

# This presentation premiered at WaterSmart Innovations

[watersmartinnovations.com](http://watersmartinnovations.com)





# Changing the Way We Water the World®

## The Emergence of Computerized Sprinklers: Saving Water with Technology



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# Gary Klinefelter and IrriGreen

- Former CTO, printer (inkjet) manufacturer
- 35 US patents
- Founded IrriGreen in 2011
- Computerized irrigation system



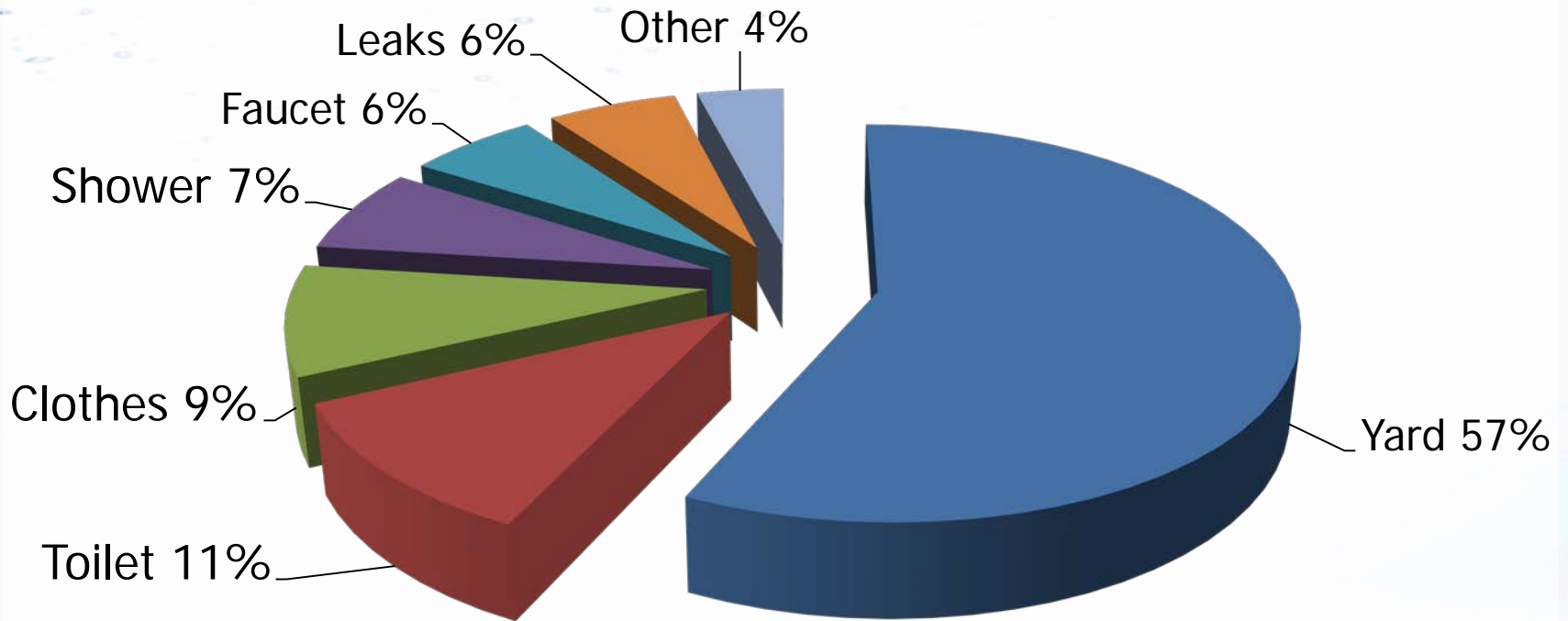
# Topics to Explore

- Residential water use
- Current technology and design
- Emergence of computerized heads
- Why computer technology saves water
- Discussion

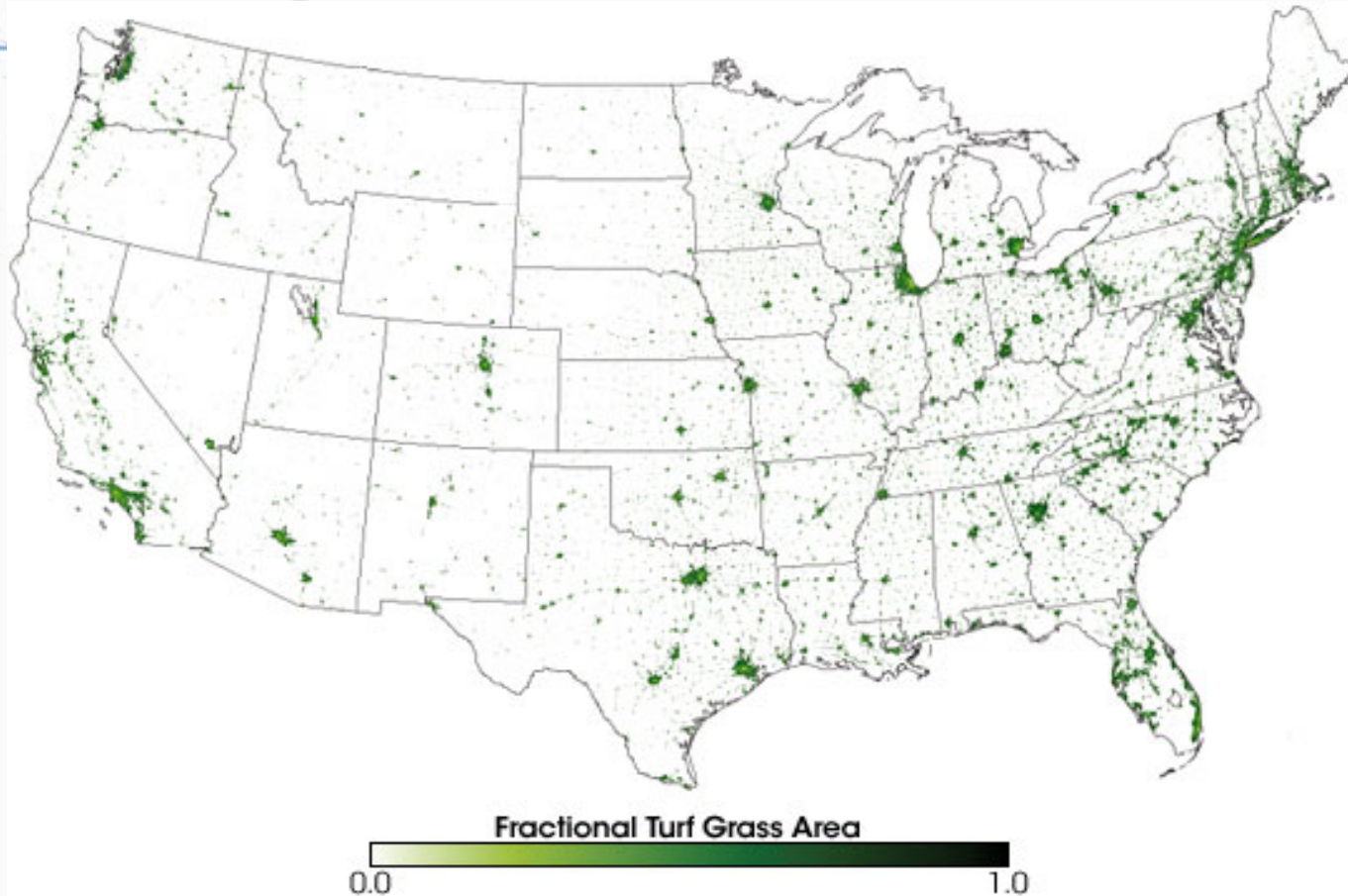


# Where is the Water Going

## U.S. Residential Water Use



# 40 Million Acres Turf







“As Much As 50% of the Water We Use Outdoors is Wasted from Inefficient Watering Methods and Systems”

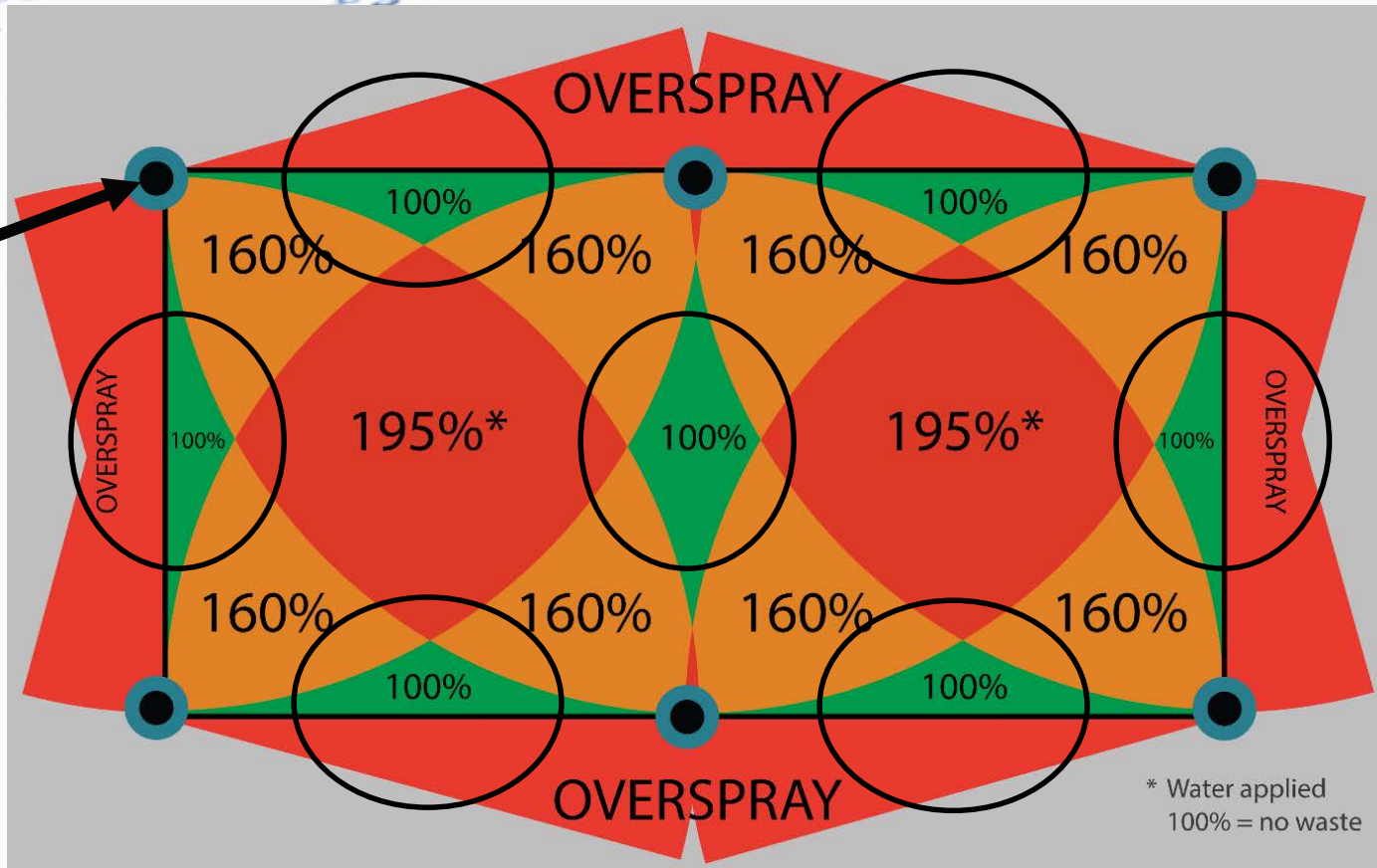
**4-5 Billion Gallons Wasted Daily**



# Current Technology



6 sprinklers  
overlapping  
DU = .65



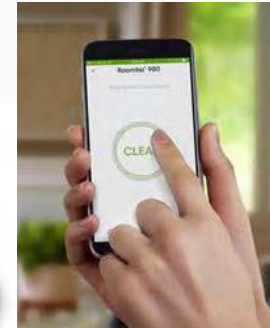


# What Happens When it Rains



# What's Enabling New Innovations

- Robotic vacuum
- Cell phones
- Printers
- Small motors
- Computing power
- Wireless



# GPS



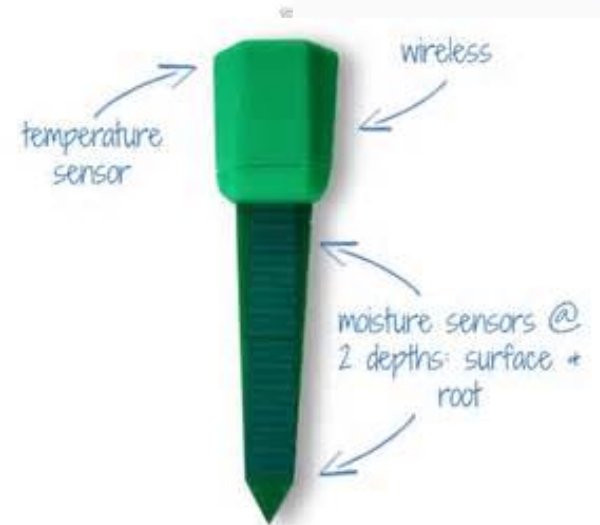
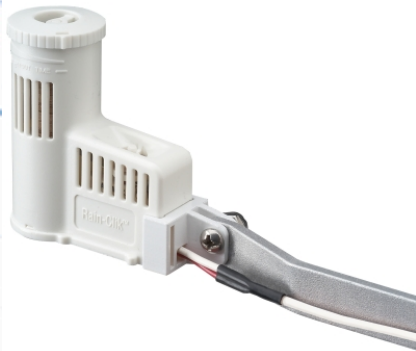


# Controller Innovations





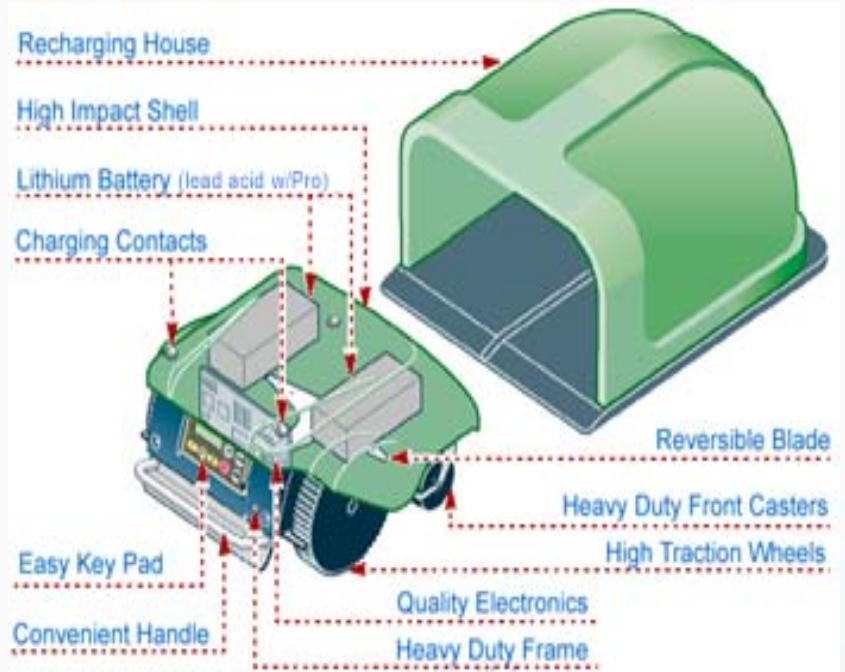
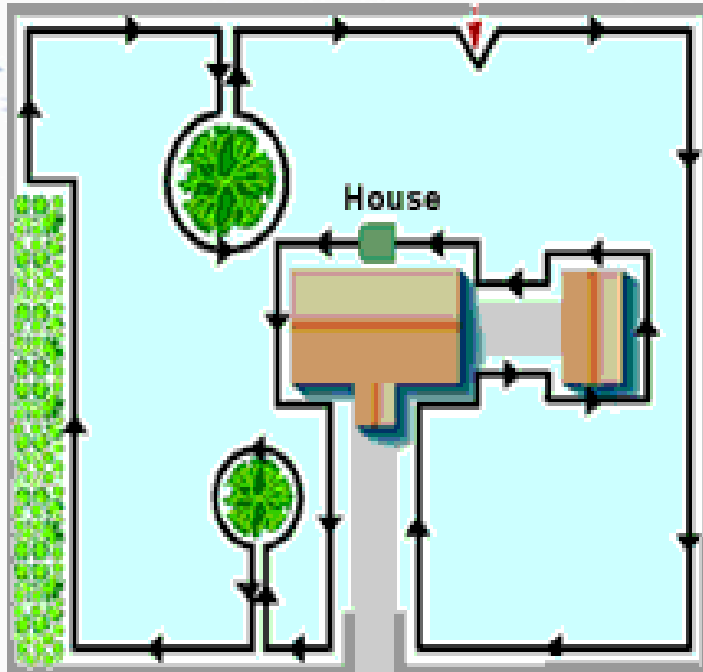
# Sensors



# Mechanically Adjustable



# Robotic Mower Watering



# Robotic Plant Watering

Dorhout R&D  
LLC



**Aquarius:**  
The Greenhouse Watering Robot

Dorhout R&D LLC © 2013





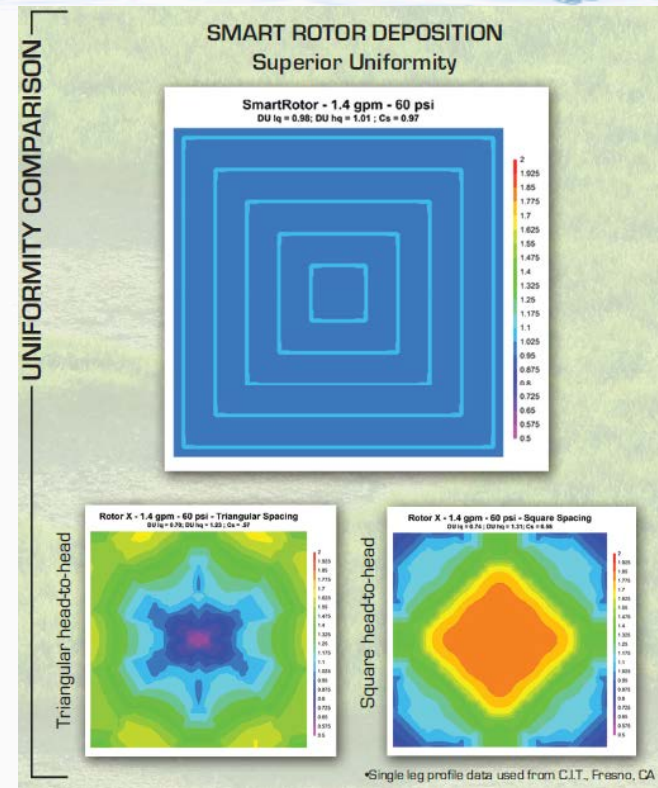
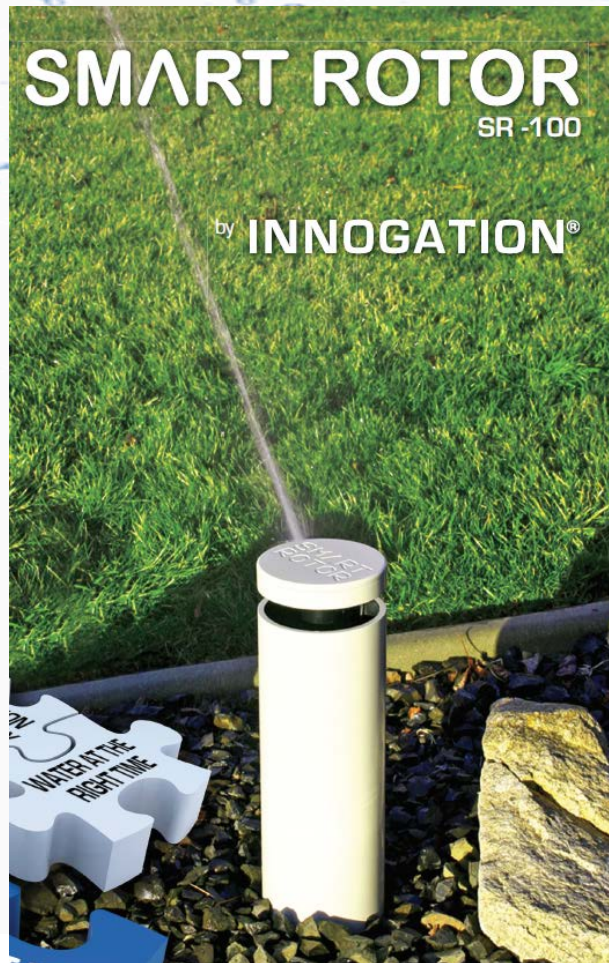
# Computer Controlled Stream Volume

## AccuRain™

- Each Head can water over 1900 square feet
- Each Head can have up to 15 watering zones of almost any size or shape.
- The System monitors itself and reports errors.



# Computer Controlled Spray Volume



“Based on the dryness distribution plot in Figure 3, an intelligent system can reduce water use by 40% to 50% in most cases.”



# Computer Controlled Stream X-Y



Dropplet™



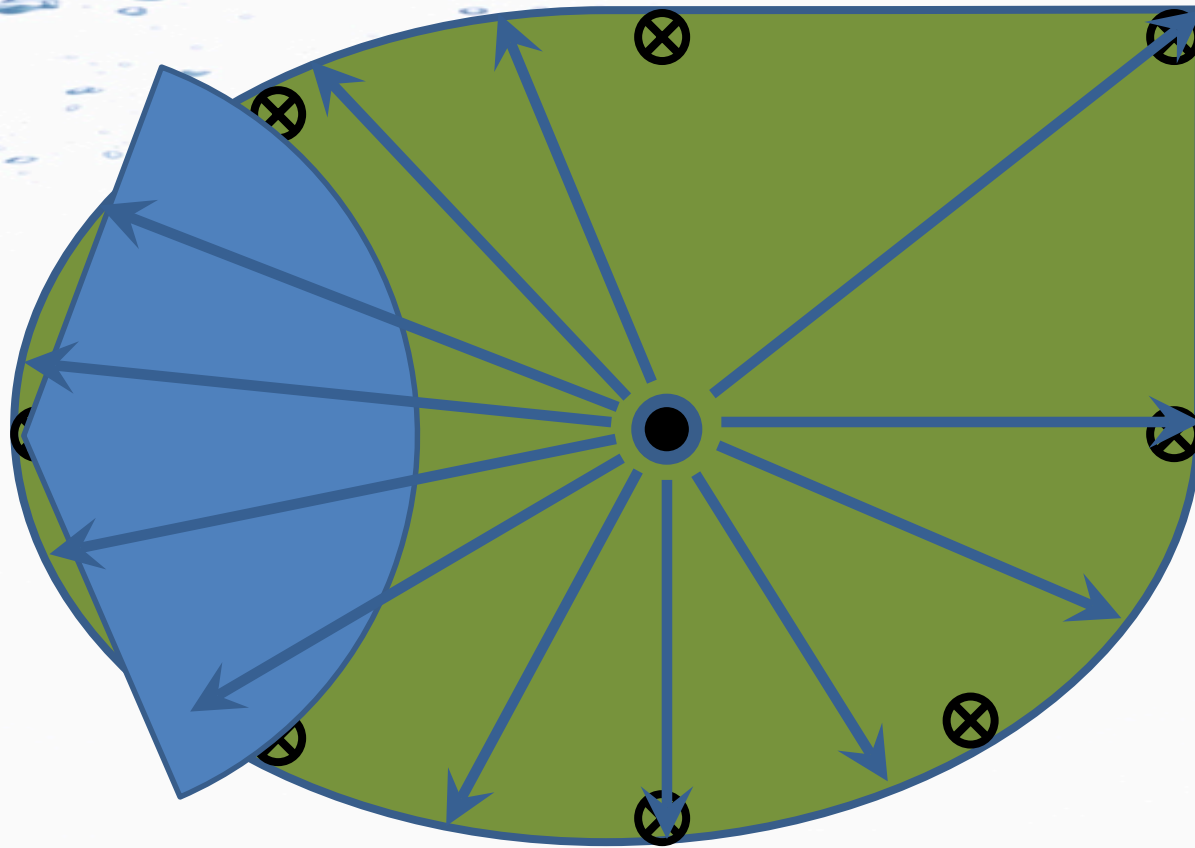


# Multi-Volume Streams



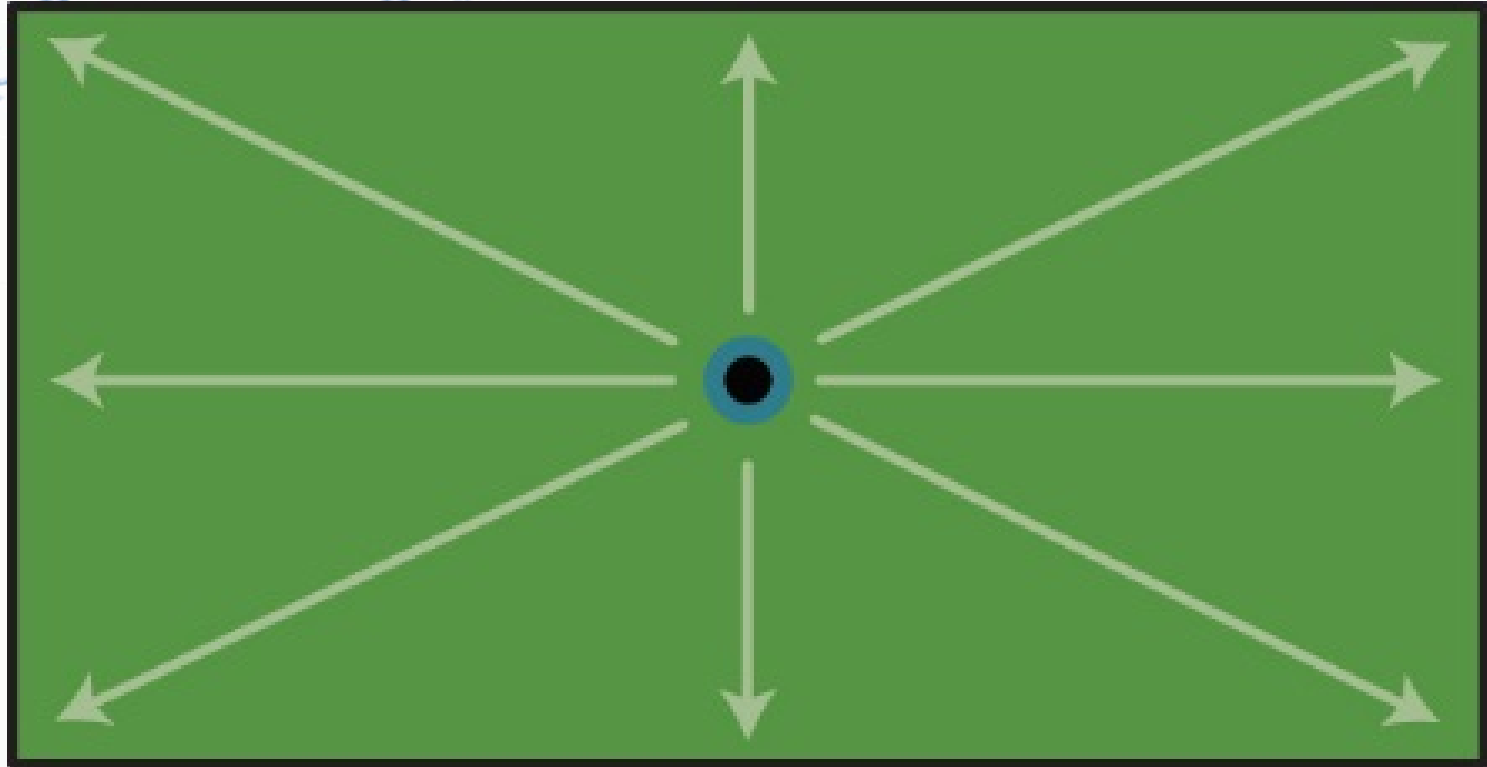


# Computer Controlled Shape



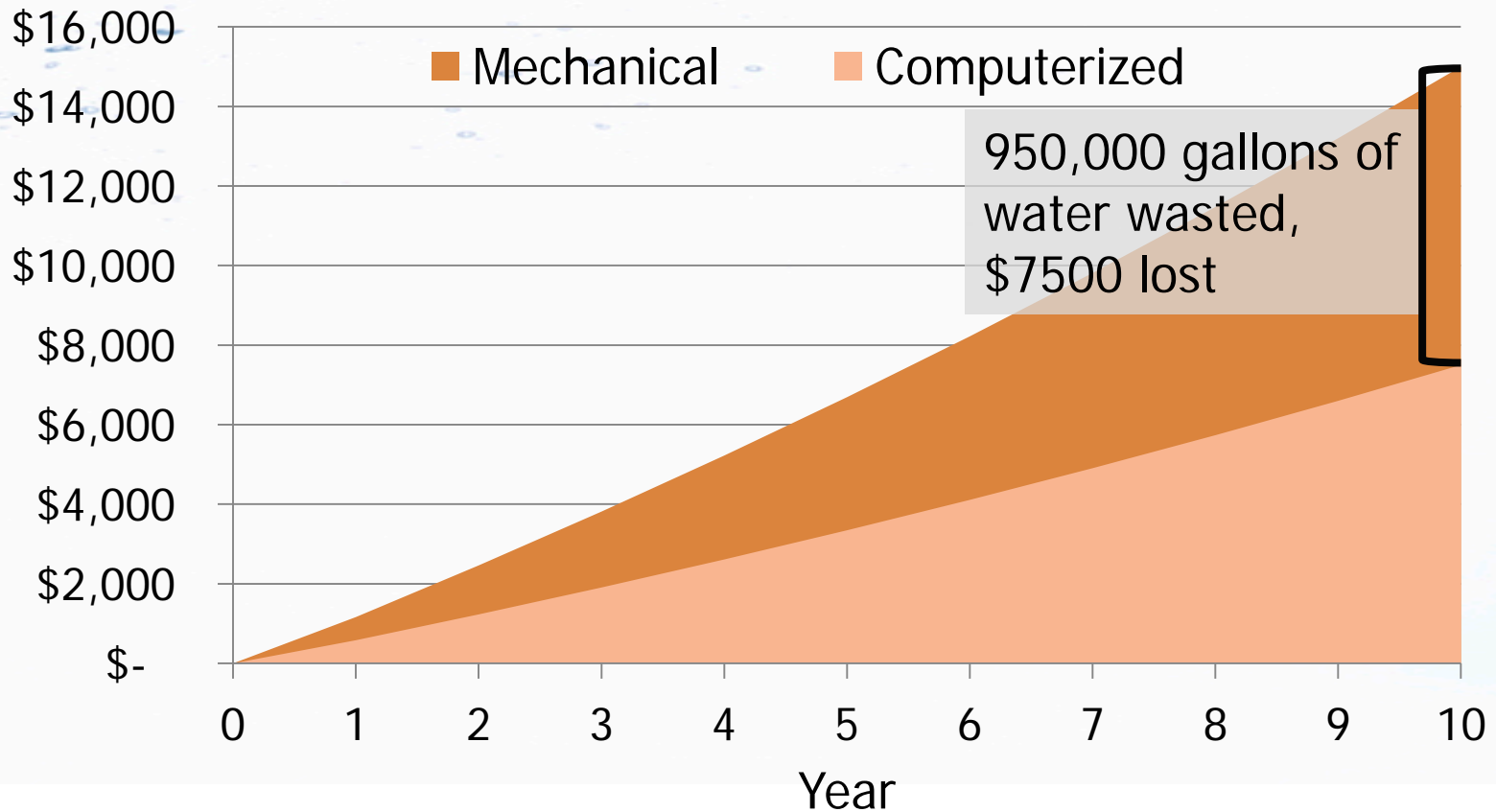
- Wire sensing
- GPS
- X-Y plotting
- Beacon
- Flash drive

# Computer Controlled Rainfall

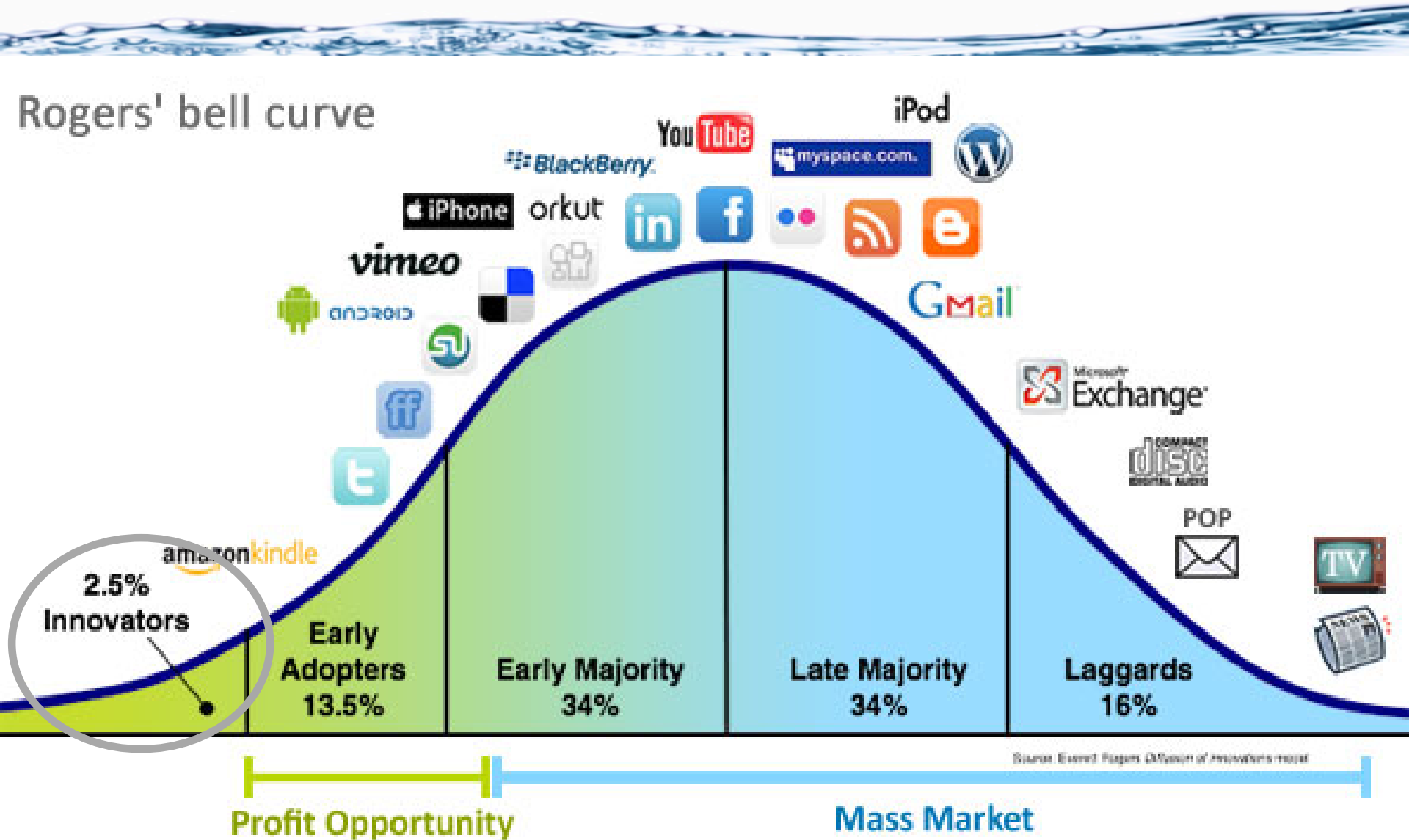


# Water Savings

## Water Use Comparison



# Smart Water Innovations





# Conventional versus Computerized



## **Mechanical Heads**

- Head-to-Head Coverage
- Proven Design
- Inexpensive Head
- Trained Irrigation Industry

## **Computerized Heads**

- Fewer Heads (less pipe)
- Water the Landscape Shape
- No Overlap, Reduce Waste
- Easy to Reconfigure
- Talk to Your Phone
- Meet Your Water Budget

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