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RESOURCE MANAGEMENT AND PLANNING USING DATA TECHNOLOGIES

Calsense and The University of Texas at Austin



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## Water

- A global issue
  - A reliable water supply is necessary for socioeconomic development, energy and food production, healthy ecosystems, and adaptation to climate instability.

Lack of Water Data Oversight

- Government water data only compiled once every 5-years
- Data informs & guides opportunities to change behaviors

(Fishman)



# Data Technology and Resource Management

- Analysis & fine-tuning of management strategies
- A.I. will improve the resource struggles with population growth



## U.S. Water

- 30% of money spent on water systems through 2025 will be targeted for water loss control
- Water scarcity
- Why should water-plentiful areas care?
  - Water loss = energy loss
  - Conservation reduces need for costly infrastructure

# Smart Controllers and Water Management

- Budgets/Mandates WaterSense
- Water Conservation

#### • Cloud accessibility



Program



Look for this label:

# Smart Controller Data

- Flow Analysis
- Budget
- Pressure
- Weather
- Usage
- Labor (People/Acre)



- Capacity
- Water Window
- Soil Moisture
- Restrictions





# Case Study: UT Austin

- 134 Automatic irrigation controllers
- 29,744 Irrigation heads
- 53 Manual zones
- Previous yearly irrigation consumption 176 million gallons of water (2009)
- Irrigation System upgraded in 2011
- 2012 2018 consumption was 70% lower on automated systems



# The Problem



# The Problem



# Solutions Implemented



Drone



Smart irrigation



Data Analytics

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## Results

#### Gallons Used and Approximate Avoided Cost



Baseline: Approximately \$1,487,340 spent on 176 Million Gallons of water in 2009. Avoided approximate cost calculated using baseline.

# Next Steps (New Technology)



# Conclusion

- Data reveals our resource interdependence patterns
- IoT optimizes data sharing
  - Allows for quicker analysis and adjustments to current/future practices

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