

BUILDING A WORLD OF DIFFERENCE

July 2013

OPPORTUNITIES FOR THE UTILITY MANAGER OF THE FUTURE: INNOVATE, INTEGRATE, EDUCATE

CINDY WALLIS-LAGE, PRESIDENT B&V WATER



BLACK & VEATCH
Building a world of difference.®

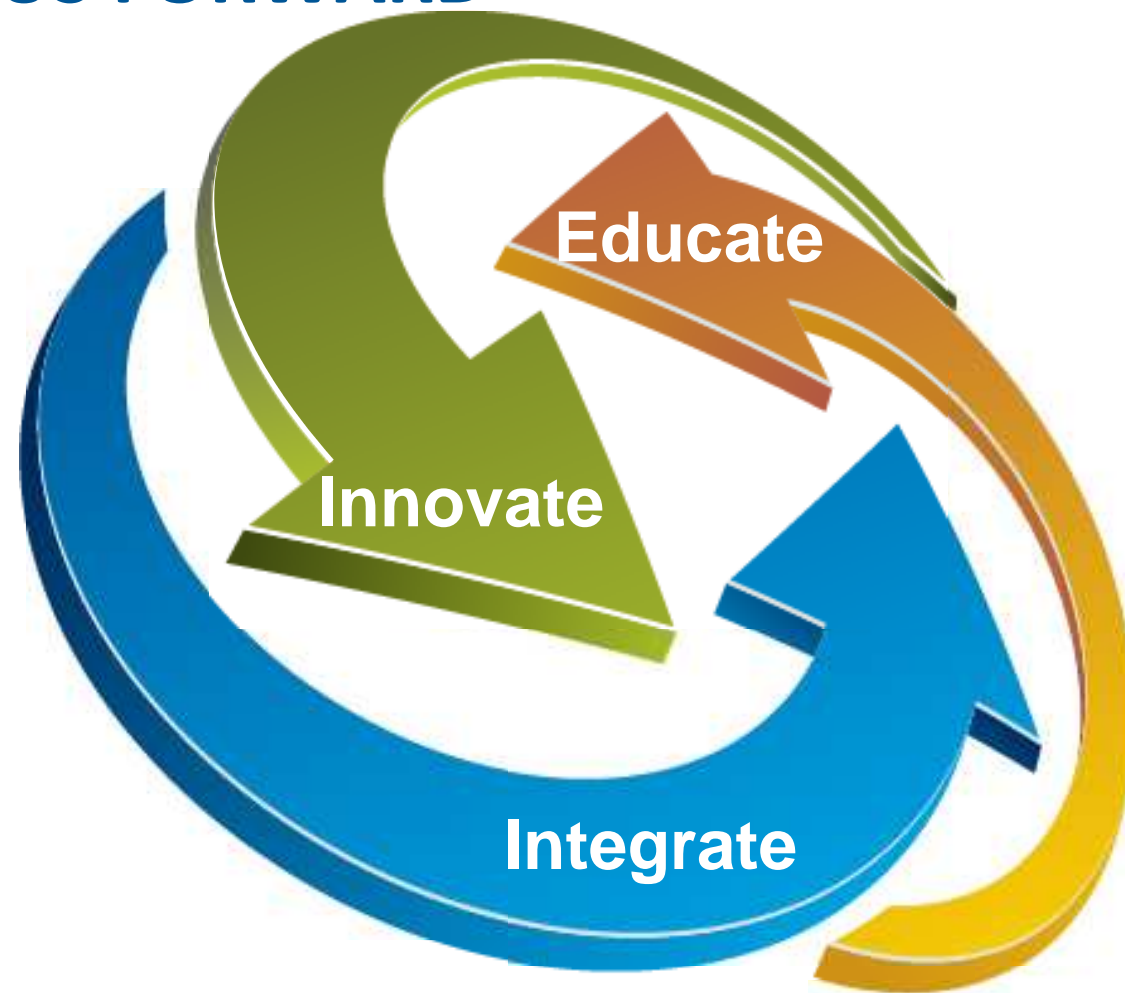
THE CHALLENGES FACING THE WATER INDUSTRY: AGING INFRASTRUCTURE, FINANCES, ENERGY



www.bv.com



SINGLE POINT SOLUTIONS WON'T MOVE US FORWARD



**Collaboration of owners, consultants,
manufacturers, regulators is required**

INNOVATE

“Once we rid ourselves of traditional thinking we can get on with creating the future.”

JAMES BERTRAND

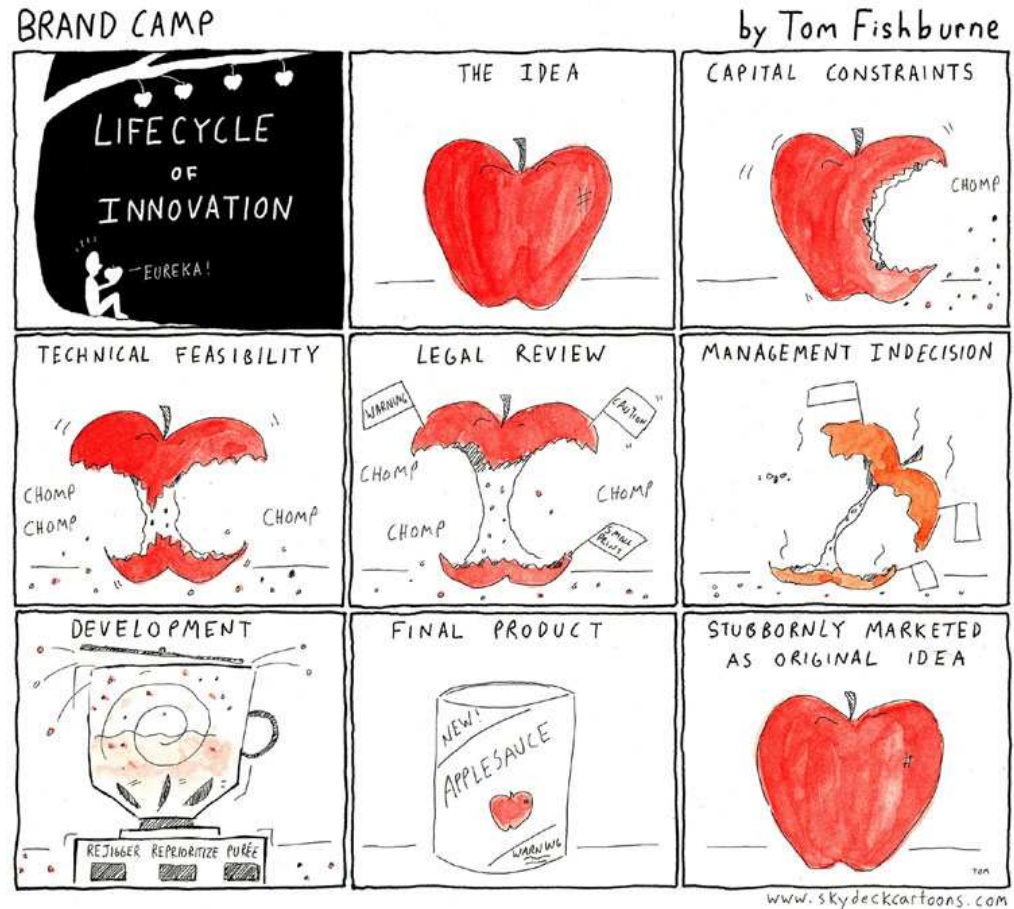


INNOVATION GOES BEYOND TECHNOLOGY

“The water industry needs to reframe its thinking and embrace innovation at all levels. To solve our cities’ future water challenges, we need to be smarter about how we *create policies* and then *plan* and *deliver infrastructure*.”

WHAT INHIBITS INNOVATION?

- Funding
- Regulatory acceptance
- Unknowns
- Knowledge
- RISK!



Death by a thousand knives!

DC WATER BLUE PLAINS WWTP



**Operational efficiency | Energy efficiency |
Improved water quality**



EASTERN TREATMENT PLANT — MELBOURNE, AUSTRALIA



**Collaboration with regulators, vendors, consultant, contractor
resulted in an Innovative and successful project**



INTEGRATE

“Creativity, as has been said, consists largely of rearranging what we know in order to find out what we do not know. Hence, to think creatively, we must be able to look afresh at what we normally take for granted.”

GEORGE KNELLER

PERFORMANCE CONTRACTING

“The use of guaranteed savings from the maintenance and operations budget as capital to make needed upgrades and modernizations to your...systems, financed over a specified period of time.”

UNITED STATES DEPARTMENT OF ENERGY



ANOTHER PERSPECTIVE

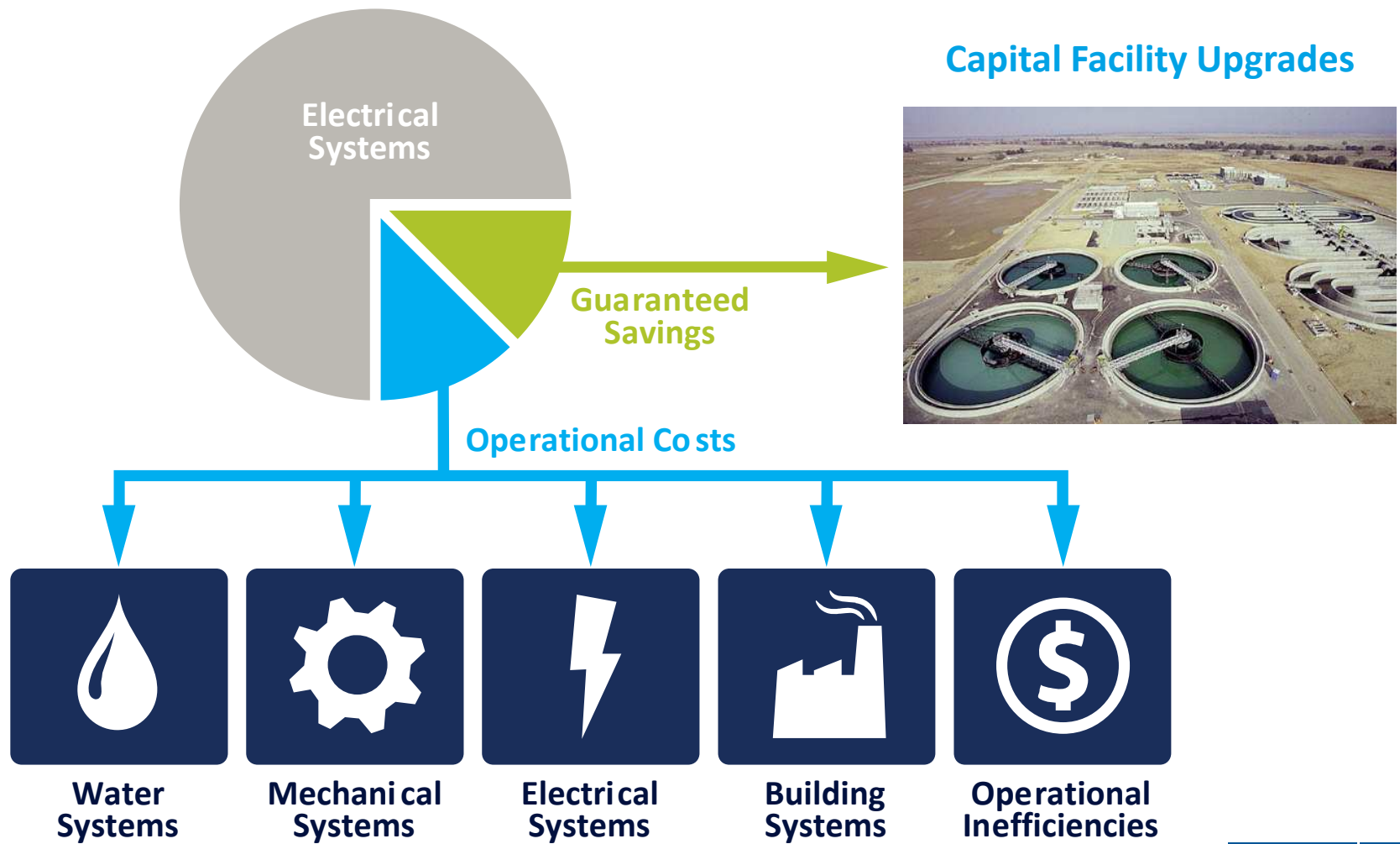
A reinvestment of utility and operational dollars to affect...

- **Infrastructure modernization**
- **Long term reduction in energy consumption**
- **Environmental stewardship**

Requirement: Collaboration between owner and ESCO to set goals and direct solutions.



HOW DO THE SAVINGS OCCUR?



THE COLLABORATIVE APPROACH TO PERFORMANCE CONTRACTING



UPPER OCCOQUAN SERVICE AUTHORITY

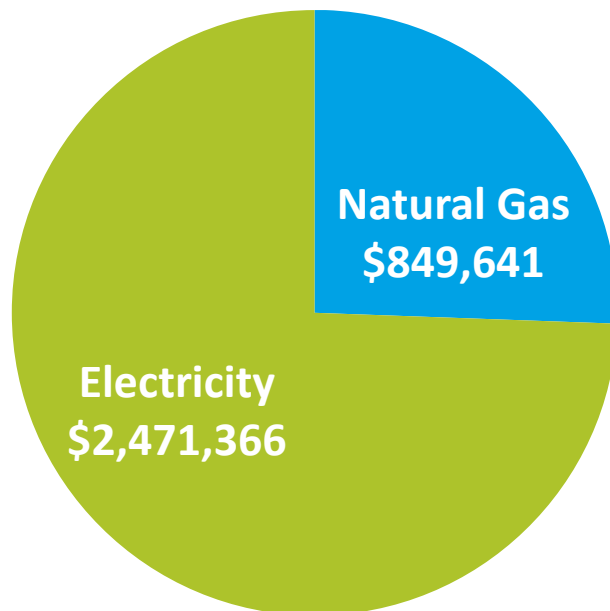


Owner + ESCO + Consultant = Success

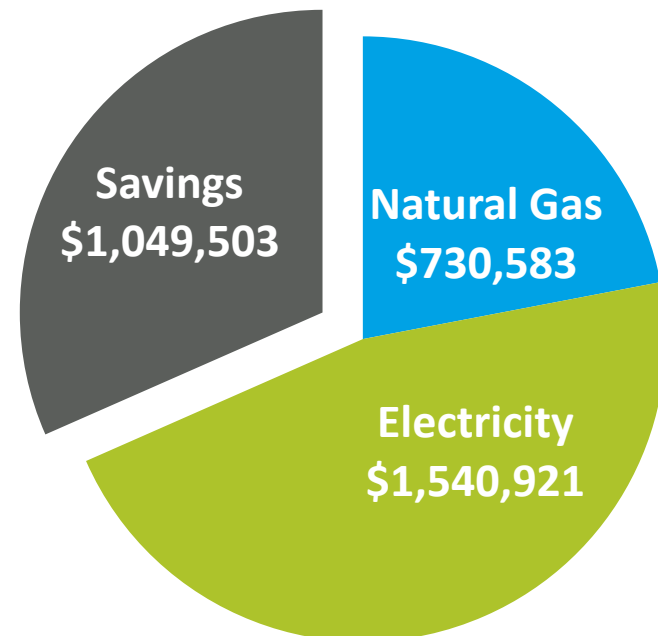


IS IT WORTH IT?

Utility Costs Before Project



Projected Utility Costs After Project



- 2013 projection of 2200 kwh/MG
- Generate \$18.4M in additional cashflow

U.S. & AUSTRALIA UTILITY PARTNERSHIP



Zero-energy solutions for wastewater treatment



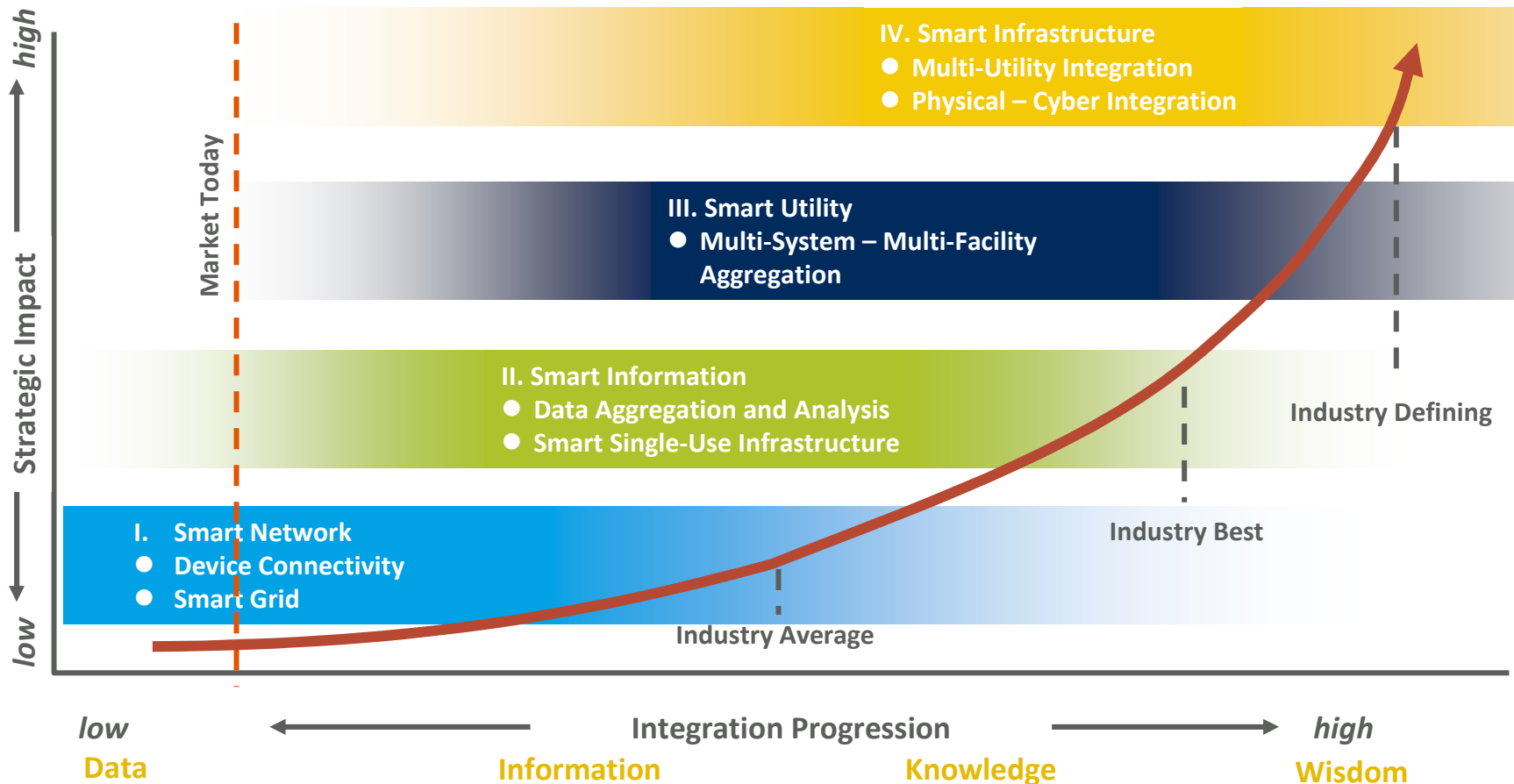
EDUCATE

“The widespread deployment of digital technology across the utility enterprise is generating volumes of data never before encountered.”

UTILITY ANALYTICS INSTITUTE



SMART UTILITY IS A JOURNEY



Being “Smart” is understanding how to plan, integrate and operate technologies holistically

**“Analytics have proven
to be a low-cost
approach to achieving
greater efficiency.”**

IDC Energy Insights





KEY INDUSTRY ISSUES DRIVING NEED FOR SMART ANALYTICS

- Data Overload
- Operational Complexity
- Skilled Workforce Shortage
- Aging Assets
- Tight Operating Margins
- Volatile Markets (Chemicals, Energy, Financial)
- Regulatory Compliance + Future Uncertainty

Analytics can leverage utility-wide data



THE BEST ANALYTICS WILL COME FROM COLLABORATION

- There is an opportunity to develop analytics that:
 - Improve efficiency – energy, chemicals, etc.
 - Focus on long-term health of system
 - Involve manufacturers and engineers in remotely monitoring and diagnosing issues and performance

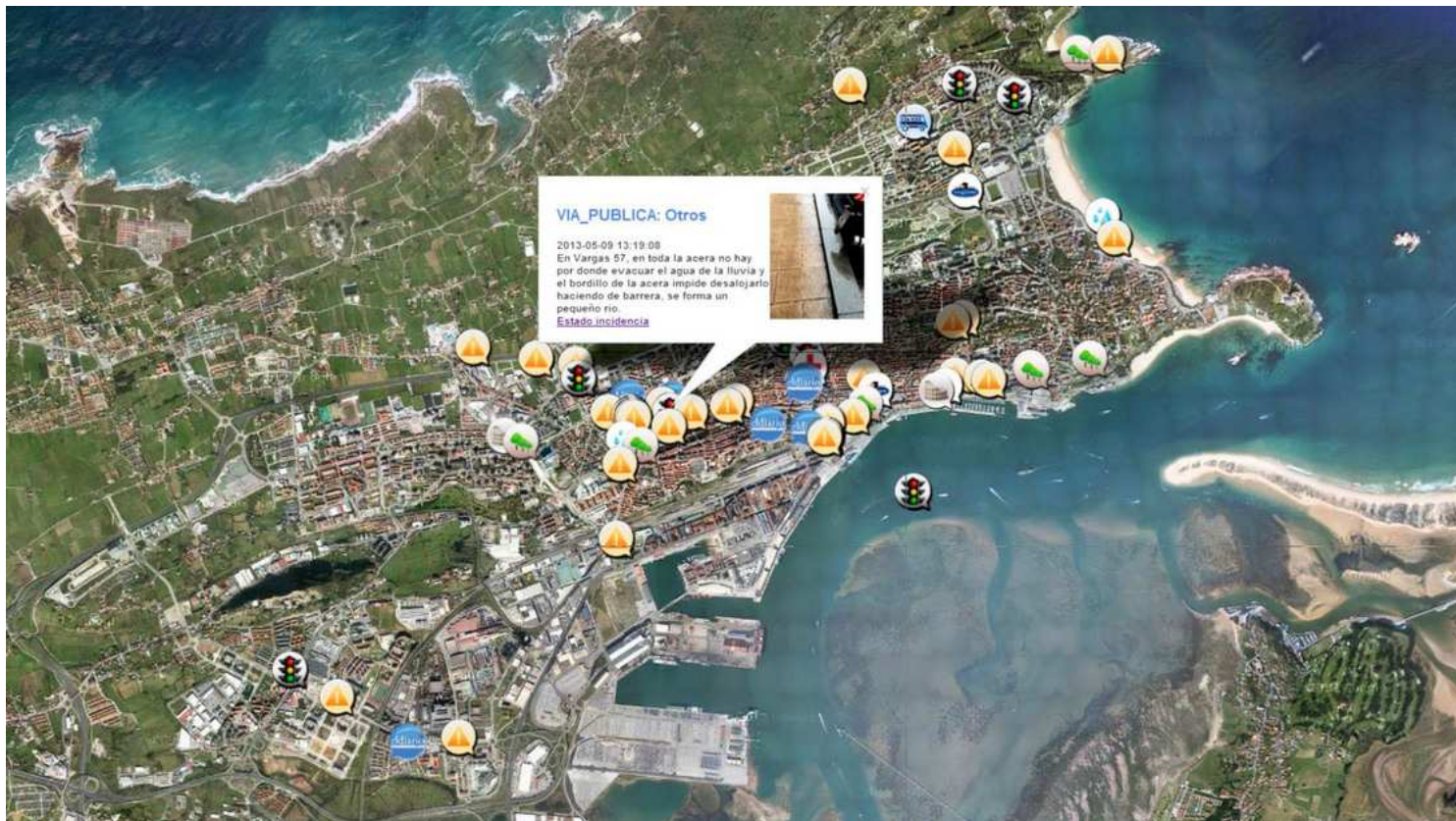


CITY OF LUBBOCK, TEXAS

- Greenfield 15 mgd WTP
- New membrane filtration system
- Cleaning event analytics
- Remote monitoring and diagnostics
- Optimization
 - Pumping energy
 - Cleaning chemicals
 - Long-term membrane performance



HIGH-TECH SENSORS HELP OLD PORT CITY LEAP INTO SMART FUTURE CITY OF SANTANDER, SPAIN



<http://www.npr.org/blogs/parallels/2013/06/04/188370672/Sensors-Transform-Old-Spanish-Port-Into-New-Smart-City?sc=17&f=1019>



COLLABORATION

**“ALONE WE CAN DO SO
LITTLE; TOGETHER WE CAN
DO SO MUCH”**

HELEN KELLER



Building a **world** of difference.®

Together

