Public Works Department

Extending Services using ArcGIS Online

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St. Johns County, Florida
Over 100 Cityworks & ArcGIS Users

**Assets Maintained:**

- Culvert Network & Cross Drains
- Stormwater Related Features
- Traffic Sign & Signal Network
- Pavement Management Conditions
- Road Related Features
- Transfer Station & Landfill Post Closure
- Fleet

Engineering & Traffic | Fleet Services | Road & Bridge | Solid Waste
<table>
<thead>
<tr>
<th>Year</th>
<th>Event Description</th>
</tr>
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<tbody>
<tr>
<td>2005</td>
<td>Conceptual Geodatabase Design</td>
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<td></td>
<td>CMMS Implementation</td>
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<td>Asset Inventory</td>
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<td>2006</td>
<td>“Go Live” with Cityworks</td>
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<td>2007</td>
<td>Performance Based Budgeting Tool</td>
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<td>Key Performance Indicators Reports</td>
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<td>2008</td>
<td>Streamline Data Maintenance</td>
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<td>Document Management System</td>
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<td>Scanned &amp; Digital As-Builts Entry</td>
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<td>2009</td>
<td>ArcGIS Server Implementation</td>
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<td>2010</td>
<td>Esri Special Achievement Award</td>
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<td>2011</td>
<td>Mobile Technology</td>
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<td>Transition from Desktop to Web Apps</td>
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<tr>
<td>2012</td>
<td>ArcGIS Online Integration</td>
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<td>Digital Data Demands</td>
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<td>2013</td>
<td>New Public Works Director Transition</td>
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<td>PW Information System “Big Vision”</td>
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<td>2014</td>
<td>Cityworks Exemplary User Award</td>
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<td>AVL Implementation</td>
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Organization Structure

County Information Systems

GIS Division

Public Works Department
Organization Structure

GIS DIVISION

Internet

County Information Systems

PUBLIC WORKS

ArcGIS Online

FIREWALL

DMZ

VPN
Challenges: Funding Key Programs

1. Transportation
2. Stormwater
3. Pavement Management

Sustainable Service in a Cost Effective Manner
Current Funding Sources

- Transportation Trust Fund (TTF):
  - Ad Valorem Taxes (0.53 mils)
  - Gas Taxes
- Impact Fees
- Portion of Gas Tax and Impact Fees dedicated to long term debt
- Remainder of Impact Fees utilized for road capacity projects
- FY 2014, total revenues $23 mil
Current Expenses

- FY 2014 BCC approved budget is approx. $32 million
- Current sustainable funding sources (ad valorem tax & impact fees) can only fund approx. $23 million
- Remainder is funded by TTF Reserves
Current Operations

- Revenues down 40% over past 5 years
- Maintenance & Infrastructure needs increasing
- Regulatory requirements increasing
- Expenses exceeding current revenue sources
- Reserves supplementing current budget / estimated to be below min. fund balance by FY17
- Increase revenue sources
- Reduce expenses
Road Capacity
- Future Roadways
- Primarily Funded by Impact Fees

Estimated $82.2mil Unfunded Road Capacity Project Cost between 1-5 years
Engineering: Capital Improvement Project

- Using existing GIS Division’s ArcGIS Viewer for Flex
  - In house Basemaps & Tools
  - Configurable web client application
  - Leveraging existing framework and dataset

- Using Subscription base ArcGIS Online
  - Imported via ArcGIS Desktop ArcGIS Online Login
  - Available for other web applications
  - Portable use for mobile and tablets
Using Esri’s ArcGIS mobile app
- Extends enterprise GIS
- Provide mobile navigation and inform citizens
- Branding application for specific business needs.

Using Esri Maps for Office add-in for MS Office
- Import weekly traffic interruption list to MS Excel
- ArcGIS Online interaction to Update Shared Layer
Sign Inventory: Automated Data Collection

☑ Deployable application through ArcGIS Online and ArcGIS Server
  - Integration with Cityworks Web Server
  - No lag or backlog for new assets
  - Lower maintenance cost with thin web client

☑ Increase County Growth & Added Infrastructures
  - 15% increased in maintained roadways the last 10 yrs
  - Over 18,000 sign post
  - Over 34,000 sign plates
County Water Bodies
- Two-thirds of water bodies are “impaired”
- Manage efforts to reduce pollutant loading

Stormwater discharges are a significant contributor of pollutants to water bodies.
NPDES: Storm Water Management Program

- Reproducible map of “Urbanized Area”
  - Location of know outfalls
  - Inventory of County owned and maintained
  - Inspect, Document, & Report

- Implementation of maintenance schedule of the County’s MS4
  - Proactive scheduling of maintenance using Cityworks
  - Flood control and drainage improvement projects
  - Street Sweeping & Litter Control
As-Built Survey: Paving & Drainage Data

- Published a hosted feature service from ArcGIS for Desktop
  - Delivers geographic location of As-Built files
  - Enabled Attachment on a geodatabase feature class
  - Downloadable digital files

- Increase Demands for Digital Data
  - Land Development Code change requiring digital application submittal
  - Document Management of scanned As-Builts

- Published a hosted feature service from ArcGIS for Desktop
  - Delivers geographic location of As-Built files
  - Enabled Attachment on a geodatabase feature class
  - Downloadable digital files

As-Built Survey: Paving & Drainage Data
Customer Care: Service Request Calls

- Increase of Public Inquiries
  - Inquiry of specific constructions and scheduled maintenance
  - Area requiring attention and additional resources to remedy a particular needs

- Capturing Citizen Needs
  - Accurately identify and locate the problems and provide immediate resolution
  - Dynamic link from service request to inspection or work order
Pavement Management
- Maintain a safe & good ride quality
- Maintain low lifecycle cost across entire roadway network

950 Miles of Roadway: 31% Collector Roads & 69% Local Roads
Pavement Condition: 950 Miles of Roadway

- County average: 76 PCI
- Proactive Strategy per Mile (Now)
  - Reclamation | $254k
- Deferred Strategy per Mile (FY 2017)
  - Reconstruction | $750k

Pavement Condition Index (PCI):
- Good (100-85)
- Satisfactory (85-70)
- Fair (70-55)
- Poor (55-40)

Pie chart showing:
- 48% Good
- 14% Satisfactory
- 27% Fair
- 8% Poor
- 3% Others
**Work Cycle: Pavement Management System**

- **Management Work Cycle**
  - GIS maintenance and update cost
  - Pavement Inspections in Cityworks
  - MicroPAVER analysis
  - Development of deterioration curve
  - Reports for plan action

- **Operational Dashboard**
  - Visual representation of the current pavement conditions
  - Accurate maintained road counts
  - List known critical roads
  - Preview of scheduled projects
Future Deployments

» Similar web application for
  Light Poles Inventory
  Annual Traffic Counts
  ADA Ramps Data Collection

» Online Project Viewer
  Application to feature Public Works projects
  Small-drone Technology

» Outreach program
  Teaching Tools
  More Story Maps
http://sjcpwd.maps.arcgis.com

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