

CITY OF CORAL GABLES
 INFORMATION TECHNOLOGY DEPARTMENT
 SMART CITY ALIGNMENT, STRATEGIC PLANNING, ENGINEERING & DESIGN

CORAL GABLES
 THE CITY BEAUTIFUL
 A World Class City with a Hometown Feel

SMART CITY INITIATIVES
 No-Sign Process Improvement
 Data Science & Business Intelligence
 Public Safety Smart Initiatives
 Sustainability Master Plan
 Smart Apps & Enterprise Systems

DATA & BI
 EARS Applications Dashboard
 Analytics Dashboard

PUBLIC SAFETY
 Stolen Vehicle or Vehicle
 CRIMEVIEW Dashboard

SMART APPS & ENTERPRISE SYSTEMS
 CORAL GABLES ON THE GO!
 City of Coral Gables mobile and web applications

SUSTAINABILITY
 City of Coral Gables RECYCLING PROGRAM
 Step Into Solar!
 CITY OF CORAL GABLES PROHIBITION ON EXPANDED POLYSTYRENE
 City of Coral Gables PROHIBITION ON PLASTIC BAGS

STRATEGIC PLANNING • CUSTOMER SERVICE
 CONTROL
 DEFINE
 MEASURE
 ANALYZE
 IMPROVE
 INNOVATION • PROCESS IMPROVEMENT

Visit the City of Coral Gables Web Site:
www.coralgables.com
 Coral Gables City Hall • 405 Biltmore Way, Coral Gables, FL 33134 • 305-446-6800

smart city
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SMART DISTRICT PROJECTS

STRATEGIC PLANNING – INNOVATION CONTINUOUS IMPROVEMENT CUSTOMER SERVICE – QUALITY OF LIFE

SMART CITY ECOSYSTEM
 COLLABORATION, PARTNERSHIP, INTELLIGENCE / CUSTOMERS, STAKEHOLDERS AND TECHNOLOGY

PEOPLE BUSINESSES ORGANIZATIONS THINGS I.T. SYSTEMS

SMART CITY HUB
 VALUE, TRANSPARENCY, OPEN DATA AND ANALYTICS, ACTIONABLE INFORMATION, EFFICIENCIES
 CITIZEN ENGAGEMENT, MOBILITY, ACCESSIBILITY, INCLUSION, CROWDSOURCING, COLLABORATION

DATA MARKETPLACE
 OPEN DATA PORTALS
 IoT DASHBOARDS
 GIS PORTALS

APP STORE
 Welcome to App Store

TRANSPARENCY PORTALS
 CITIZEN ENGAGEMENT

CRIME INTELLIGENCE CENTER

ENTERPRISE SYSTEMS • eGOV

DATA PLATFORMS
 DATA AGGREGATION, INTEGRATION AND CORRELATION / BUSINESS INTELLIGENCE AND ANALYTICS BACKEND

PUBLIC & PRIVATE CLOUDS & DATACENTERS
 BIG DATA-AGGREGATION & ANALYTICS
 ARTIFICIAL INTELLIGENCE & MACHINE LEARNING
 VIDEO ANALYTICS
 OPEN DATA & APIS
 HORIZONTAL & VERTICAL INTEGRATION

INTERNET OF THINGS
 REAL-TIME URBAN AND ENVIRONMENTAL VISIBILITY / PHYSICAL INTERFACING

SMART LIGHTS TRAFFIC & PARKING SENSORS PUBLIC SAFETY SMART EQUIPMENT ENVIRONMENTAL SENSORS & ACTUATORS SMART DEVICES SMART KIOSKS & DIGITAL STORAGE ROBOTICS & SMART VEHICLES

HIGH SPEED COMMUNICATIONS AND RESILIENCE
 ROBUST, RESILIENT SMART CITY NETWORK FOUNDATION

RESILIENT NETWORK FIBER OPTICS WIRELESS BACKBONE METROPOLITAN ETHERNET PUBLIC & PRIVATE WI-FI NETWORKS SATELLITE & CELLULAR COMMUNICATIONS SMART ENERGY RESILIENCE

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Our smart city plan implements several interconnected and inter-operable elements that include:

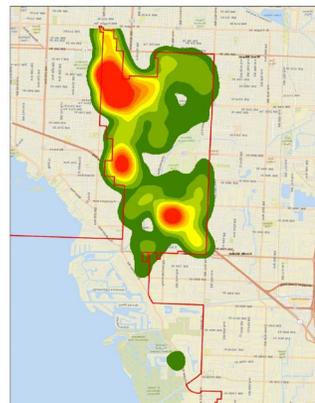
- A Smart City Hub
- Data Platforms
- Internet of Things
- Horizontal Integration
- A robust, secure, resilient technology infrastructure with high-speed communications.



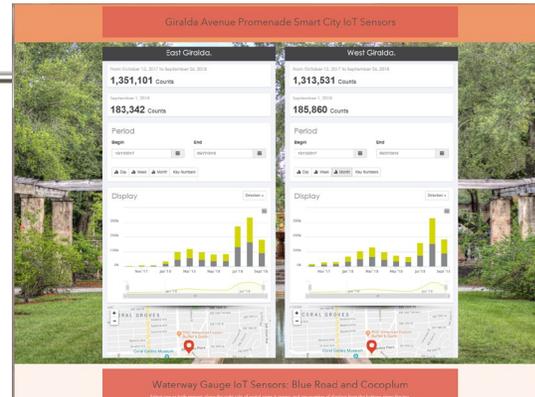
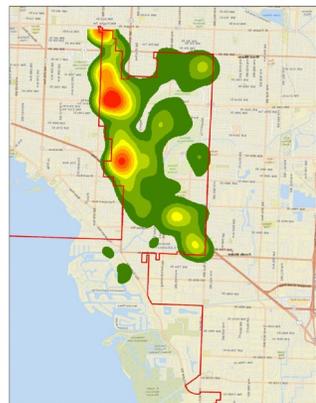
CITY OF CORAL GABLES - INFORMATION TECHNOLOGY DEPARTMENT SMART CITY HUB - BUSINESS INTELLIGENCE. DATA FOR CIVIC GOOD. PROBLEM SOLVING.



COMMUNITY INTELLIGENCE CENTER (CIC)



CRIME ANALYSIS



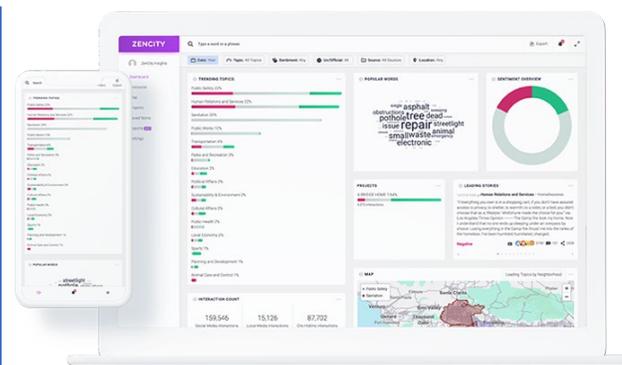
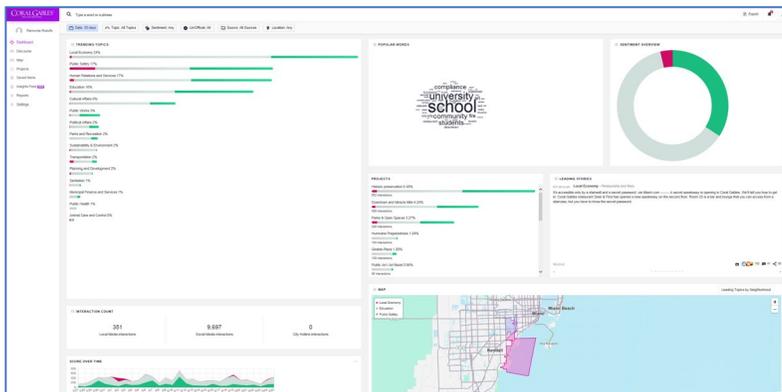
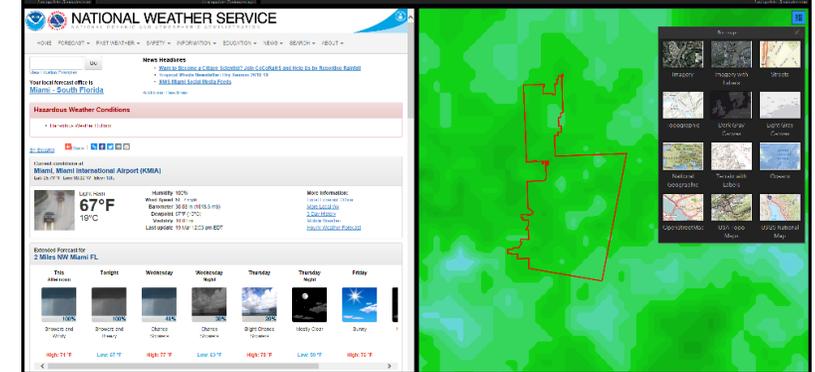
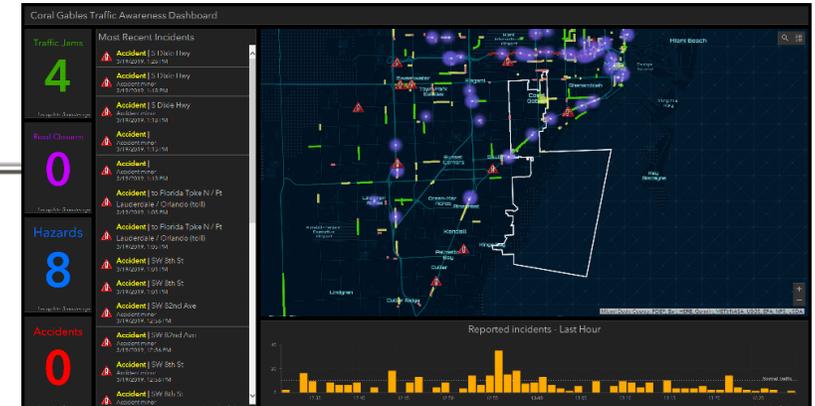
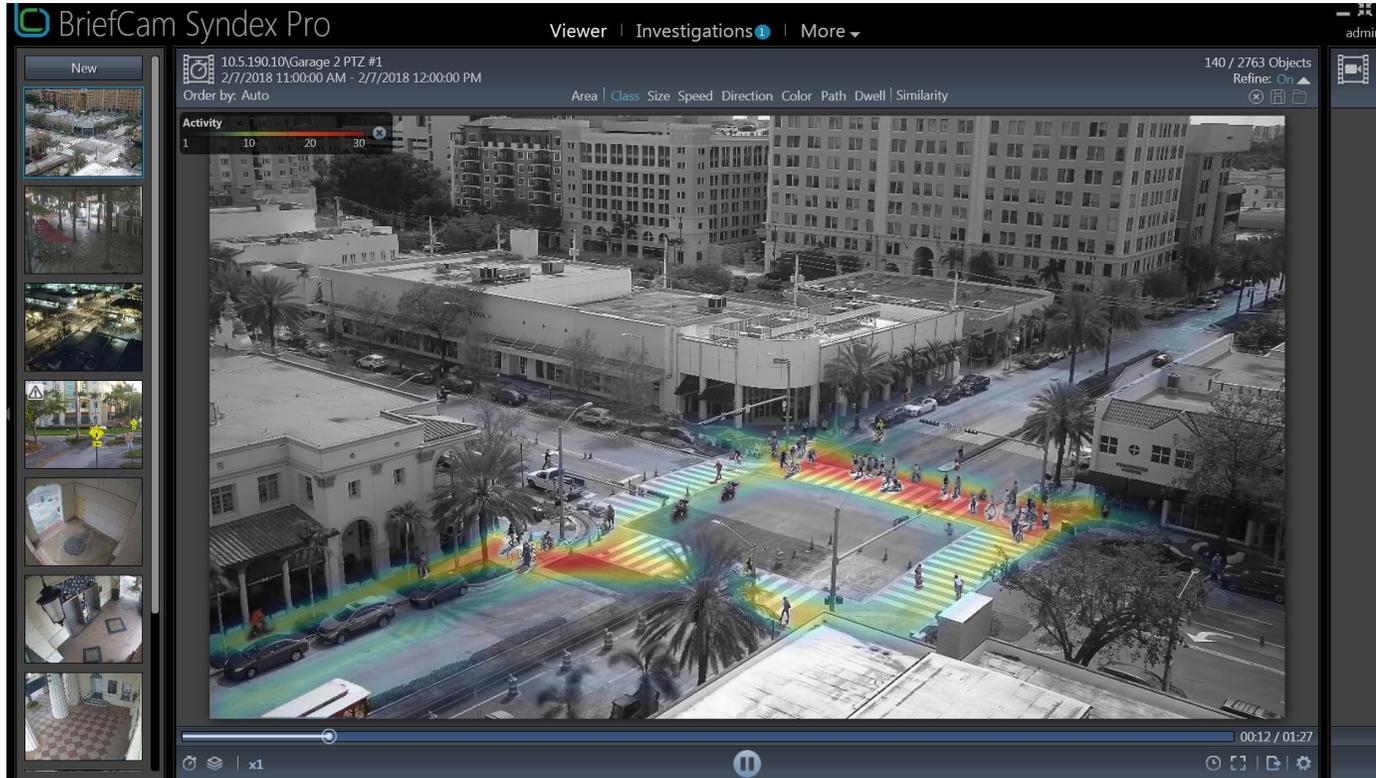
IOT REAL-TIME DASHBOARDS



CORAL GABLES SMART CITY HUB PUBLIC PLATFORM



CITY OF CORAL GABLES - SMART CITY DATA PLATFORMS LAYER



- 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



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BUSINESSES



ORGANIZATIONS



THINGS



I.T. SYSTEMS



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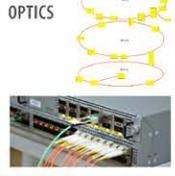
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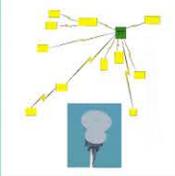
RESILIENT NETWORK



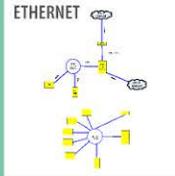
FIBER OPTICS



WIRELESS BACKBONE



METROPOLITAN ETHERNET



PUBLIC & PRIVATE WI-FI NETWORKS



SATELLITE & CELLULAR COMMUNICATIONS



SMART ENERGY RESILIENCE



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- Six-Sigma Process Improvement
- Data Science & Business Intelligence
- Public Safety Smart Initiatives
- Sustainability Master Plan
- Smart Apps & Enterprise Systems

DATA & BI



PUBLIC SAFETY



SMART APPS & ENTERPRISE SYSTEMS



SUSTAINABILITY



City of Coral Gables RECYCLING PROGRAM

Items that ARE Accepted:

- Plastic Bottles & Containers (#1 & #2)
- Flattened Cardboard & Paper
- Glass Bottles & Containers
- Cans (Aluminum, Steel & Tin)

Items that are NOT Accepted:

- Plastic Bags
- Expanded Polystyrene (Styrofoam #6)



CITY OF CORAL GABLES PROHIBITION ON EXPANDED POLYSTYRENE



City of Coral Gables PROHIBITION ON PLASTIC BAGS





LONGBOAT KEY SMART CITY APPROACH

TOM HARMER, TOWN MANAGER
LONGBOAT KEY FLORIDA

FLORIDA LEAGUE OF CITIES
AUGUST 16, 2019





Longboat Key Snapshot

Over 10 miles long

7,000 year round residents

Over 21,000 during season

\$1M Median Home Value

\$6B in Taxable Value

\$100K+ Average Income

Average Age 71+



IN THE BEGINNING...

- 2015, FPL plans to harden current above ground electrical infrastructure
 - Bigger, Uglier Concrete Poles
- Considering Undergrounding- would be more expensive after FPL Upgrade
 - Need to act
- Concern about resiliency
 - Safety, Reliability, Aesthetics
- Wireless/Cell Task Force
 - Concern about consistent and reliable cell coverage



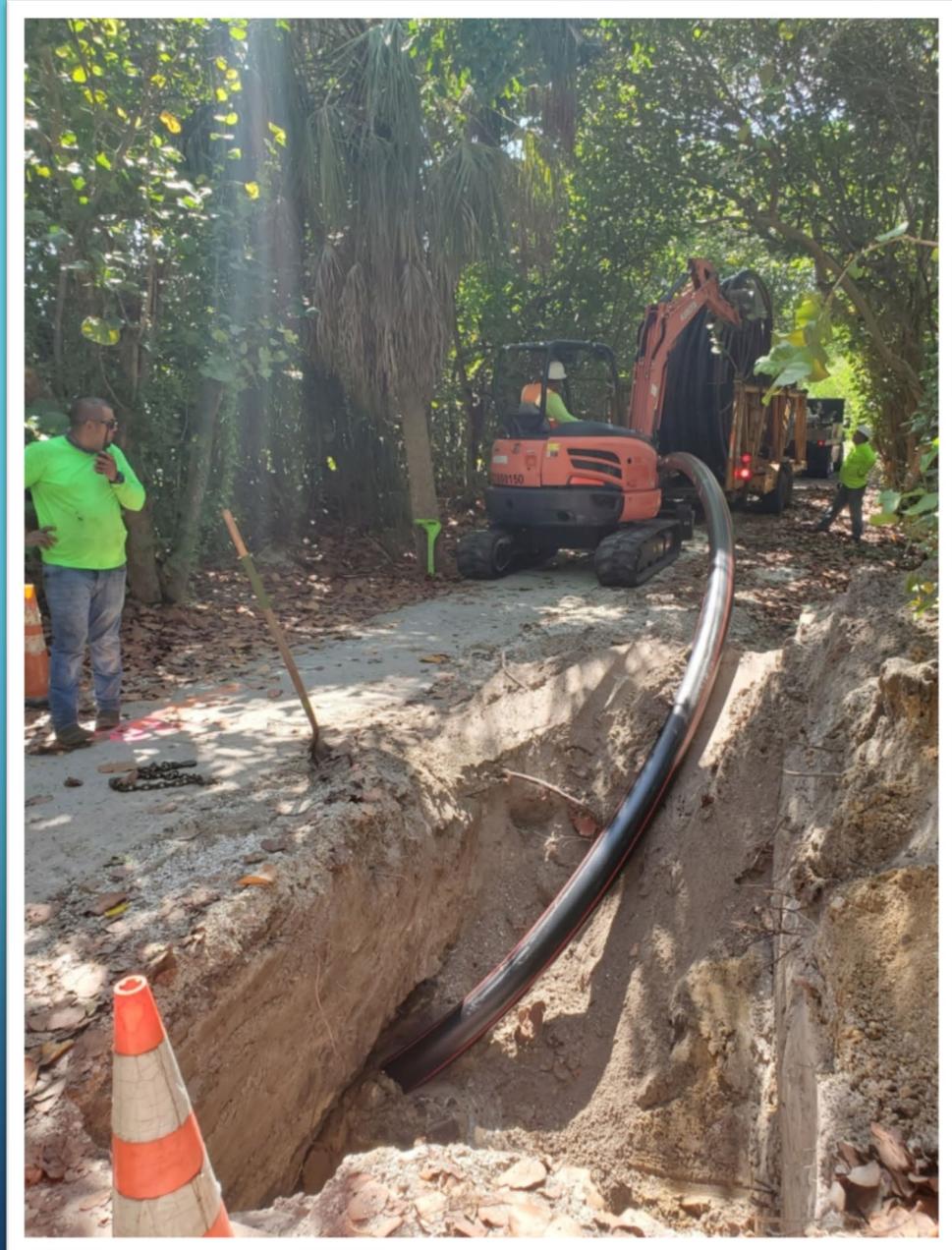
GOALS....

- All existing utilities buried underground
- Fiber Backbone Installed
- Updated policy on aesthetics related to small cell
- New street lights capable of accommodating smart and small cell technology
- Partner to leverage Town fiber and street lights for enhanced services to residents, visitors, and Town facilities



HISTORY/STATUS....

- **2015- 2017**
 - Initial Planning
 - Cost Estimates
 - Voter approval of assessments
- **2018**
 - Credit rating (S&P)
 - Bond Validation and Borrow Complete
- **2019**
 - Hired underground contractor (Wilco)
 - Construction has started- electrical and undergrounding existing cable
 - Phased 1200 day project (3 ¼ years)
 - Solicited partner(s) to leverage our fiber backbone
 - Negotiated LOI and MOU
 - Final P3 Agreement pending



ROLE OF PARTNERS....

Town

- Fund Electrical and Cable Undergrounding as well as a Fiber Backbone.

Partner(s)

- Leverage the Town backbone to improve services on the island
 - Wireless/Cell/SMART is designed to be an open enterprise and represent the town to the big cell providers, offer new services, maintain system, and monetize data
 - FTTH is designed to extend fiber to the home to compete with existing cable providers (triple play+)
- Design, operate, and maintain system, provide revenue sharing to offset investment and participate in success of partnership

FUNDING STRATEGIES....

- Overall public portion of project \$49M
- Public Project Funded through Special Assessments
 - First – along Gulf of Mexico Drive
 - Second- rest of island (neighborhoods)
- Private Partnership
 - Town contribute its “fiber backbone” funding towards partnership
 - Town pay for the costs associated with required streetlights
 - Street lights upgraded to accommodate small cell/smart technology
 - Partner to provide a revenue share back to the Town based on investment and success of partnership



Lessons Learned

You will hit things.....

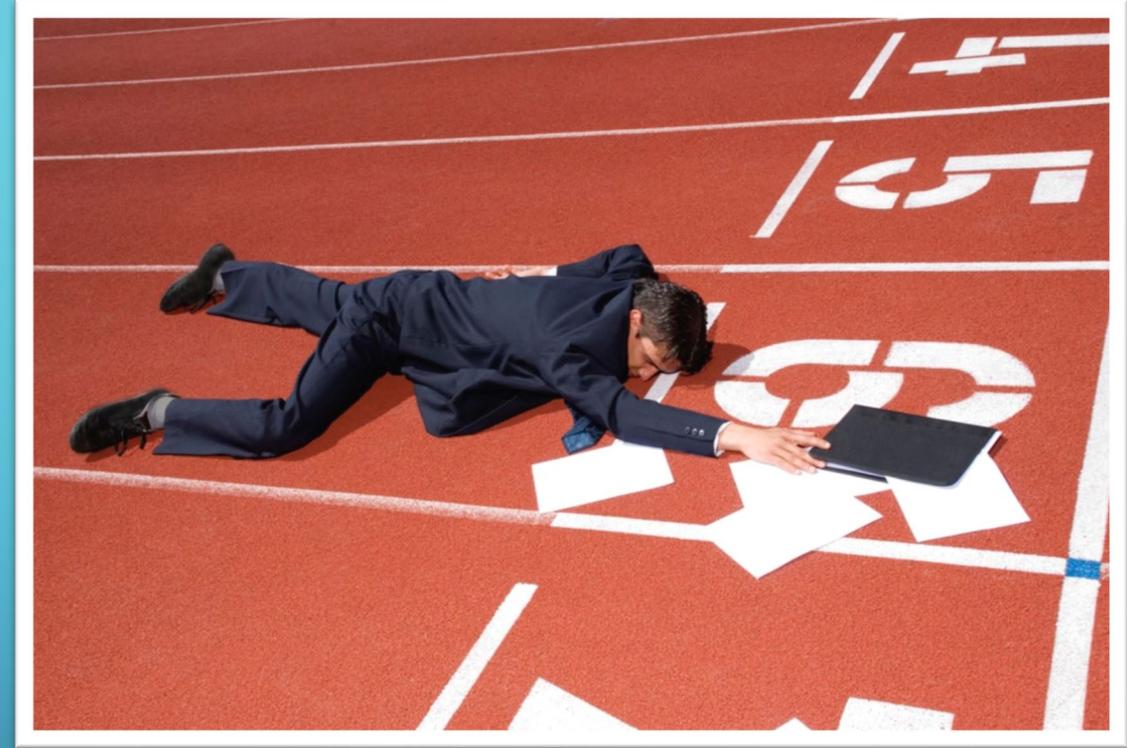


LESSONS LEARNED SO FAR.....

- Plan fiber/P3 much earlier
- You will negotiate with cable companies over “betterment”
- FDOT Lighting requirements will decide # of poles on State Roads
- Light poles versus smart poles (where and who pays)
- Bonding restrictions (tax exempt versus taxable) – private benefit
- 1200 days is too long to market for private sector
- P3’s can be complicated- 3rd party help and patience
- Areas already underground- fiber component still needed
- Pole Aesthetics (and Pole Height) are important to the residents
- Have a Plan B, C, D....

NEXT STEPS....

- Finalize full fiber design
- Finalize P3 Agreements, including revenue share model
- Keep Plan B, C, D... in mind
- Finalize street light pole selection
- Update local ordinance on small cell aesthetics
- Initiate fiber construction



Town of Longboat Key
www.longboatkey.org

UNDERGROUNDING PROJECT ENHANCED TECHNOLOGY

FIBER AND STREET LIGHT COMPONENTS

The Town, by authority of the voters passing Referenda for Gulf of Mexico Drive and Neighborhood Undergrounding Projects, plans to install a fiber-optic backbone as part of the Undergrounding Project. This will enable the Town to leverage this type of technological infrastructure. The Town is negotiating public-private partnership (P3) agreements that can provide next-generation wireless and Fiber-To-The-Premise (FTTP) services to the residents, businesses, and community anchors located across the island. The Town expects that the partners could provide solutions that bring delivery of advanced Internet and other IP based products and services, including enhanced cell phone and wireless services.

TOWN FACTS AND DESCRIPTION

The Town of Longboat Key incorporated area is 16.0 square miles, with 11.9 square miles being water. According to the 2010 Census, 6,888 people call Longboat Key home and during the peak winter/tourist season, the Town population increases to approximately 22,000. Data shows that 67% of individuals in Longboat Key are over the age of 65 with an increasing influx of residents achieving retirement status. Statistics also illuminate an educated and generally wealthy population, with 57% of residents having a bachelor's degree or higher.

There are 8,814 housing units, 70% of which are in multi-unit structures. The median value of owner occupied housing units is \$605,600. Many of the remaining single family homes are upwards of 45 years old; however, in recent years numerous of these homes have been purchased, demolished, and new, ornate homes with values in the millions have been built in their place. The economy is generally made up of industries focused on serving the influx of seasonal residents/visitors and catering to those who own a 2nd, 3rd, or beyond homes.

By planning strategically and installing fiber networks and related smart street lighting and smart poles with 4G wireless and future 5G capabilities, the Town strives to future proof its economic community, ensuring that residents and visitors have access to the most recent fiber based internet and wireless communication technologies.

Residential and Business Internet overview

- Longboat Key is the 75th most connected town in Florida ahead of Palmetto, Bradenton, Ellenton, and Bradenton Beach.
- Florida is the 10th most connected state in the U.S.
- 7% of Town residents are still severely limited in fiber based broadband choices.
- In Sarasota County, approximately 14,000 people do not have access to higher speed wired broadband.

The development of a fiber network with wireless, smart street lighting, smart pole systems and FTTP will provide significant benefits for the Town by:

- Advancing the Town's economic sustainability goals;
- Additional potential to reducing Town energy consumption and operational costs;
- Improving public safety;
- Enhancing public goods and services through the use of technology;
- Greatly improve cellular/mobile/wireless coverage throughout the community.

For additional information please visit our website at www.lbkutilityundergrounding.com
or email us at underground@longboatkey.org

FIBER and SMART POLE STREET LIGHT PROJECT OVERVIEW AND GOALS

- Deploy the infrastructure (conduit, fiber cable, equipment, headend, upstream services) needed to support the delivery of next-generation broadband, cell phone and wireless technology services;
- Support the quality of life and economic needs of residents through a platform of high-speed Internet service and other advanced cell phone, wireless Internet of Things (IoT) technologies and IP services;
- Ensure FTTP accessibility and enhanced wireless services to 100% coverage of the community over time, including residents, businesses, and community facilities; the Town is open to exploring wireless last-mile options that feed off the new fiber/conduit feeder/distribution network;
- Establish Longboat Key as of one the most connected Gigabit communities in the West Coast of Florida with services and an innovation platform that match;
- Establish innovative, long-term partnerships with qualified Service Provider(s); that are:
 - Willing to partner with the Town, to discuss, agree upon, and develop and provide best in class products and services to the residents, businesses, and community anchors located on Longboat Key.
 - Willing to consider approaches where capital is contributed to the partnership.
 - Enables the Town to generate a positive revenue stream from its conduit, backbone network assets, fiber, and street lighting/pole assets.
 - Provides a turnkey managed solution whereby the partner is responsible for all operations and maintenance of systems deployed.
 - Enables the Town to make use of these vertical assets to deploy various community facing technologies.

Town residents value the convenience and benefits realized through the use of technology, and foresee its ability to affect positive change through greater island security, aging in place initiatives and providing for increased property values throughout the community.

SMART AND STREET LIGHT POLE EXAMPLES



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WPB Mobility Intelligence

Fostering New Opportunities for Businesses and Residents

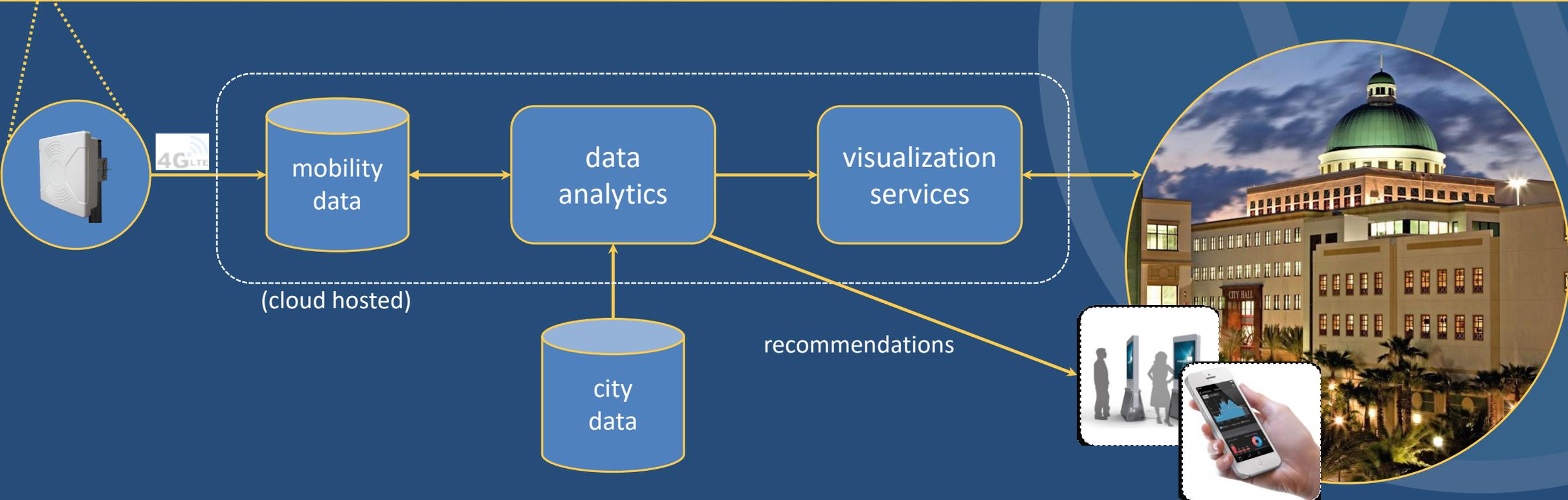
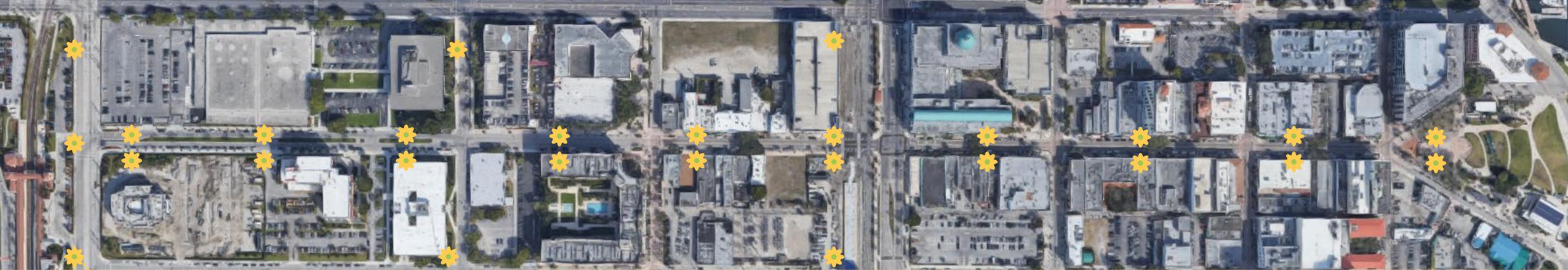


WEST PALM BEACH

The project involves smart city technology, but **residents and businesses are at the center of the design**

- Collection of individualized mobility patterns and impacts, **supporting access optimization for all residents**
- Collection and forecasting of site traffic, **supporting business development, service management, and city planning**
- Individualized recommendations, **connecting residents to city destinations and services most likely to be of value**

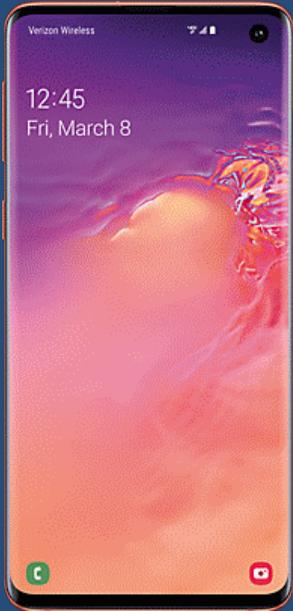
Technical





Bluetooth and WiFi devices emit numeric codes that identify **individual devices**

These codes are transmitted periodically, even when disconnected



Passive code collection provides a way to **anonymously localize** devices

Network-based collection provides a way to estimate **anonymous pathways**

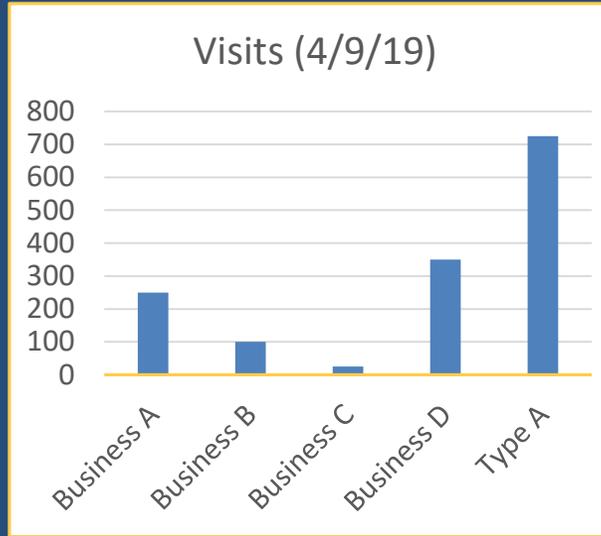
User-facing services will span three main categories

Pathway Visualization



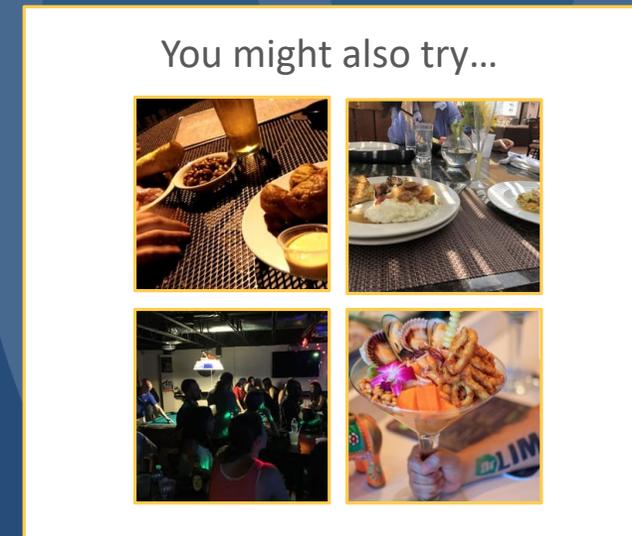
High-fidelity mobility visualization, disaggregated by transportation mode

Streetscape Analytics



Streetscape analytics, leveraging existing city data (e.g., GIS, tax revenue)

Recommendations



Differentiated flow forecasts and hyper-local visit recommendations

The project plan is focused on providing value for **policy-makers, city managers, residents, and businesses**, delivering

- A powerful visualization tool for quantifying the **impact of city initiatives** (e.g., curbless streets, canopy cover, road closures)
- A hyper-local recommendation system for **enhancing resident access** to the city's businesses and services
- A powerful streetscape analytics tool for **assessing business opportunity**, capturing volume, patterns, and trends
 - **A potential revenue generator for the city**

Keys To Smart City Technology

- Robust Fiber Network
 - 5g is not possible without a robust fiber network
 - IOT is driving increased demand for faster internet connections
 - Cities must play a role in creating this infrastructure or risk being left behind

