



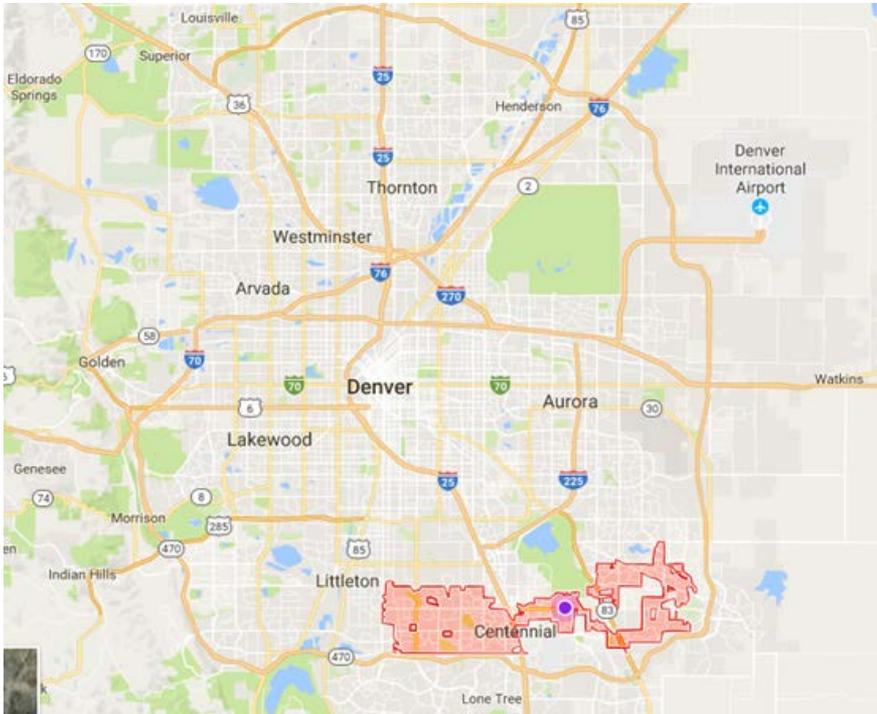
Office of Technology & Innovation

Alaska Smart Communities Forum

Scott Blumenreich – Chief Innovation & Technology Officer
Derek Stertz – GIS & Data Analytics Supervisor

02.07.2017

CENTENNIAL, CO



- Newest City in oldest County
- ~ 106,000 residents
- Contract model city ~ 67 FTE
 - Public Works
 - Law Enforcement
 - Code Compliance
- No historic town center
- 2 light rail lines to downtown
 - I-25 bisects the City
- Considered Highly Innovative

Office of Technology & Innovation



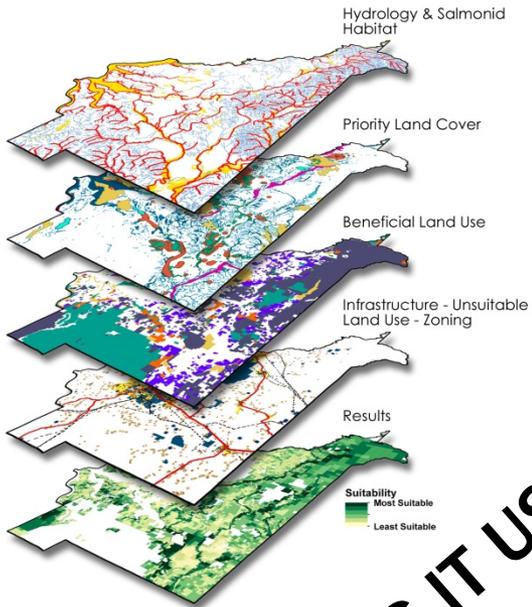
- Newest Department in the City
 - 7months
 - 14 FTE and 2 Contractors
 - Remote 24/7/365 Ops

- **Information Technology**
- **GIS & Data Analytics**
- **Innovation Team**

CENTENNIAL GIS - (GEOGRAPHIC INFORMATION SYSTEMS)

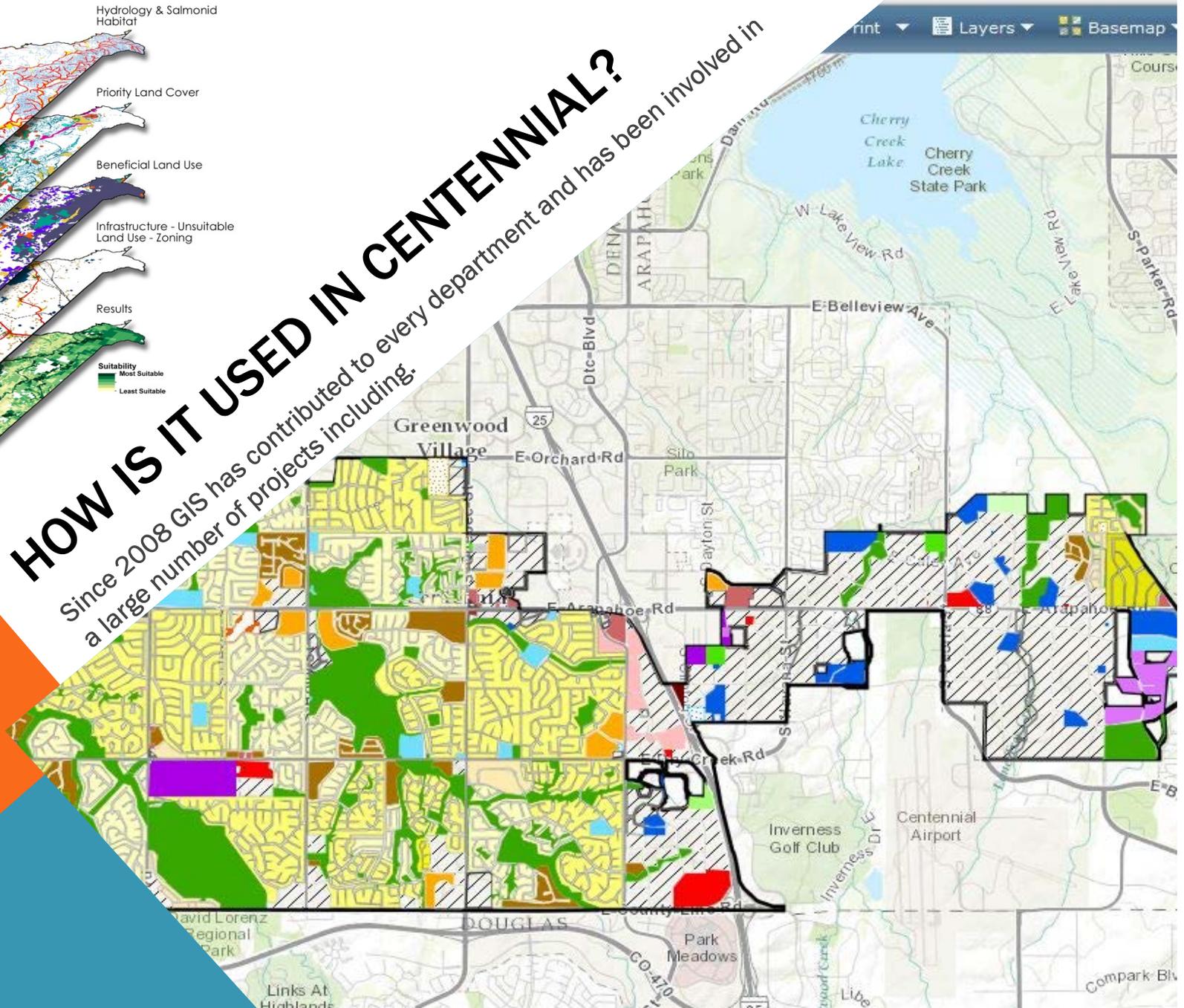


<https://www.youtube.com/watch?v=oMUGp0rGf7I>



HOW IS IT USED IN CENTENNIAL?

Since 2008 GIS has contributed to every department and has been involved in a large number of projects including.



What has it been used for ?

City Council Redistricting 2010

Litigation Exhibits

Addressing

Building Permit

Issuance and Revenue

Residential Property Analysis

Commercial Buffering Analysis

CAFR Reporting

Financial Analysis

Regulatory Compliance Mapping and Analysis

Liquor License

SOBs

Zoning

Restricted Development Area

Infrastructure Mapping

Storm Water (SEMSWA)

[Fiber-Conduit](#)

Street Lights

[Medians and Roadsides](#)

[Trails and Bike Paths](#)

Flood Plain Regulation Mapping

[Feature Class Sharing](#)

Election Mapping and Analysis

Voter Registration Validation

Analysis on Outcomes

Boundary, Land Use, and Zoning Updates

Annexation

Legislative Rezoning (LDC)

HUTF- Highway Users Tax Fund

App Development

[Arapahoe Traffic App](#)

Economic Development

[Arapahoe Rd Corridor Study](#)

Shopping Center Analysis

Employment and Wage Data

Fast Food Analysis

Cost to Serve

Emergency Management Data

Internal and Intra-Jurisdictional Data Coordination

Aurora Water

Arapahoe County Sheriff's Office EM

Sales Tax District Development Analysis

[Sales Tax District](#)

[Reporting and Analysis](#)

Data Development- Local and Regional

Utility and Inter-jurisdictional agreements

Updated Imagery and Analysis

[Denver Regional Council of Governments Data](#)

Utility Easements

As-Built Collection and Reconciliation

Census and Demographic Research

2010 and 2020 Census Preparation

Special District Inventory and Analysis

Mill Levy Analysis

Financial Analysis and Inventory on GIDS

.....and More

GIS FACTS FOR THE CITY

Timeline-

- 2008- GIS brought In- House
- 2011- Feasibility Study for Expanded GIS System
- 2013- Budget to Implement a full GIS with additional Funding and Public Works Inclusion
- 2014- Implementation of the “System and IT Upgrades”



Arapahoe Road-Waco to Himalaya

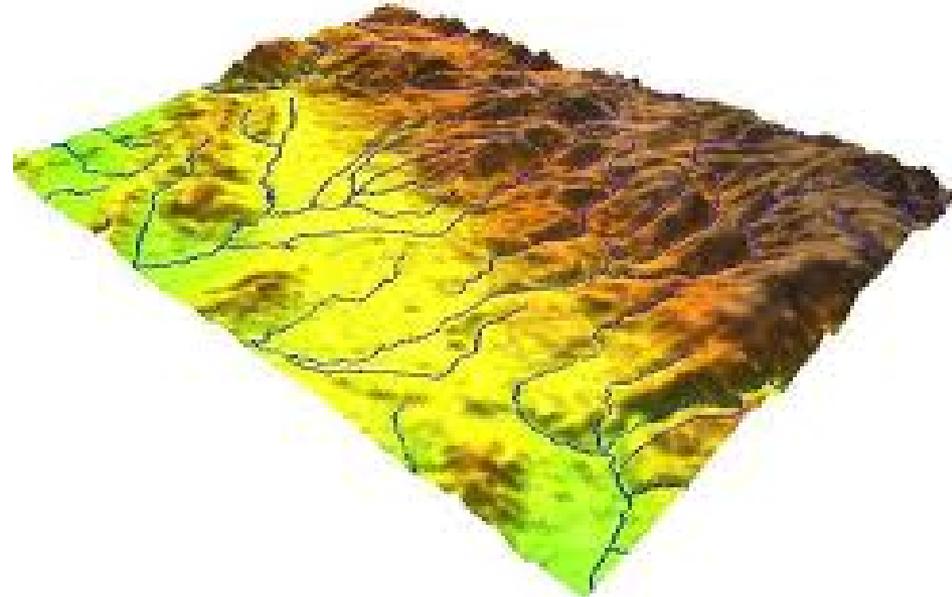
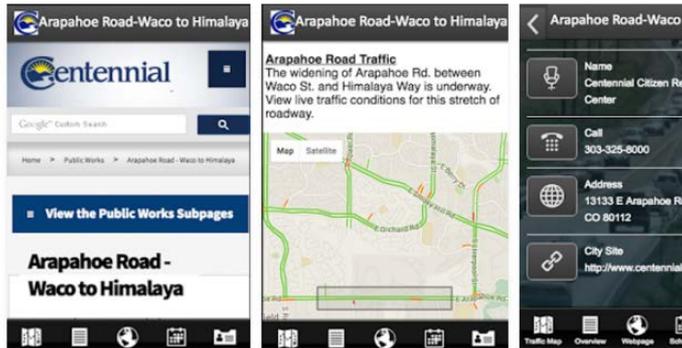
City of Centennial Colorado Business

★★★★★ 3

Everyone

Add to Wishlist

Install



Arapahoe Road is being widened between Waco Street and Himalaya Way in Centennial Colorado. This app allow you to link to the project homepage, view traffic conditions and project information so you are prepared when you hit the road.

TODAY'S CENTENNIAL GIS HIGHLIGHTS

What we want to show you.

- GIS Web Portal
- Open Data
- Interactive Maps
- PDF Maps
- Story Maps (Beer Tour, What's being Built, City Tour)
- Survey 1,2,3 with Coyotes



WHERE WE ARE GOING

... INTO THE FUTURE!



3D Modeling through Geo Planner with Sales Tax

Integration with Communications via Social Media, Geo-fencing and Story Mapping

Data Strategy and Development

Dashboards- Property Tax Forecasting and Quarterly (daily) Reports

3D AND DASH-BOARDS



103 m * 104.99°W 39.61°N 1,667,002 m

RoofFormsCentennial RoofFormsCentennial_copy

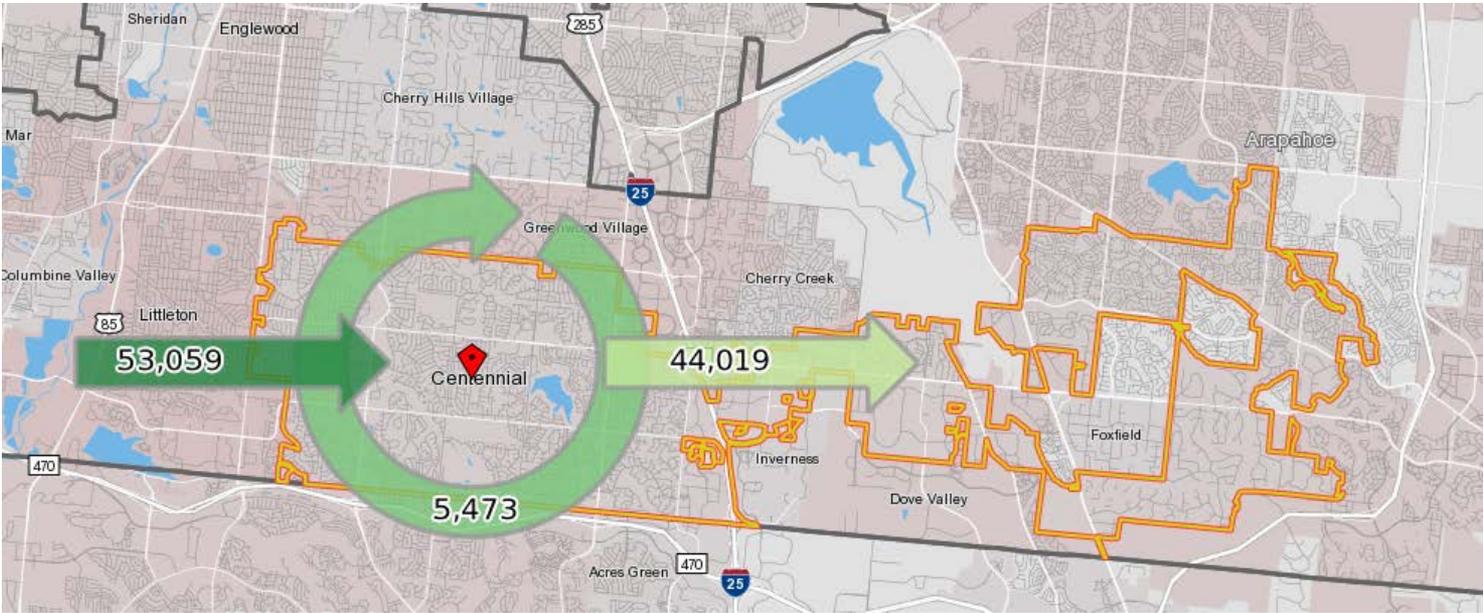
OBJECTID	Shape	Shape_Length	Shape_Area	BLDGHEIGHT	EAVEHEIGHT	ROOFORM	BuildingFID	BASEELEV	ROOFDIR	RoofDirAdjust	RMSE
1	Polygon	11.739071	7.96201	3.171	<Null>	Flat	Building_1	5467.815	<Null>	0	3802.656
2	Polygon	121.421518	761.941867	20.94	9.077	Hip	Building_2	5466.818	<Null>	0	<Null>
3	Polygon	75.464431	342.493921	24.77	18.546	Gable	Building_3	5465.249	0	0	<Null>
4	Polygon	106.133241	494.349841	16.631	<Null>	Flat	Building_4	5464.587	<Null>	0	<Null>
5	Polygon	12.19927	9.301384	1.944	<Null>	Flat	Building_5	5466.063	<Null>	0	<Null>
6	Polygon	116.224983	588.746918	15.966	<Null>	Flat	Building_6	5462.437	<Null>	0	<Null>
7	Polygon	24.665763	37.96406	6.72	<Null>	Flat	Building_7	5461.476	<Null>	0	<Null>
8	Polygon	21.424198	28.505571	9.417	<Null>	Flat	Building_8	5461.068	<Null>	0	<Null>
9	Polygon	81.765799	335.929293	23.742	17.661	Gable	Building_9	5462.741	.180	0	<Null>
10	Polygon	88.932978	387.274428	14.307	9.756	Gable	Building_10	5468.106	0	0	<Null>
11	Polygon	10.65409	7.003276	3.345	<Null>	Flat	Building_11	5467.884	<Null>	0	<Null>
12	Polygon	93.090884	439.219392	16.063	10.362	Gable	Building_12	5466.226	45	0	<Null>
13	Polygon	23.362588	30.982774	5.051	<Null>	Flat	Building_13	5467.028	<Null>	0	<Null>
14	Polygon	96.919509	498.61423	16.169	8.621	Gable	Building_14	5466.746	90	0	<Null>
15	Polygon	15.835017	15.61747	9.744	<Null>	Flat	Building_15	5466.469	<Null>	0	<Null>



Innovation Team

- Bloomberg Philanthropies Grant
 - Received end of 2014
 - 3 year grant
 - 3:1 match
- 4 team members (Mgr, PM, Data Analyst, UI/UX Designer)
- Received \$1.5 M + \$500k match = \$2.0 M
- Purpose – Embed innovation in government
 - 1st Initiative: Transportation
 - 2nd Initiative: Aging in the Community

COMMUTE PATTERNS



RTD (REGIONAL TRANSPORTATION DISTRICT)

- Bus lines in this area cut
- Current Call-n-Ride service has a per-trip subsidy of \$21
 - Not responsive to real-time demand
 - Vans fill up and people are turned away during rush hours



DRY CREEK STATION



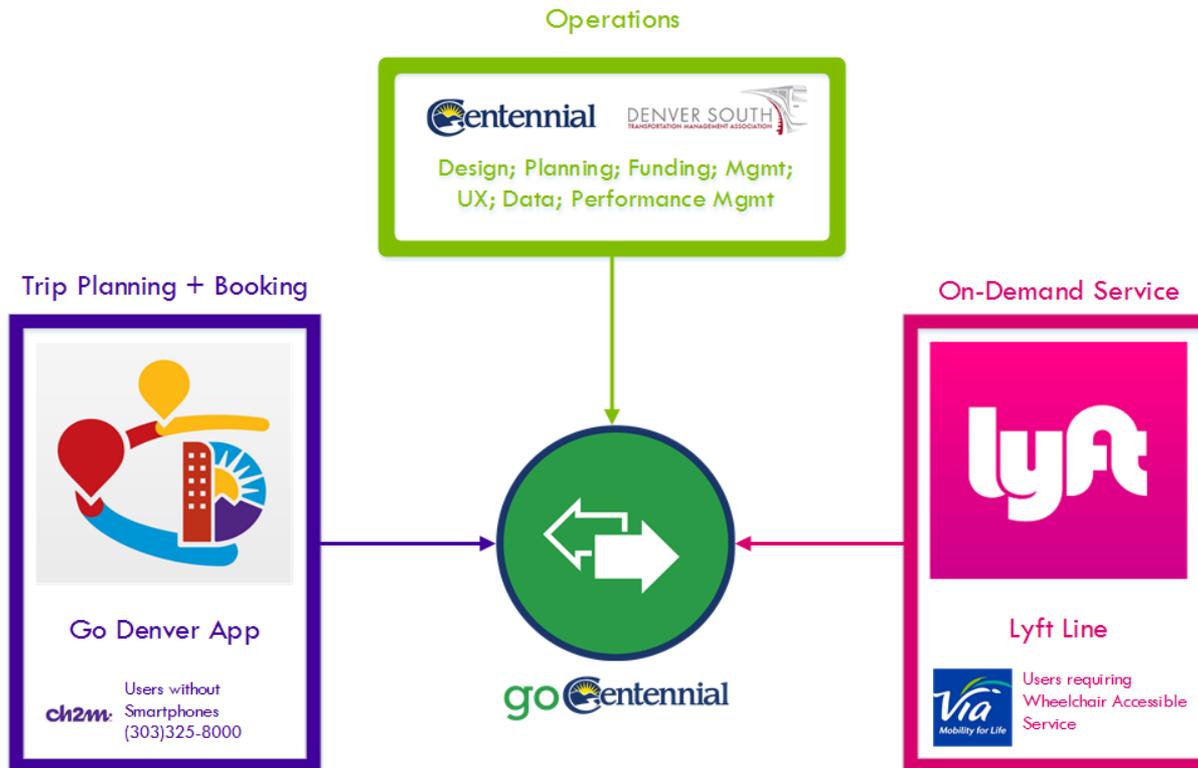
PILOT PHASE I

GOALS

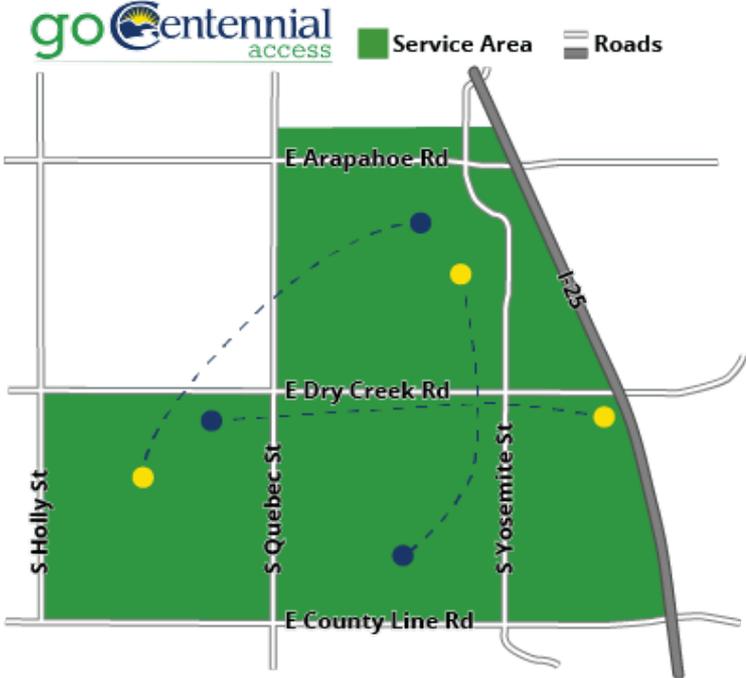
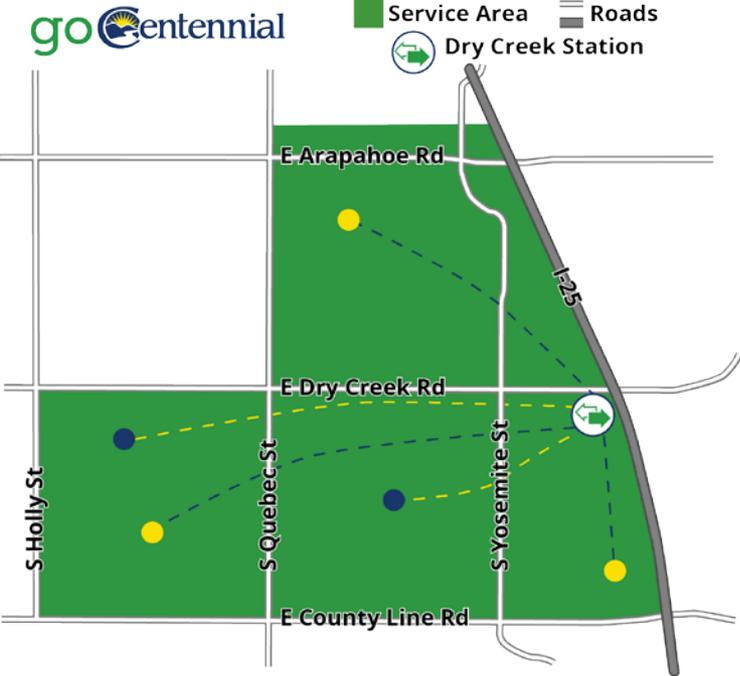
- Encourage light rail ridership
- Reduce first and last mile subsidy compared to existing RTD Call-n-Ride
- Research latent demand for free first and last mile trips



PARTNERSHIPS

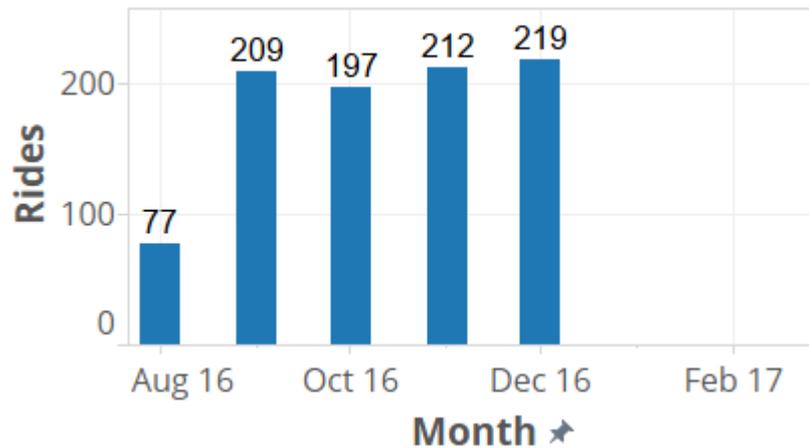


SERVICE DESIGN



TOTAL RIDES

Total Rides



914 total rides given

About 10 rides per day

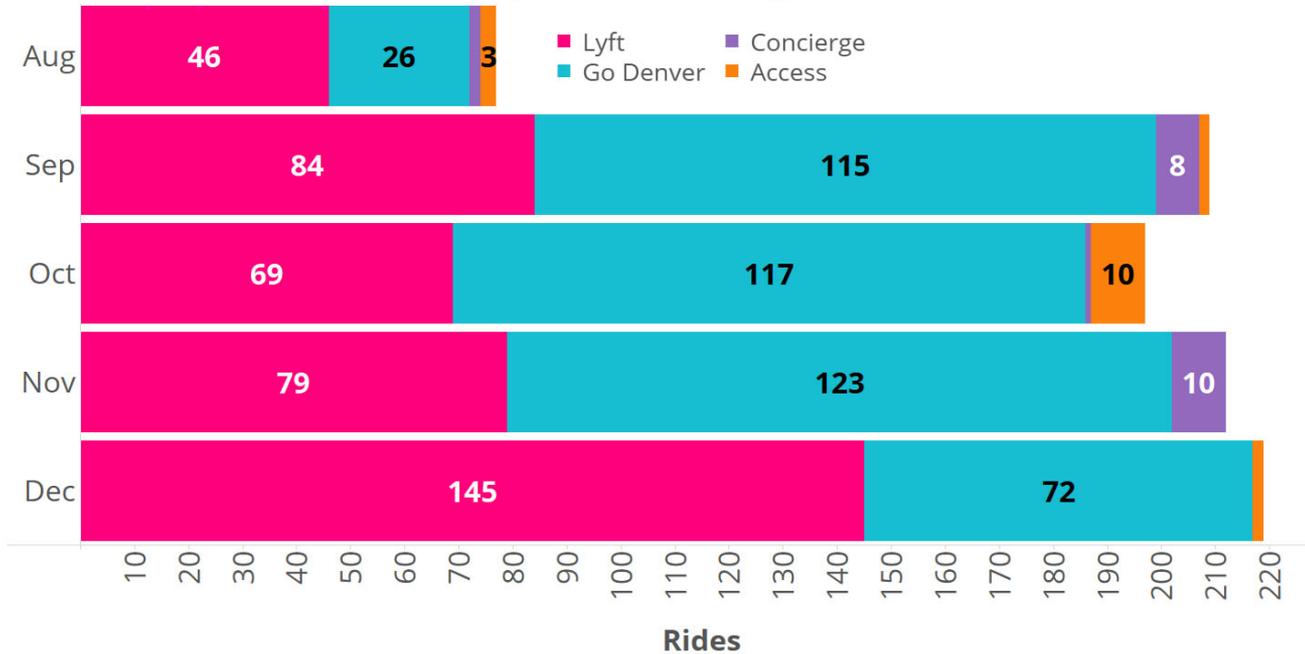
RIDERSHIP

105 unique riders

64% have used the service
more than once

HAILED RIDES

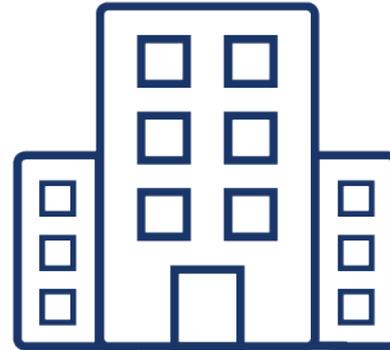
Rides by Month and Hailing Method



DESTINATIONS



40%



33%

COST

If the Go Centennial model were to supplant the existing Call-n-Ride, it could provide the same number of trips for about

55%

of the cost.

Fiber Backbone Initiative

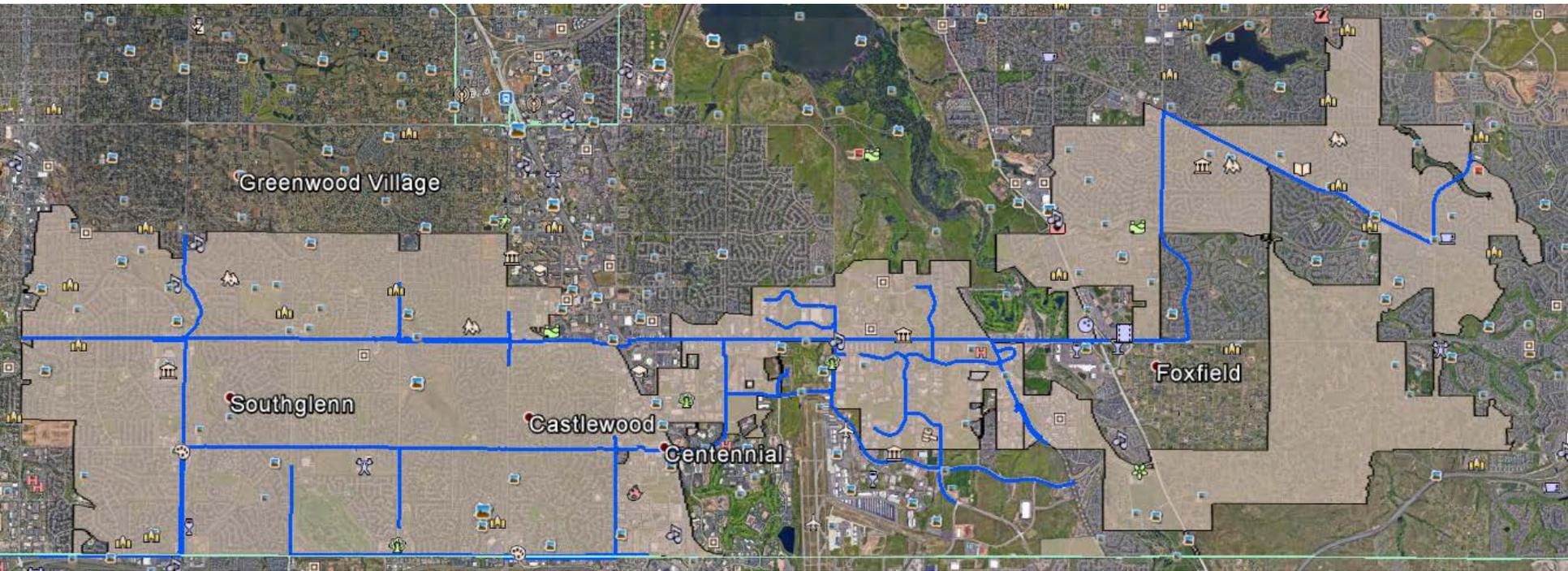
- About Centennial
- Project Background
- Fiber Master Plan
- Lessons Learned
- Current Status

Broadband Adoption Rates

Rank	City	Percentage of Internet-Connected Households
1	Centennial, CO	96.00%
2	Cary, NC	95.50%
3	Irvine, CA	95.30%
4	Frisco, TX	94.70%
5	Bellevue, WA	93.60%
6	Gilbert, AZ	93.40%
7	Boulder, CO	92.70%
8	Pearland, TX	92.60%
9	Plano, TX	92.30%
10	Scottsdale, AZ	92.10%

Source: 2013 American Community Survey

Centennial Fiber and Conduit (2013)



Project Background

- Existing infrastructure – more than 50 miles of fiber and conduit along most major arterial roads
- SB 152 ballot question – explore opportunities related to use of existing infrastructure
- Placed on November 2013 ballot – passed overwhelmingly (76%)

Policy Decisions and Steps Taken

- Council directed and funded a three-part process:
 - Asset Inventory and Opportunity Analysis (2014/2015)
 - Strategic Planning and Feasibility Study (2015/2016)
 - Development and adoption of Fiber Master Plan (2015/2016)
- Implementation of Fiber Master Plan is underway

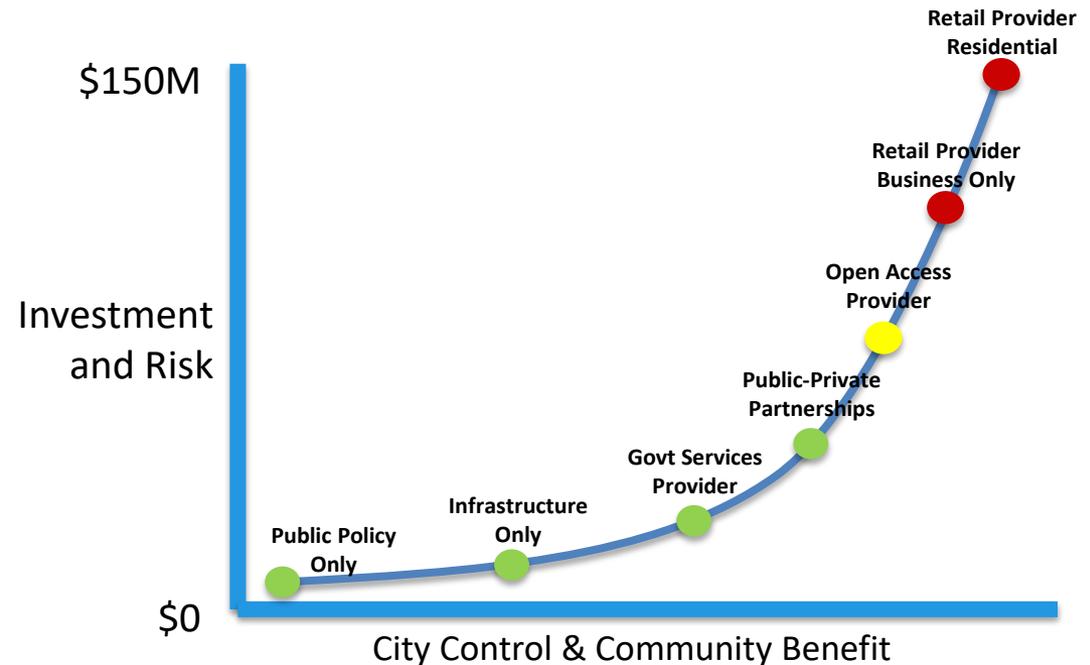
Plans and Goals

- Understanding and adoption of the Fiber Master Plan by Council was crucial
- Education and understanding with the Fiber Steering Committee:
 - Infrastructure - dark fiber, funded as infrastructure
 - Competition important – create the environment
 - “Carrier grade” requires the right specs, access, key opportunities
 - City-wide build – core streets, passing as many CAIs, commercial sites and potential residential areas as possible

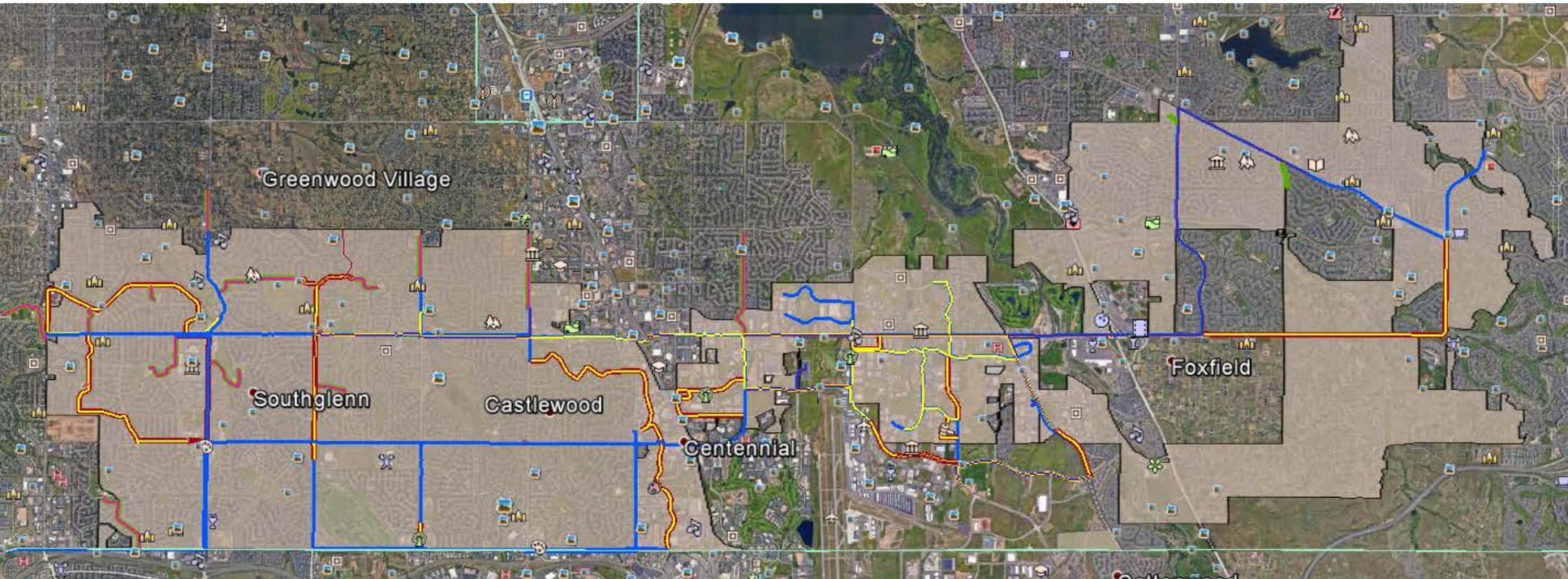
Development of Fiber Master Plan



Risk & Reward Tradeoffs of Municipal Broadband Options



Proposed Backbone (Fiber Master Plan - 2016)



Partnering with the Private Sector

- Everyone thinks they have a solution for you, so be clear what you need
 - Financing, service providers, FTTP builders, network operators, incumbents
- Seek a partner that “fits” and understands your community.
- Make your community as attractive as possible.
 - Policy leadership, political climate, regulations
- Focus on mutual benefit: trust and verify.

Maintaining Momentum

- Regular updates to Council. Public updates when appropriate
- Manage expectations, seek small wins, reference the original plan
- Work and engage with Economic Development
- Maintain political leadership and direction

Where is Centennial Today?

- Currently constructing first segment of the backbone.
- Capital assets (conduit, fiber, etc) purchased and held by City.
- Moving forward with Ting.
- Continuing to explore CAI opportunities.



Information Technology

- Infrastructure & Operation
 - Service Desk
 - Network/Telecommunications Engineering
- Applications Specialist
- Business Systems Analysis

In process of rebuilding Network Infrastructure and relacing every major legacy system

Information Technology

- Projects and Initiatives
 - Rebuild and upgrade of internal network
 - Replacement of every major legacy system
 - Community Development (Project eCLPs)
 - Clerks Office (new fully integrated ECMS)
 - Finance (new ERP)
 - Public facing Digital Government (eGOV) transformation
 - Misc projects (TBD) – HR, CRM, Asset Mgmt, Work Order

Note: Current Work Order System integrated with Public Works Citizen Response Center



QUESTIONS

Scott Blumenreich – Chief Innovation & Technology Officer
Derek Stertz – GIS & Data Analytics Supervisor

02.07.2017