Smart Communities Using GIS

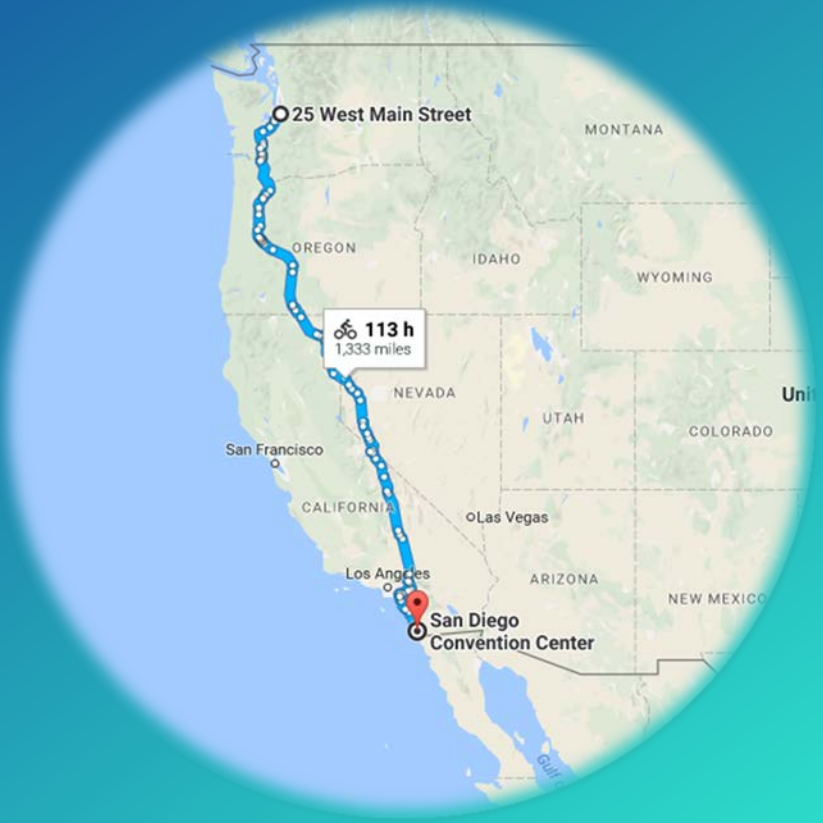
Building a Smarter City with the Internet of Things

Ashley Riggs, GISP
Assistant Director of IT
ariggs@auburnwa.gov
City of Auburn, Washington

The City of Auburn, WA

- **30** square miles
- **450** full-time employees
- **80,000** residents

<u>Full service</u> City providing:
sewer, storm, water, transportation, environmental, garbage, police, parks…and much more.



Innovation & Technology

GIS

"To teach GIS and the power it has to make each of our jobs easier"

"Coming up with creative ways to share geospatial data for decision making"

"To help people understand geography from different angles"

Setting the Table

Smart City: a smart City means different things to different people. For Auburn, it's not just about throwing up sensors everywhere. It's not technology for technology sake. It's about leveraging our investments better, partnering more and adding value with technology.

The end goal for Auburn is obtaining better data for applications, integrations, decision makers and ultimately the citizens.

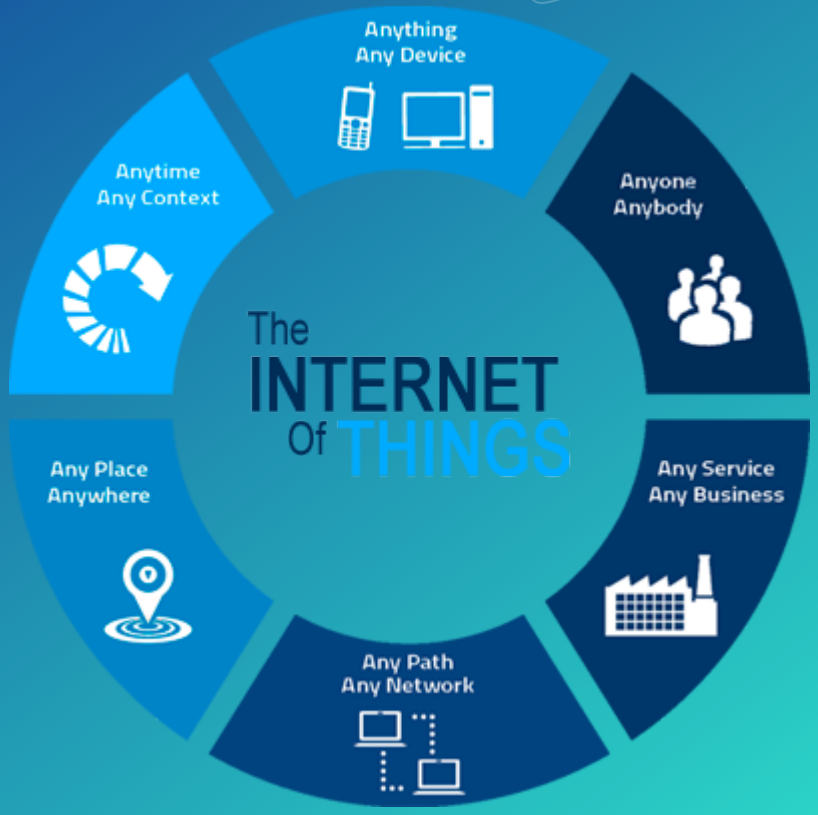
Internet of Things: the IoT refers to the ever-growing network of physical objects connected to the internet to communication between each other and the internet.

IoT is Here

One of the biggest issues
I come across is people thinking the IoT is a buzz word.

IoT is here and growing exponentially.

Auburn is striving to
get in front of it so we can
capitalize on it. There is a wave of
data and security risks coming!



Key Initiatives

IT's strategic plan is derived directly from the City's goals.

- Build a smarter city that brings value and is sustainable.
- Increase citizen engagement and government transparency.
- Continuous improvement for staff and for the City.
- Economic development.
- Mobility.
- Workforce Empowerment.

* Challenged by our boss!

Key Technology

GIS

The City has made a strategic decision about GIS. GIS is not just a piece of software, but rather a platform that all other applications within the City will use. We have an ELA and major investment with Esri technology.

Cartegraph OMS

Almost every "thing" we discussed around IoT is an asset. That drove preventative maintenance, work, predictive analysis and more.

Darktrace

Adding devices all over Auburn communicating with the internet and network provide major risk, we needed a robust security tool.

What we Did

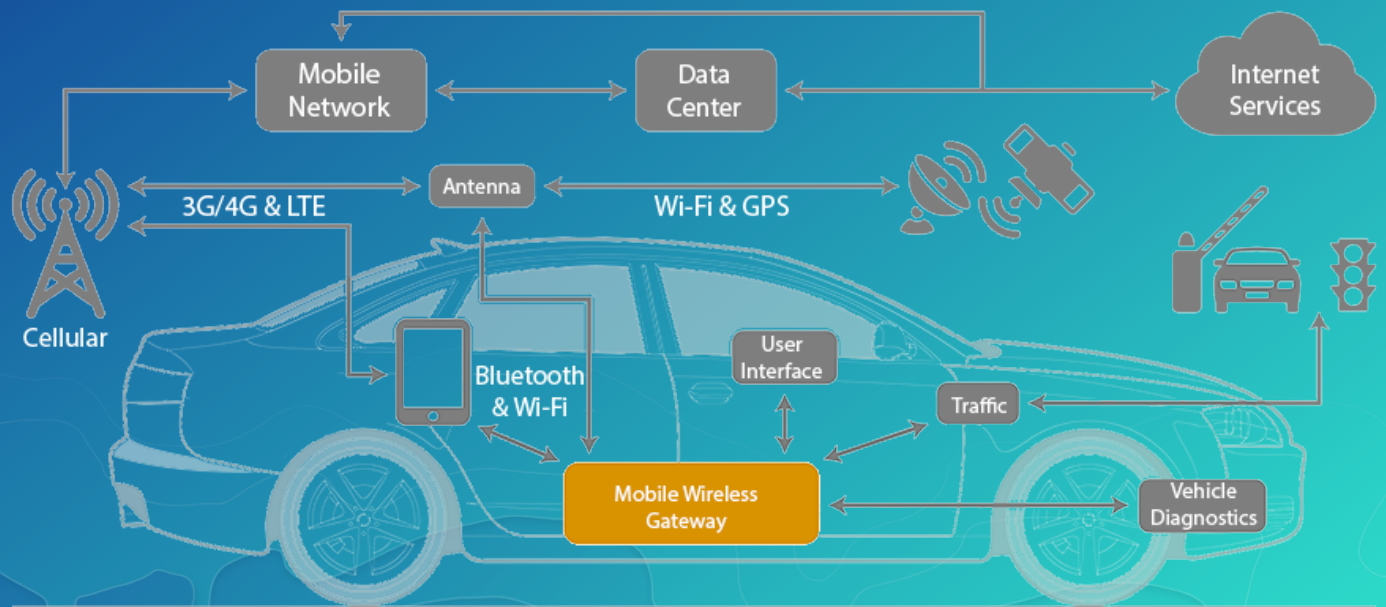
- Built an addendum to our IT strategic plan around the vision of IoT.
- Educated our council on what IoT is and how it impacts Auburn.
- Developed a business case/proof of concept.
- Found strategic business partners.
- Implemented a solution.
- Built a ROI.
- Leveraged data to start conversations.
- Built Esri story maps and 3D models.

Examples

[all in different stages]

IoT: Integrated Existing Resources

- River Gauges
- Intelligent Traffic System (ITS)
- Pedestrian Signals
- Intersection and Security Cameras
- Automated License Plate Reader
- Electronic Badge Readers (started the IoT concept)
- 311 Citizen Reporting
- Online Resources/Services
- Automated Vehicle Locator (AVL)



IoT: Leveraged Existing Partners

Verizon

- Verizon Private Network (VPN)
- Parking
  - Analytics
  - Electronic ticketing
- Lighting
  - Energy and controlled usage
- Traffic
  - Counts
- Pedestrian Safety

IoT: Formalized Relationships

Green River College

- Represent Auburn on the IT Advisory Board
- Shared resources

University of Washington

- Citywide collaboration with students on targeted projects

Wave, Zayo

- Fiber and conduit swap

Community Connectivity Consortium (CCC)

- Regional fiber sharing

IoT: Engagement

Auburn Business Collaboration (ABC): Buy Local

- Online business license renewal
- Business search
- Business incubator

IoT: Addressed a Business Need

Partnered with the Auburn School District

- Digital parity for low income students.
- In 2018 all Auburn students will be assigned a Chromebook.
- Enabled us to help students, increase free Wi-Fi and expand public safety network.

IoT: Data Driven

QR Codes

- Street art
- Construction notices
- Marketing material

GeoFence

- Special deals
- Targeted marketing

IoT: Just Cool

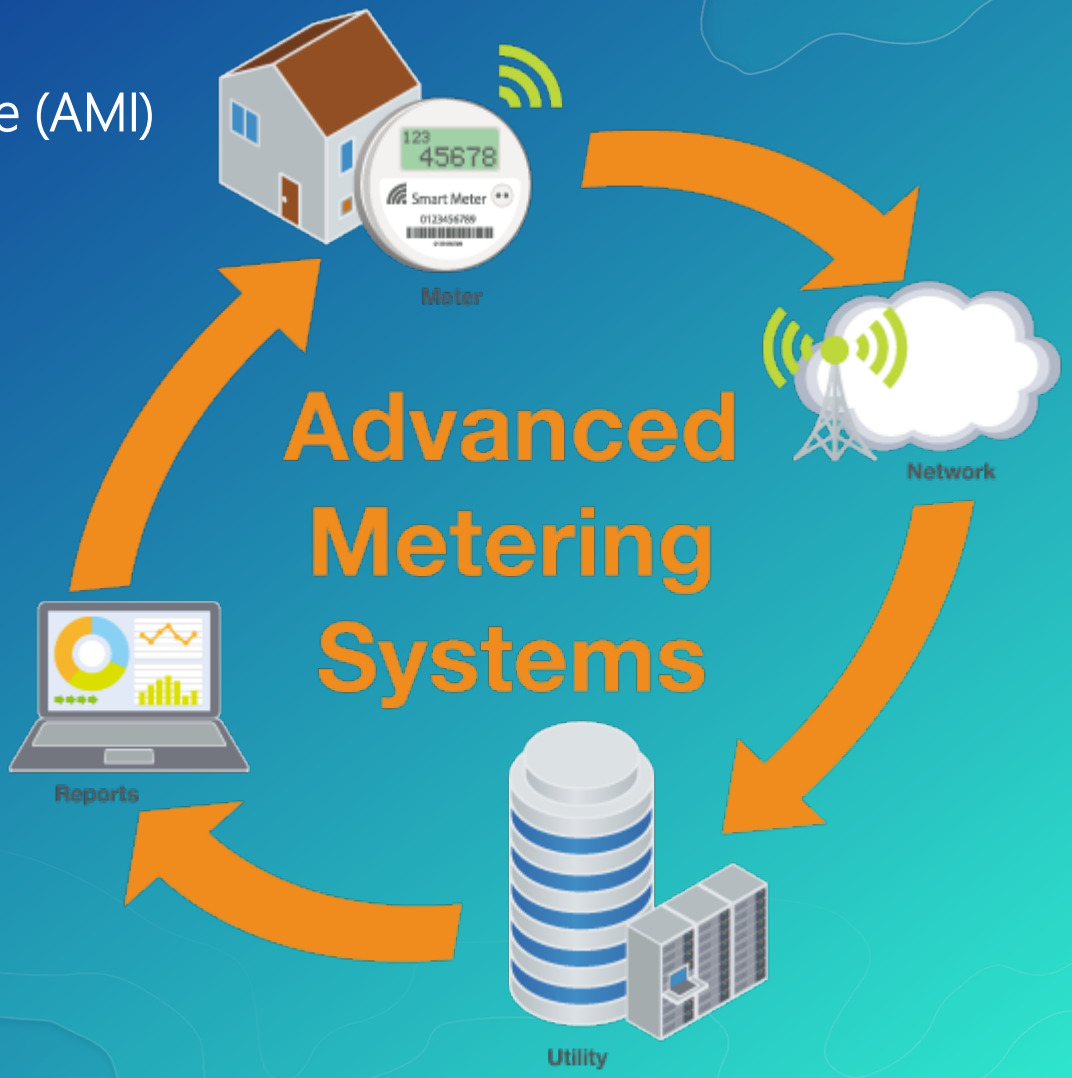
Drones

- First FAA approved UAV program in local-government
- Uses
  - Marketing/Advertisement
  - Inspections
  - Public safety
  - 3D modeling
  - Change management

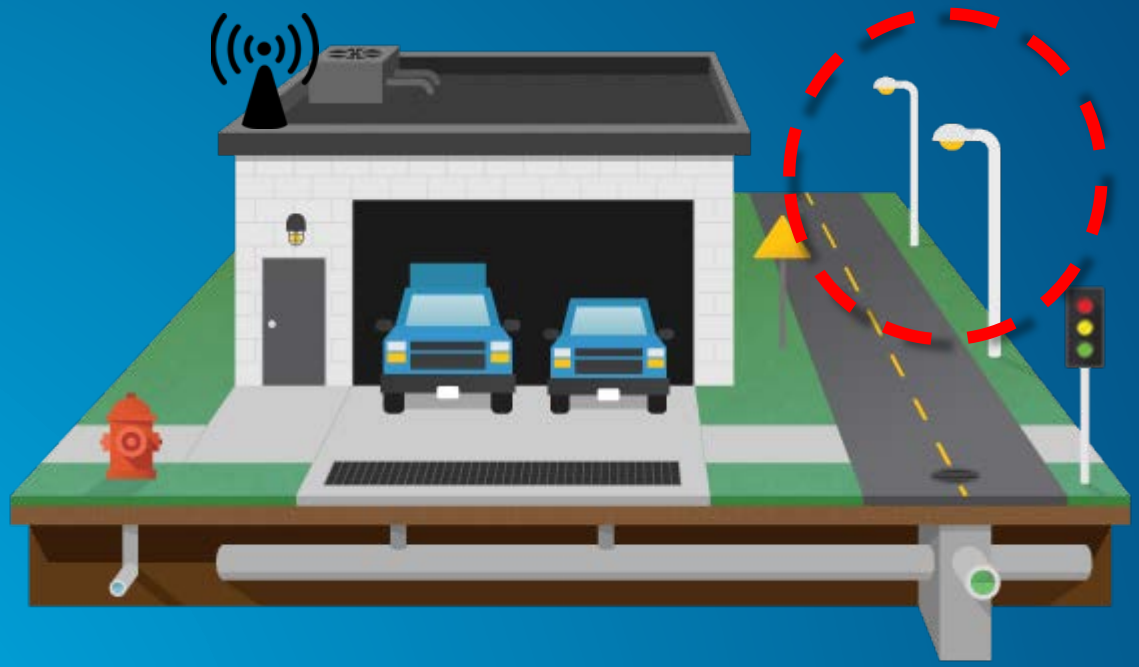
IoT: Operating Efficiencies

Automated Meter Infrastructure (AMI)

- Leak detection
- Stealing water
- Two-way shutoffs



IoT: Asset Management



What's the Common Theme?

IoT: GIS is the Platform

PERMIT_NO	APPLICANT_NAME	PermitType	PermitSubType	STATUS	APPLIED	APPROVED	EXPIRED	FINALED	ISSUED
BLD03-0395	LAKELAND TUSCANY LLC	BUILDING	NEW RES	FINALED	11/25/2003, 12:00:00 AM	12/1/2003, 12:00:00 AM	5/29/2004, 12:00:00 AM	8/27/2004, 12:00:00 AM	12/1/2003, 12:00:00 AM
MEC03-0548	LAKELAND TUSCANY LLC	MECHANICAL	NEW RES	FINALED	11/26/2003, 12:00:00 AM	12/1/2003, 12:00:00 AM	5/29/2004, 12:00:00 AM	8/27/2004, 12:00:00 AM	12/1/2003, 12:00:00 AM
MEC05-0203	ALL CLIMATE HEATING & A/C LLC	MECHANICAL	RES ALT	ISSUED	8/16/2005, 12:00:00 AM	8/16/2005, 12:00:00 AM	2/12/2007, 12:00:00 AM		8/16/2005, 12:00:00 AM
PLM03-0501	LAKELAND TUSCANY LLC	PLUMBING	NEW RES	FINALED	11/26/2003, 12:00:00 AM	12/1/2003, 12:00:00 AM	5/29/2004, 12:00:00 AM	8/27/2004, 12:00:00 AM	12/1/2003, 12:00:00 AM
STM03-0328	LAKELAND TUSCANY LLC	STORM	RESIDENTIAL	FINALED	11/26/2003, 12:00:00 AM	11/26/2003, 12:00:00 AM	5/29/2004, 12:00:00 AM	3/8/2004, 12:00:00 AM	12/1/2003, 12:00:00 AM
SWR03-0515	LAKELAND TUSCANY LLC	SEWER	NEW CONNECTION	FINALED	11/26/2003, 12:00:00 AM	11/26/2003, 12:00:00 AM	6/5/2004, 12:00:00 AM	3/4/2004, 12:00:00 AM	12/8/2003, 12:00:00 AM

Lessons Learned

- Every City is different. Needs are different.
  - Determine a business case.
  - Develop a proof of concept.
  - Leverage existing resources (if possible).
    - Infrastructure.
    - Applications.
    - Partnerships.
- There are very little pre-built packages.
  - Most solutions are extremely flexible and configurable.
- Build a strategic plan/vision around IoT.
  - Communicate the plan to elected officials and the community

Looking Ahead

- Not even close to being done. Just scratching surface. Identify targeted, valued-add projects.
- Build a platform with GIS.
  - Expand services.
- More data…more risk/reward(?)
  - Storage.
  - Security.
  - Staff.
- "Overlay" IoT projects/data.
  - Ethernet over power?
  - Wi-Fi access points/digital marketing/emergency phone (all in one)?

Thank You

Ashley Riggs
ariggs@auburnwa.gov