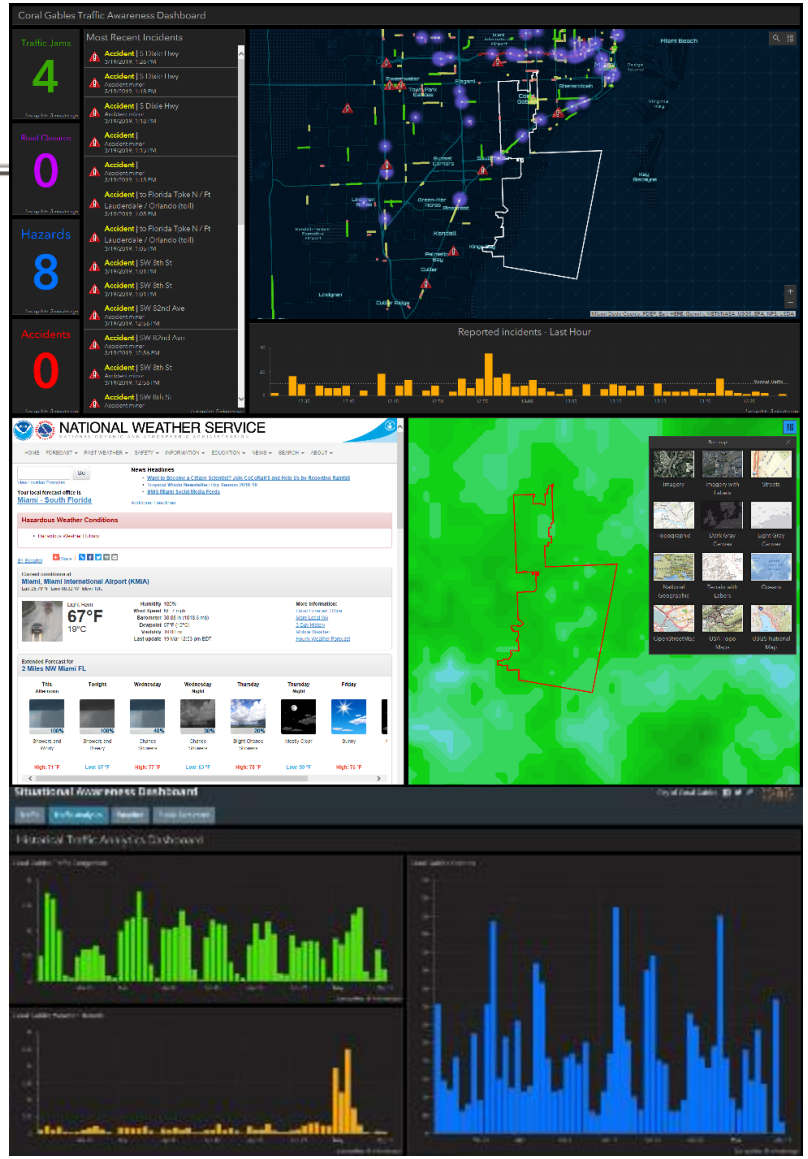
City of Coral Gables – Smart Buildings - PSHQ, FS2/Trolley Network HQ, 1ry Data Center, Backup 911 PSAP

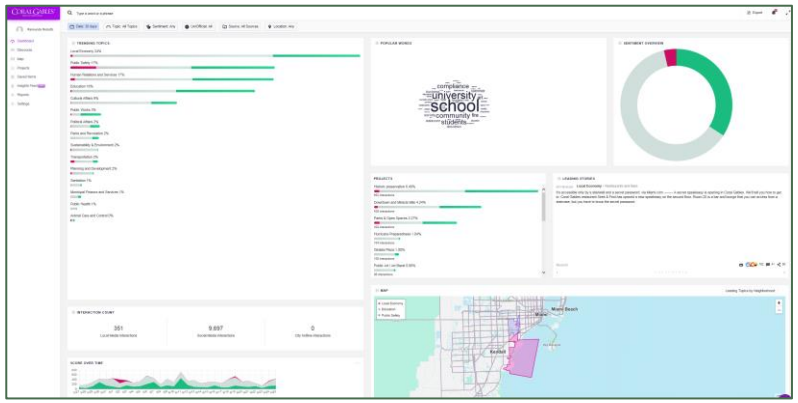


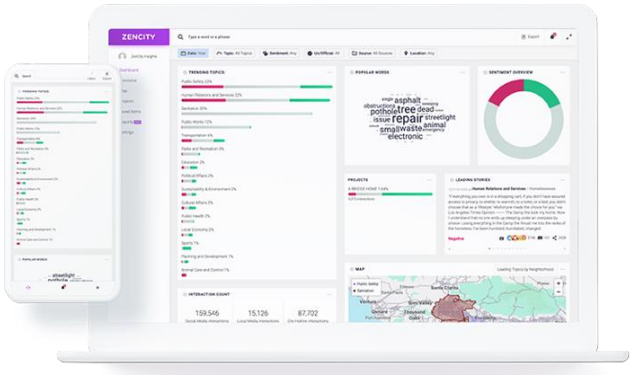


City of Coral Gables - Smart City Data Platforms Layer – Use Cases



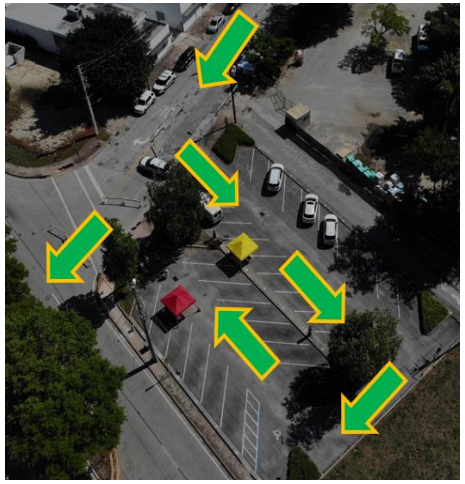


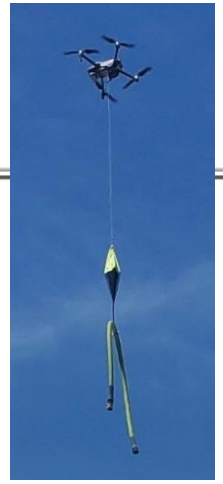
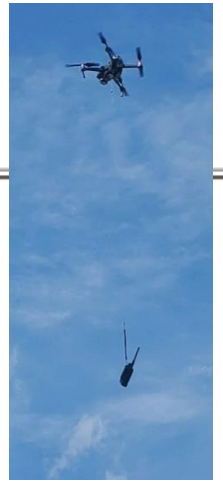
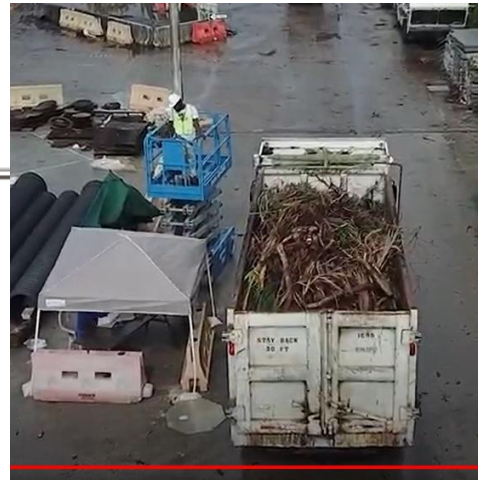




- Video Analytics – Computer Vision & AI for Traffic Engineering and Public Safety
- Situational Awareness Dashboard – Waze Connected Citizens Partnership (CCP)
- AI and Machine Learning for Citizen Engagement and Public Sentiment Analytics

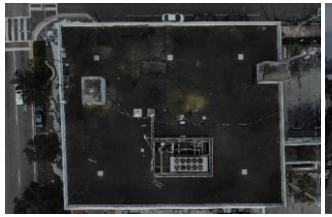
City of Coral Gables - Smart City Drones/UAS Use Cases – Drones Sensing Applications



City of Coral Gables Drones/UAS, Robotics, Autonomous Systems Use Cases:

- Drones/UAS use cases:
  - Hurricane rescue recon and damage assessment.
  - Combined use cases with IoT, AI/ML, autonomous routes, computer vision, crowd analysis, data analytics, real-time video feeds on Incident Command Post.
  - Drone delivery for rescue recon and other emergency management scenarios.
  - With live video broadcasting; with autonomous routes; with cellular or satellite communications. Traffic Management and Mobility Applications.
  - Outdoor Covid-19 testing sites monitoring.
  - Building rooftop water damage/accumulation assessment.
  - Public safety operations.
  - Fire accreditation, site operations/inspections.
  - Telecom tower/antennae inspections.
  - LiDAR GIS 3D modeling in collaboration with universities and GIS aerial photography.
  - Video analytics.
  - Communications / Public Affairs / CGTV drones with special cameras, dedicated for TV production for our PEG TV channel, YouTube, social media and webcasting channels.
- Autonomous Vehicles.
- Smart and connected mobility pilots.
- Public Safety and Public Works robotics technologies.

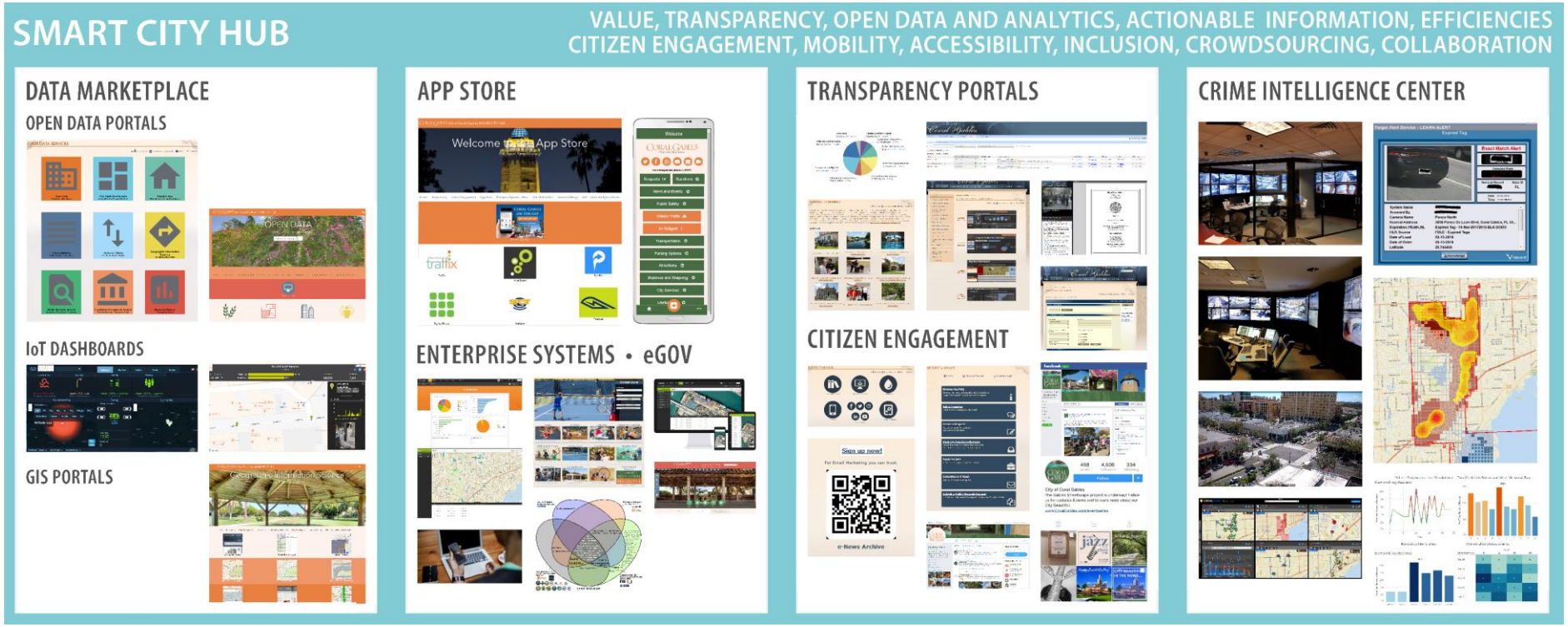


Smart City Hub Public Platform: www.CoralGables.com/SmartCity

CITY OF CORAL GABLES - INFORMATION TECHNOLOGY DEPARTMENT

SMART CITY HUB

OPEN DATA, TRANSPARENCY AND COLLABORATION. SMART TOOLS AND APPS FOR CITIZENS, BUSINESSES AND CUSTOMERS



SMART CITY HUB PUBLIC PLATFORM:

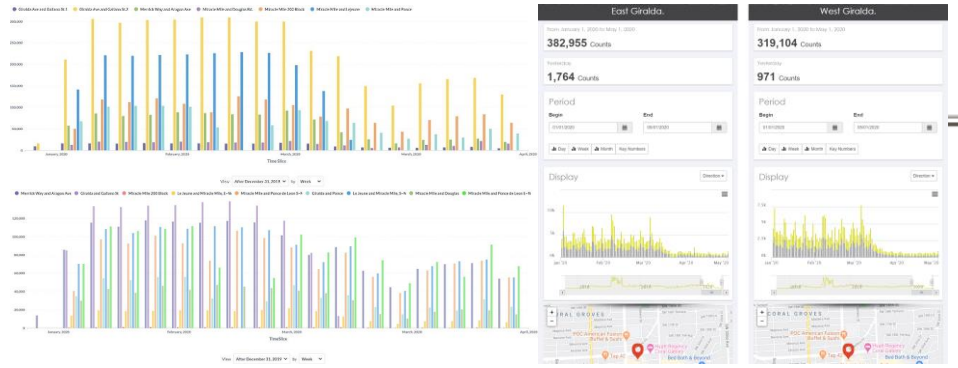
WWW.CORALGABLESSMART.CITY - WWW.CORALGABLES.COM/SMARTCITY

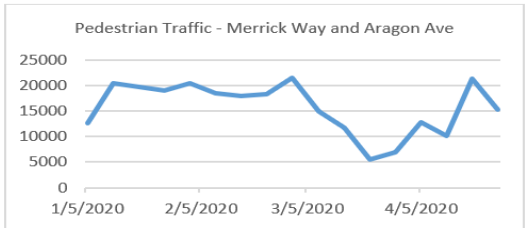
Benefits:

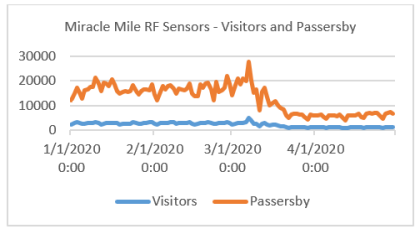
- Free open data from pedestrian and traffic sensors; provides statistics by hour/day/week/month; it can be used to design business strategies (retail, service, etc.)
- Digital services, mobile apps and applications for residents, businesses and their customers (transportation, parking, public safety, customer services connect…)
- Transparent government data that benefits all constituents (property tax, public records, business licenses, vendor services, open bids, demographics, dashboards, City agendas and legislati ve documents…)
- Tools that engage citizens and attract visitors and customers (social media, news, events, attractions, City virtual tours, parks and recreation digital services…)
- Open GIS mapping data that is useful for residents, developers, real estate agents, contractors and businesses in general
- Actionable information from business databases; among other features that foster economic growth and business innovation

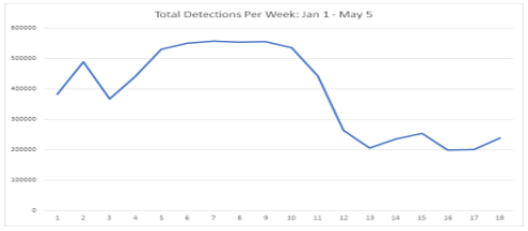
COVID-19 PANDEMIC: HIGH VISIBILITY – SITUATIONAL AWARENESS – ACTIONABLE INSIGHT

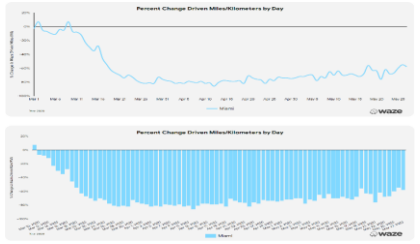
TRAFFIC CPS/IOT DATA



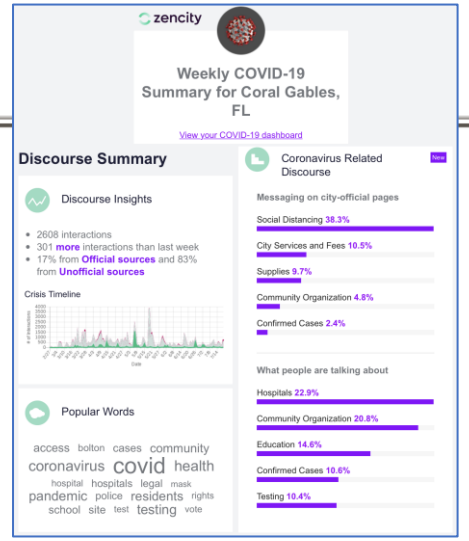


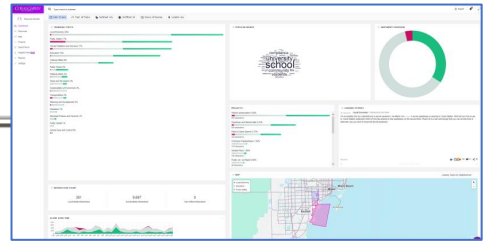


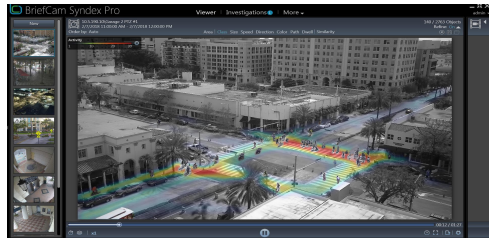


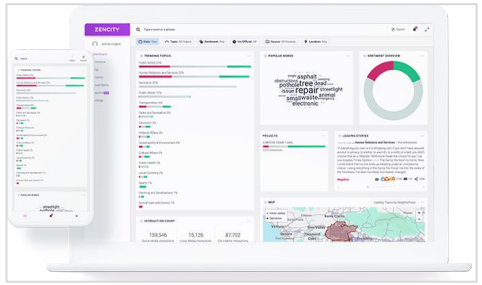


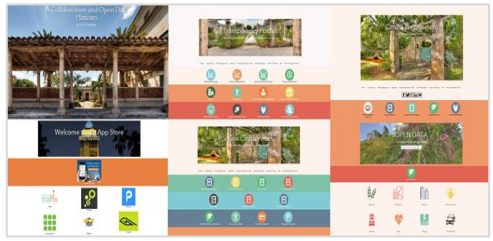
A.I., PUBLIC SENTIMENT ANALYTICS, SE DATA MODELS, DATA HUBS











High-Visibility from IoT/CPS Sensors for First Responders - Integrated into SOPs and Business Continuity Plans
Smart City Response to the COVID-19 Pandemic Crisis - Organic Resilience → Mission-Driven Alignment

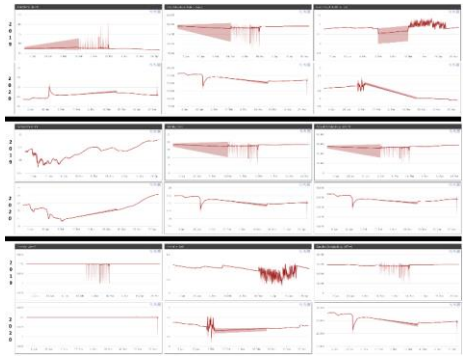
➢ **Strategic Planning, Preparedness**
- Incident Response, Emergency Management, Continuity of Operations
- Collaboration & Interoperability, Mobile Workforce, Risk Assessment
- Concurrent Crises Management

➢ **Engineering Framework**
- Scalable Capacity, Resilient, Secure Design, Industry Standards, Best Practices
- Business Composability, Hyperconnectivity
- **High Visibility, Data Insight**

➢ **Adaptability and Agility**
- Cybersecurity Awareness, Digital Literacy & Adoption, Continuous Improvement / Learning
- Adaptable COOP, Agile response & Solution delivery, Resourcefulness

ENERGY CPS/IOT DATA

ENVIRONMENTAL IOT DATA



Raimundo Rodulfo, P.E. – CIO / Director of Information Technology

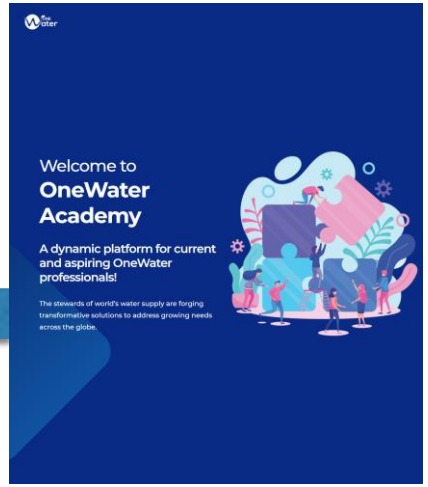
CORAL GABLES
THE CITY BEAUTIFUL

Cyber-physical Systems, Smart Lighting, IoT, AI, Data Science…
Coral Gables Smart City Case Studies - Papers and Publications

IEEE Internet of Things Magazine, June 2020 Edition
Smart Cities Case Study:
City of Coral Gables Leverages the Internet of Things to Improve Quality of Life
https://ieeexplore.ieee.org/document/9125438

ASPA PA Times Magazine, Fall 2020 Edition
Dealing with COVID-19:
How Coral Gables, FL is Using IoT and Data Analytics to Respond
https://patimes.org

NIST GCTC, Covid-19 Resource Kit
Smart Cities Case Study:
City of Coral Gables COVID-19 CPS/IoT Data Analysis
https://gctc.opencommons.org/images/a/a5/CGIT_COVID-19_IOTDataAnalysis.pdf



OneWater Academy, Covid-19 Resource Kit
Smart Cities Case Study:
Smart City Technology Strategies for Water Management
https://onewateracademy.org/onewaterblog/blogpost/5e9e3bfec7f2310017e68994

Other Published Papers (Walkability Data Studies, GIS, Smart City Planning, etc.):
https://www.coralgables.com/media/IT/CGIT_PublishedOriginalPapers.pdf

City of Coral Gables
Smart City Awards and Recognition

2018 Digital Cities Award, First Place
>75K Population Category

2020 Smart 50 Award Winner
Urban Infrastructure Category

Named to 8 Smart Cities to Watch in 2020
StateTech Magazine

2020 Open Cities Index Award
Winner, U.S. 1st Place

American Society for Quality
2019 International Team Excellence Award
Case Study Competition - 3rd Place

IEEE 2017 World Standard Day
Smart City Video Contest Prize

2019 Open Cities Index Award
Winner, U.S. 1st Place

Named to 10 Top-Performing ITEA Teams from
around the world, 2019, Quality Progress Magazine

Selected as one of 17 public agencies in the
inaugural STIR Labs program funded by NSF

National Institute of Science and Technology (NIST)
Global City Teams Challenge (GCTC)
Supercluster Co-Chair, Action Cluster Chair

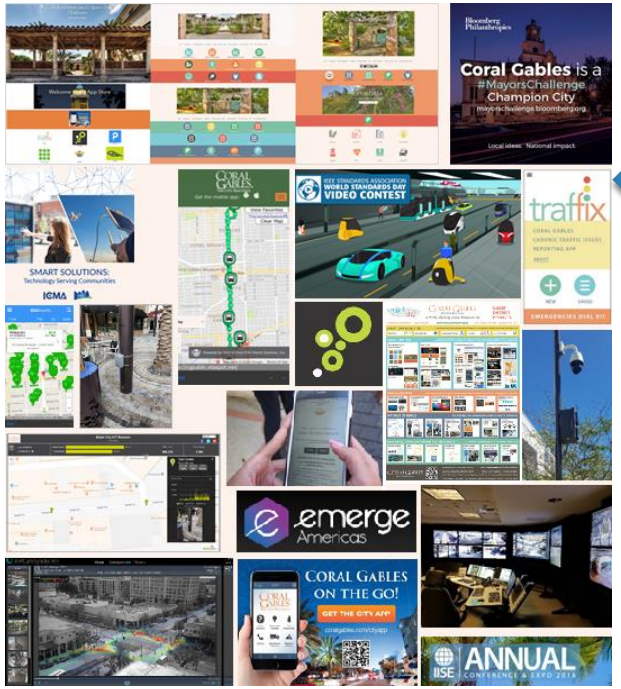
City of Coral Gables

Smart City Strategic Partnership, Research and Collaboration Model

Outreach, Co-Innovation, Co-Creation, Benchmarks, Standards and Best Practices

Performance Benchmark and Awards Organizations

Citizen Engagement, Outreach and Communication



Research & Development Co-Innovation

SHARE → LEARN → PARTNER → COLLABORATE → BUILD VALUE

Strategic Partnerships:

Industry, Academia, Government, Nonprofits

Improve Programs, Augment Capacity

Sustainability, Resilience, Workability, Livability

Raimundo Rodulfo, P.E., MSEM, PMP, CSSBB
Chief Innovation Officer / Director of Information Technology

May 2021