

WELCOME



Tom Wyatt, Walt Disney World





Irrigation Maintenance and Control

- 826 irrigation controllers controlling 12,094 valves.
- Disney's Horticulture maintains approximately 9,451 of the valves on a little over 1000 acres, contractors maintain the remainder (primarily RCID roadways).
- Over 300 points of connection from 3/4" to 10"
- 240 master valves and flow sensors
- Three weather stations and 93 rain sensors



Irrigation water sources

- Well over 85% of The Walt Disney World Resort is irrigated using reclaimed water based on irrigated acreage
- The remainder is irrigated using potable water sources
- Conversions of potable water irrigated properties to reclaimed are constantly evaluated and completed where feasible, currently converting Future World at Epcot
- All new development is required to be irrigated with reclaimed water



Reclaimed water quality

- Reclaimed water at Walt Disney World is tertiary treated, it actually meets State standards for drinking water.
- Since we have little manufacturing there are no heavy metals or other difficult compounds to remove.
- There are higher levels of chlorides due to the disinfection process as well as moderate phosphorus levels. Most of the phosphorus is not in a usable form for plants but use is restricted near water bodies.
- Reclaimed water has higher salts content from the treatment process that can build up in the soil but our seasonal rains mitigate that problem.



- Construction began in 1967, opened in 1971
- About 30 years of irrigation maintenance which was primarily performed and driven by the technicians
- This led to inconsistent standards, products and practices
- In addition, no one was watching contractors as the property continued to be developed





















New Years Eve 1985

- Irrigation began running while the Magic Kingdom was open and thousands of guests present
- Need for central irrigation control was realized
- A new Rain Bird product called "Maxi" had recently been introduced into the golf market
- The commercial version "Maxicom" was developed and installed at the Magic Kingdom over the next few years



- About 20 years ago the decision was made to consolidate each park and resort's irrigation technicians into one Department
- This allowed standardization of products, practices, procedures and accountability with the overall goal of reducing water consumption



- Specifications were updated
 - Examples
 - Contractor qualifications
 - New industry products
 - As builts
 - Inspections
 - Practices

- Install in accordance with valve manufacturer's specifications and wire chart. Provide proper size for control and common wires so that as many as four electric control valves can operate from any field satellite at any time. In no case shall wire size be less than #14 for control wires and #12 for common wires.
- 3. Color code control wires as follows:
 - a. Station No. 1: Black
 - b. Station No. 2: Orange
 - c. Station No. 3: Brown
 d. Station No. 4: Blue
 - d. Station No. 4: Blue
 e. Station No. 5: Light Blue
 - f. Station No. 6: Tan
 - g. Station No. 7: Purple
 - h. Station No. 8: Blue with white stripe
 - i. Station No. 9: Pink
 - j. Station No. 10: Gray
 - k. Station No. 11: Yellow
 - I. Station No. 12: Red
 - m. Station No. 13: Black with red stripe
 - n. Station No. 14: Orange with red stripe o. Station No. 15: Brown with red stripe
 - Station No. 15: Brown with red strip p. Station No. 16: Blue with red stripe
 - g. Station No. 17: Light blue with red stripe
 - r. Station No. 18: Tan with red stripe
 - s. Station No. 19: Purple with white stripe
 - t. Station No. 20: Blue with yellow stripe
 - u. Station No. 21: Pink with white stripe
 - v. Station No. 22: Grey with red stripe
 - w. Station No. 23: Yellow with red stripe
 - x. Station No. 24: Red with white stripe
- Color of common wire shall be white. Multiple common wires in the same trench shall be white with a different colored stripe on each. Provide separate common wire for each field satellite or controller installed.
- For new control valves installed on an existing controller, control wire and common wire shall follow the prescribed color code above.
- 6. Use a continuous wire between controller and <u>remote control</u> valves. Do not use wire splices without prior approval by Owner.
 - a. Install each approved splice in Highline Products valve box.
- Provide separate control and common wires for operation of each automatic gate valve. Install wires within the same conduit as its related flow sensor cable.
 a. Install wires within the same conduit as its related flow sensor cable.
- 8. Install wire in 2 inch Schedule 40 PVC conduit a minimum of 18 in. below finished grade.
- G. Tracer Wire:
 - 1. Irrigation lines: UL-approved #14 single conductor direct burial solid copper wire with yellow polyethylene insulator.
 - Wash-down lines and irrigation main lines without field wires: UL-approved #14 single conductor direct burial solid copper wire. Polyethylene insulator color: black with white stripe.
- H. Wire Connectors: DBR/Y-6 Direct Bury Splice Kits by 3M with <u>Scotchlok</u> connectors.
 1. For wires larger than 10AWG or for more than two wires use Paige 270RC(x).

 Details were also updated and continue to be as new products we can utilize are introduced into the industry



Irrigation Guiding Principles

- We work as safely as possible, adhering to all applicable safety standards, methods and practices.
- We are cognizant of the interaction of irrigation and the public and will do everything possible to ensure their safety while attending to our client's needs.
- We serve as the knowledge source of irrigation for our clients.
- We stay current on all new irrigation technology.
- We do not circumvent computer control of any portion of the irrigation system nor do we allow anyone else to do the same.
- We discuss irrigation issues and arrive at solutions that are consistent with these guiding principles.
- All of our work vehicles are well stocked and organized with a goal of no returns to the parts warehouse during the workday.
- All of our equipment used during the course of the day is cleaned, fueled and serviced prior to returning to storage.
- All of our work complies with the current construction specifications and details.
- We do not exceed 5 fps water velocity in laterals or main line.
- We never mix different precipitation rate heads on the same zone and report any zones identified as such to management.
- We maintain hydrozoning (irrigating plant material with common water requirements together) where installed and we retrofit to that standard whenever possible.
- We use pressure regulating devices on all valves and heads.
- We use check valves to prevent low head drainage.
- We strive to enjoy our profession, team members and coworkers.

- Training topic examples
 - Detail and specification review
 - Disney specific products
 - Pipe and fittings
 - Hydraulics
 - Electrical
 Troubleshooting





- Technology
 - iPads
 - Zone maps
 - POC's
 - SOP's
 - Specifications and Details





Region 1 Magic Kingdom POC 1. Tunnel – A/C Equip Room

Start at the **MK Tunnel Loading Dock**, walk past the Employee Cafeteria, look for the double yellow doors on the right side of tunnel to the A/C Equip. Room.

Door Signage: AVAC P15A, Fantasyland, ATS-SB1, Panel SBHD2

Walk through the double yellow doors to the back wall, POC on bottom with red tag.

Size: 2 or 2 ½" Color: Copper Ball Valves Potable

Turns Off: Irrigation around Pinocchio's







Microsoft Teams Posts

- Communication between shifts to convey information about repairs and water isolation
- Safety topics
- Events that may impact access or maintenance activities





- iPhones
 - Phone calls
 - Group texting, two way rather than one way with Teams and more informal
 - <u>Maximo</u> <u>Automated</u> <u>Dispatch</u> MAD



Irrigation Maintenance Daily MAD Calls Report

Last Refreshed: 04/18/2023 07:30 AM

Last Months Work Order History through 04/18/2023

Calls on 4/14/23

Work Order #	Problem	Property	Location	Description	Priority	Status	Time In	10-97	10-98	Duration of Call	Work Order - On Behalf Of ID	Work Order - Labor Transaction Summary
141843335	BRKN	DS	WS PARKING LOT - WATERMELON (FORMERLY M)	BROKEN IRRI HEAD NEAR WATERMELON SIGN AND CIRQUE	UCL	COMP	01:53	02:29	04/14 02:44	51	Eric	Bizjak, James G25
141843402	BRKN	мк	PARK 1 - SECURITY KIOSK	PASSED KIOSK UNDER RR - HEAD SPRAYING ELEC PANNELS	UCH	COMP	03:05	03:12	04/14 03:37	32	Joseph	Torres Torres, Teodoro 42
141843679	LEAK	AK	KILIMANJARO SAFARI - WEST SAVANNAH	NEAR DIRT PILE IN HORSESHOE, OBSERVED LEAKING ON OCCASION.	UCL	COMP	05:53	06:47	04/14 07:12	79	McCarthy, Meaghan	Weiss, Abraham E42
141843869	INOP	YB	BEACH CLUB RESORT	CLOCK 101-6 INOP	UCL	COMP	06:56	08:49	04/14 08:49	113	Lisa	
141843882	BRKN	CS	MAYA GRILL	BROKEN IRRIGATION HEAD FLAGGED	UCL	COMP	06:59	21:20	04/14 21:20	862	Sianese	
141843920	DAMAGE	AS	LOVE BUG 7 ROOM 7701	BROKEN LATERAL LINE FLG	UCL	COMP	07:14	19:59	04/14 20:16	782	Cecil, Philip	Childress, Harley D28
141843944	BRKN	DS	LUXURY OF TIME BY DIAMONDS INTERNATIONAL - 3P OPERATING	DNB - BROKEN HEAD - FLG	UCL	COMP	07:24	03:09	04/15 03:40	1215	Youselli	Bizjak, James G52
141844309	DAMAGE	CB	OPR BUS STOP	WATER COVERAGE ISSUE 121-11-3	UCL	COMP	08:40	12:27	04/14 12:33	233	Andrew	Switzer, Noel P10
141844314	DAMAGE	CB	BARBADOS POOL	WATER COVERAGE ISSUE 121-13-1	UCL	COMP	08:41	12:34	04/14 13:53	312	Andrew	Villegas, Carlos I - 1.32
141844380	DAMAGE	СВ	TPD SKYL STATION, TRINIDAD	BRKN HEAD AND LATERAL - ENTRY TO EXIT - FLG	UCL	COMP	08:54	12:17	04/14 13:17	263	AAndrew	ORTIZ CRUZ, FREDERICK - 1.00
141844569	BRKN	PR	PR: BLDG 12, PORTE-COCHERE	BROKEN HEAD	UCL	COMP	09:25	11:30	04/14 12:21	175	Jeremy	Koch, Jeffrey E85
141844713	ADJUST	DS	CIRQUE - WBS 1012621.2 (FORMERLY BLDG 8)	NOT WORKING IN FRONT OF CIRQUE FLG	UCL	COMP	10:19	11:31	04/14 11:59	100	Cecil, Philip	Romero, Alfonso47
141845334	H2OFLW	AN	ART OF ANIMATION RESORT	119 FZ2 POTABLE WATER 110 GPM	UCH	COMP	14:03	14:10	04/14 15:08	64	Miller, Jeff	Oquendo Reyes, Jose A 97 Childress, Harley D90

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- QR codes are in each controller and can be used to display what that controller irrigates.
- The red and white QR code is for gardeners and other non-irrigation personnel
- The black and white QR code is for irrigation specialists



• Service vehicles

- All are set up identically
 - Common set of tools, parts and supplies
 - Goal is 95% of repairs can be made without returning to warehouse for parts



- Focus on Preventive versus Reactive maintenance
 - Each value is inspected twice annually with the goal of:
 - Improving uniformity
 - Making repairs
 - Collecting data



#	Job Plan: Irrigation Preventive Maintenance Inspection Procedures						
10	Manufacturer's Guidelines						
	1) Only operate equipment in accordance with manufacturer's suggested guidelines, listed in the owner's manual for the equipment.						
20	Disney's Irrigation Operating Guidelines						
	Follow Disney's Horticulture Operating Guidelines, covering the following:						
	1) Usage of Personal Protection Equipment.						
	2) Following Disney's Irrigation Specifications and Details.						
	3) Following Disney's Irrigation Guiding Principles.						
30	Landscape Coefficient Inspections						
	1) Obtain current landscape coefficient value for valve to be inspected.						
	2) Note any landscape coefficient values that are higher than the specified limit for this PM cycle.						
40	Electric Valve Operation Inspections						
	1) Turn on valve and observe operation.						
	2) Inspect landscape covered by irrigation zone for any localized areas that are too wet or too dry.						
	3) Make all repairs necessary to achieve uniform coverage with no over spray onto non-target areas such as adjusting,						
	repairing and replacing heads, correcting mismatched MPR nozzles, repairing lateral lines and wiring issues, etc.						
	4) Note any major deficiency that cannot be repaired in four or more hours (individually, not in total if multiple deficiencies						
	are observed).						
	5) Open valve box, inspect condition of wire, splices, electric valve, ball valve, ID tag, and box. Note any defects on PM sheet.						
50	Data Gathering						
	1) Amass data specified for this PM cycle.						
	2) Verify continued accuracy of previously gathered data.						
60	Completion and Follow-up						
	1) Complete all required paperwork and notify leadership of completion of job and any specific issues found in the location.						

• How do you tell if your strategy is working?


The Walt Disney World Resort Maintenance Strategy for Aging Systems

- What does the future hold?
 - Drone inspections
 - Robotic repairs
 - "Smart" irrigation components
 - Heads that tell you when they're clogged, missing nozzles or out of plumb
 - Valves that tell you when they didn't run
 - Next generation control systems that address the knowledge gap between system capability and average user.





Navigating Change in the Golf World... And Planning Ahead

Henry DeLozier, GCA Partners

www.ggapartners.com



Began in 1992 as the KPMG Golf Industry Practice

- Became Global Golf Advisors ("GGA") in 2006 and rebranded to GGA Partners in 2020
- Point of Differentiation Strictly Professional Services
- Serving 3,500+ Clients Worldwide
- Headquartered in Toronto Offices in Dublin, Ireland and Phoenix AZ



A Sampling of GGA Clients



Henry DeLozier is a Principal at GGA Partners. Highly experienced in guiding directors and leaders in matters impacting private clubs across the globe, he is frequently called upon for board facilitations and training in matters of strategic thinking, governance, and forward planning.

Henry is considered to be a leading strategic thinker for private clubs and leisure properties. Having created strategy at some 220 private clubs, he teaches strategic planning for the Club Management Association of America – Strategic Leadership curriculum. Having managed operations for private clubs, destination resorts, and a portfolio of privately owned clubs, Henry brings broad and deep understanding of the variety of strategic and tactical necessities that challenge leaders of clubs of all types.

A student of John Carver and a supporter of GGA's Fred Laughlin, the renowned non-profit governance expert, Henry is recognized within the private club segment for his understanding of the standards of best practice for private club governance and board leadership. In addition to board and club-leadership coaching, he is a regular contributor to *Club Director* magazine from the National Club Association, and *BoardRoom* magazine. He understands how clubs work and don't work and translates that knowledge into insight, enlightenment, and understanding that leads to improved results in the board room.

He is the current Chairman of the Board of Directors for Audubon International. Prior to joining GGA, Henry was an executive at America's largest homebuilder, Pulte Homes, where he guided the investment of more than \$500 million in developing club assets and amenities. A 'go to' resource on matters of residential investment and development, Henry is often called upon for comment on social and economic trends concerning private club and affiliated business segments. He serves as an expert source for Bloomberg News, Business Week, CNBC-Squawk Box, the Financial Times of London, the New York Times, the Wall Street Journal, and the Washington Post.

He is a graduate of Oklahoma State University (BA – English) where he was an All-America golfer.

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What is the highest water cost ever realized?

- \$78,571 per gallon
- \$ 25,602,438,921 per acre foot







November 27, 2009

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What is the highest water cost ever realized?

- \$78,571 per gallon
- \$25,602,438,921 per acre foot
- 1,400 gallons used
- \$ 110 million final cost

(Source :: Forrest Richardson at Richardson | Danner Golf Course Architects)





Navigating Changes for Golf



Source: Golf Digest - Mountain Shadows

Where will the 'Covid golf boom' lead us?

NGF Total Participation	41.1 million	^10%
NGF Total Off -Course	27.9 million	^13%
NGF Total On -Course	25.6 million	^ 2%
NGF Beginners	3.3 million	^ 3%
NGF Age 6 – 17	3.4 million	^11%
NGF Female	6.4 million	^ 4%

(Source :: National Golf Foundation – The Graffis Report)



Trends in Golf Facilities and Usage

- Srowing participation among women and girls.
- Sustained rounds-played metrics (weather adjusted)
- Continued influences from Covid pandemic:
 - ♦ *Al fresco* dining in clubs
 - Divisions arising from usage of tee-time reservations.
 - Higher-than-previous golf participation.
- Continued growth for non-traditional golf venues / activities.
- Sustained supply uncertainty and price escalation.







Navigating Changes for Golf Properties

Why?

- Developers have recalibrated the priority for and need of traditional golf courses.
- Increased margin / profitability.
- Escalating land costs and consumer trends.
- Consumer trends favoring socialization and entertainment over "pure golf".
- Increasing pressure / public opinion on water consumption.



What?

- Short / small courses with shorter length, alternative hole-counts.
- Short-game and alternative-format practice and gathering space.
- Evolving consumer interest and engagement with golf.
- Advanced / coordinated golf plan regarding water consumption and recharge.
- Continued facilities investments by high net-worth individuals and groups. (*)



Where?

	Where?	Growth %	Median Price
1	Farmington NM	20.3	\$261,200
2	Sarasota – Bradenton FL	19.5	\$520,000
3	Naples – Marco Island – Immokalee FL	17.2	\$802,500
4	Greensboro – Highpoint NC	17.0	\$276,100
5	Myrtle Beach SC	16.2	\$373,000
6	Oshkosh – Neenah WI	16.0	\$220,700
7	Winston Salem NC	15.7	\$285,200
8	El Paso TX	15.2	\$244,500
9	Punta Gorda FL	15.2	\$392,800
10	Daytona – Deltona – Ormond Beach FL	14.5	\$353,800





Where?

- 🔷 Arizona
- Carolinas
- 🔷 Colorado
- 🔷 Florida
- 🔷 Georgia
- 🔷 Idaho
- Maine
- 🔷 Montana
- 🔷 Nevada
- New Hampshire
- Oregon
- Tennessee
- 🔷 Texas
- 🔷 Utah
- Washington
- Wyoming

Price of Inter-State Migration

Connecticut led the pack of 26 losing 1.6% of AGI, Florida's +2.9% topped 18 gainers

Net gain/loss as % of state's total adjusted gross income (AGI) ■ Winners: > +0.20% ■ Losers: < -0.20% ■ Within +/- 0.20% +0.81%+1.14%-1.17% 0.33% +1.20% +1.66% -0.26% 0.249 +0.53% -0.28% -0.53% 0.659 -0.36% -0.31% +1.15% -0.54% +0.72% -1.09% +0.90% -0.50% -0.38% 0.22% +0.75%-0.23% +1.12% -0.39% -0.35% +0.30% -1.23% +0.35%

Source: Bloomberg analysis of IRS filing and Census data

Bloomberg



Influences on housing trends...

Booming Markets...

- Austin TX
- Dallas TX
- Boise ID
- Houston TX
- Knoxville TN
- Nashville TN
- Sioux Falls SD





Notes: Shows states with annual net AGI gain exceeding \$1 billion Source: Bloomberg analysis of IRS and Census data





Factors influencing housing growth...

Favorable Influences:

- Short supply of new home product.
- Innovative new designs for alternative / golf entertainment venues and facilities.
- Continued Covid-driven relocations.

Unfavorable Influences:

- Increasing land costs driving new golf outward.
- Scalating home mortgage rates.
- Shifting buyer preferences regarding golf courses



Continuing Housing Volatility...

February median home price down .2% YOY to \$363,000

- Ends 131-month run of increases
- Housing starts rose 9.8% in February
- NAHB / Wells Fargo Housing Market Index ("HMI") rose from 42 to 44 (the third month-over-month increase following 12 consecutive months of declines)



What's missing from current conditions?

- Reliable and proven short-course and alternative format golf venues.
- Advanced programming for instruction and socialization – to engage and retain the 3.3 million beginner golfers.
- Distribution of game improvement technologies for aspiring golfers.
- Enduing programming for conservation and environmental initiatives to engage women and rising generations.





Discussion | Questions

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Irrigation Design in Automation Systems Don't Stress, the Answer is "Yes"

Dave Shoup, Hunter Industries

The Automation Opportunity

- "Automation systems" manage all utilities within a facility or city
- These secure systems typically <u>cannot use</u> <u>the internet</u>
 - Web-based controls are not options
 - Local host solutions are required
- Users (or their system integrators) create their own software controls
- We have been interfacing our controllers directly with these systems for several years



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Who is the Customer?

Not our typical sprinkler customers!

- Network Engineers: Security and protocol concerns
- System Integrators: Software flexibility and compatibility

Irrigation Designers play a vital role as the interface between developers and users!

Irrigation Control Managers need a system they can actually use



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Industrial Automation Keywords

- Applications may be called:
 - BMS: Building Management Systems
 - BAS: Building Automation Systems
 - SCADA: Supervisory Control and Data Acquisition

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- Smart City: City-wide automation control
- Networks:
 - BACnet
 - Modbus
 - RESTful API
 - Other protocols
 - Over 120 industrial protocols available



120+ PROTOCOLS

CONTROLLERS.

SCADA/PLC

Sustainability On a Grand Scale

- Wide area management of *anything that consumes resources*
- Detailed reporting and automated adjustment



Helpful Hardware

- Field Servers ("Gateways")
- Translators between the network, and proprietary controller protocols
- Allows developers to discover controller objects for their screens
- Includes developer documentation for all controller commands





Field Server (only 4"/10 cm tall)

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Field Servers Can Be Anywhere in the Network

- Each controller is specified with a LAN (Ethernet) communication module
- Field Servers may be within the controller...
- In a building near a connection
- In a server rack mount



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Field Servers Can Be Anywhere in the Network

- Connections are also possible via cell or Wi-Fi, but these are not preferred
- Other than the connection media, these details are not important to the irrigation design process



Objects/Data Points in BACnet

Things you mostly don't need to know:

- Controllers are "devices"
- Each feature is an "object", or data point (object properties)
- Feature requirements define the size and capacity of the field server
- We use 1000 or 3000 data point field servers, depending on requirements
- A 3000 point field server might operate up to 2-3 ACC2 controllers, for example



Development Station

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Demo-Starter Software

- Our field servers have basic software on board for immediate use
- Browser-based control of the common functions
- Can be used almost immediately, or as a tutorial for screen design

BUSY FieldserverName 300 & C		
SCHEDULE STATIONS ADJUSTMENT REMOTE CONTROL ALARMS 8	LOGS FLOW SETTINGS	
Туре	Stations	
Station	Name	Status
Station		
Loading 🝷		
Run Time		
<u>0 ▼</u> hr <u>0</u> ▼ min <u>0</u> ▼ sec		
1 MIN 5 MIN 15 MIN 30 MIN		
STOP START >		

High Level Checklist

Identify key stakeholders

Network engineers and security expertsSystem integrators

□ Irrigation managers

Extra Credit:

- Identify network protocol (BACnet, Modbus, etc.)
- □ Identify the software UI development platform in use (Wonderware, etc.)
- <u>Create a Minimum Viable Product</u> specification based on user needs, reporting requirements, mobile access
 <u>Define interactions</u> with other systems or devices within the automation ecosystem



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Checklists: How to get what you (they) want

COMIV	UNICATION MEDIA	HISTORICAL INFORMATION / REPORTS	
	Fiber		Flow Totals / Rates
	LAN "UTP cables"		Controllers Alarms
	WIFI		Current Draw (Transformer and D. Module)
	Cellular		Stations Activity
	Radio		ET with Seasonal Adjustment %
	LoRa		Communication status
	Other:		Other:

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- Typical Objects and data points
- Pre-configured in our field servers, because they are the most commonly used
- They draw their own buttons around these commands
- All other commands are directly available, as needed

CONTRO	DLLER FUNCTIONS	CONTROLLER FUNCTIONS
	Set/Get Globals	Set Pause Mode
	Set / Get Flow Operation	Set Pause Cancel
	Get Item Information	Set Start Manual Event
	Set / Get Station Params	Get Active Stations
	Set / Get Flow Zone Params	Get Alarms and Info
	Set / Get Prgm Header	Get Current Flow Data
	Set/ Get Prgm Event RunTime	Get Click Sensor Data
	Set / Get Seasonal Adj	Get Decoder Module Info
	Set Stop Stations	Report Flow Totals
	Set Stop Prgm	Set Clear Flow Alarms
	Get Flow Zone Monitoring Data	Read Controller Logs
	Get Current Draw Data	Get Controller Version
	Set Stop Irrigation	Set Learn Flow Date Time
	Set Programmable Off	Set Password
	Set Suspend Irrigation	Other:
	Set Cancel Programmable Off	Other:
	Set Cancel Suspend	Other:
	Set Start Manual	Other:

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Automation and Your Business Model

- \$ Bare Minimum: Design irrigation, place controllers with LAN
 modules, have network guys define physical connections, and walk
- **\$\$ Opportunity**: Facilitate discussion between users and integrators with your expertise to define controller functionality
- \$\$\$ Opportunity, extra credit: Define control interaction with other network devices at a high level

Tribal Knowledge

- Most big-name automation corps don't know our industry exists
- There is no awareness of irrigation scheduling unless we supply it
- Integrators won't know the basics of irrigation scheduling
- To a developer, it might make sense to turn all the valves on at once, to reduce irrigation time
- There is a need for your services
Integration with Other Devices: "Use Case" Form

- You are not on your own!
- Describes interactions desired with other network devices
 - Weather Stations
 - Pumps
 - Tank Levels
 - External Sensors

Use Case ID	
Use Case Name	
Version	
Authors	
Actors	
Preconditions	
Triggers	
Brief Description	
Main course	
B	
Post-conditions	
Relevant features	

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Example Use Case:

A ASI

Use Case ID	113
Use Case Name	Smart Irrigation – Reacting with Fire alarms
Version	1.00
Authors	
Actors	Fire alarm system Irrigation controllers Platform / SCADA
Preconditions	Irrigation Controllers are installed in landscape.Fire alarm system installed at the project.Platform / SCADA connected with Irrigation andFire system.
Triggers	Fire alarm trigger
Brief Description	Provide priority and water availability to fire fighting. Saves lives.

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Example Use Case, continued:

We have many other successful examples for you.

	Platform / SCADA monitors the fire alarm feedback. Platform / SCADA reacts with shutdown the irrigation controllers that supplies from the same water tank that system received the alarm trigger from it. and keep the other areas that irrigating from another water tanks irrigating as normal.
Post-conditions	Provide priority and water availability to fire fighting. Saves lives.
Relevant features	The platform/ SCADA must be capable of communicating with Irrigation controller real-time. The platform/ SCADA must be capable of communicating with fire alarm system in real-time.

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Main course

Other examples:

- Weather station integration for automated adjustment.
- Rain sensor integration
- Flow sensor management
- Tank level sensing and adjustment
- Detailed flow consumption reporting
- Detect Manual Operation violations
- Real time electrical power monitoring
- Low pressure response
- Pump station interactions



Irrigation/Automation Success

- We now have hundreds of Field Servers in systems by:
 - Schneider Electric
 - Johnson Controls
 - Honeywell
 - Siemens
 - Etc.
- Server is Made in USA
 - Programming and support in Canada
 - Compatible with specified commercial controllers



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Questions?



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APRIL 23-25, 2023

GEE! **INEVER WOULD HAVE THOUGHT OF** THAT















AR GAP THE FLITER DISCHARGE PPE AND ROLTE PPING SOLT IS ROLTED BETWEEN BOTTON RALL AND TOP OF CONCRETE WALL FLITARTIE IS TO BIGHARGE INFO DESTING CONCRETE STRUCTURE, COORDINATE EXACT ROUTING AND INSTALLATION WITH OWNERS REPRESENTATIVE.



EXISTING STRUCTURE FOR FILTER DISCHARGE

























































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