

More Data means less Drama:

System wide smart sensors and transmitters for process understanding and optimization.

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AGENDA

- **Challenges in Water Industry**
- **Technology Advancements**
- **Importance of Data**
- **Digital Water Solutions & Risk Mitigation**
- **Use Cases**
- **Example**



What's in it for me? – Operations/Maintenance

“As a facility support staff, I need to quickly and easily understand the status of my facility and equipment and be able to prioritize activity.”

Use Cases: Municipal and Industrial



Issues Addressed

- | | |
|--|--|
| <ul style="list-style-type: none">• Compliance• Budget• Resource constraints• Expertise | <ul style="list-style-type: none">• Visibility• Trust/Accuracy• Scheduling/Productivity• Uptime |
|--|--|



What's in it for me? – Lab Technician

“As lab technician, I need to quickly and easily understand the status of my facility, assuring accuracy of collecting and reporting data to ultimately maintain compliance.”

Use Cases: Municipal and Industrial



Issues Addressed

- | | |
|---|---|
| <ul style="list-style-type: none">• Accuracy of Data• Accuracy of Reporting• Compliance• Expertise | <ul style="list-style-type: none">• Visibility• Trust• Uptime• Ease of Data Comparison |
|---|---|



What's in it for me? – Plant Manager

“As a plant manager, I need to quickly and easily understand the status of my facility, deploying resources appropriately to maintain compliance.”

Use Cases: Municipal and Industrial



Issues Addressed

- | | |
|--|--|
| <ul style="list-style-type: none">• Compliance• Budget• Resource constraints• Expertise | <ul style="list-style-type: none">• Visibility• Trust/Accuracy• Scheduling/Productivity• Uptime |
|--|--|



What's in it for me? – OEM/Consultant

“As an OEM/Consultant, I need to be able to remotely view the health and status of the equipment and systems that I am supplying in order to make sound and timely recommendations.”

Use Cases: Municipal and Industrial



Issues Addressed

- | | |
|--|---|
| <ul style="list-style-type: none">• Visibility• Trust/Accuracy• Compliance• Expertise | <ul style="list-style-type: none">• Scheduling/Productivity• Uptime• Compliance |
|--|---|



The Challenge...



Evolving workforce

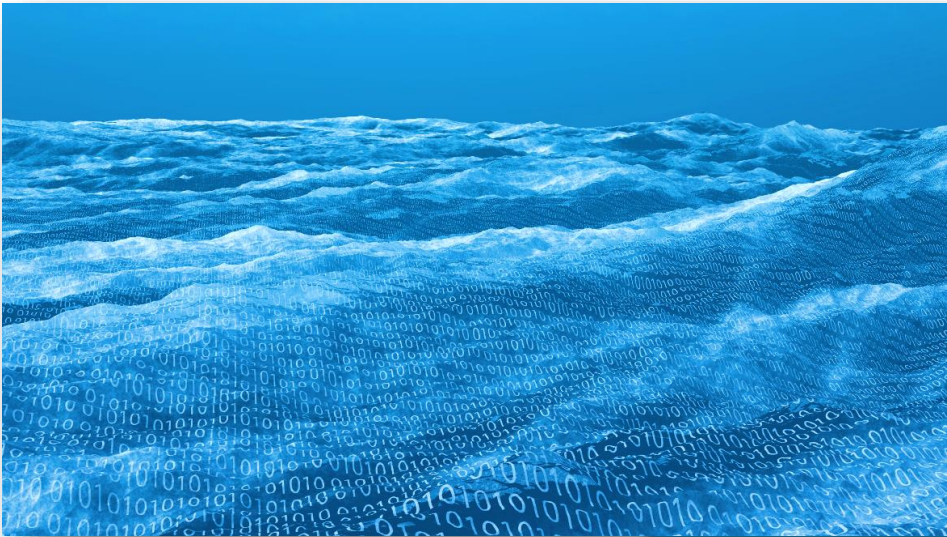
Increasing regulations



Budget pressure



Technology Evolution

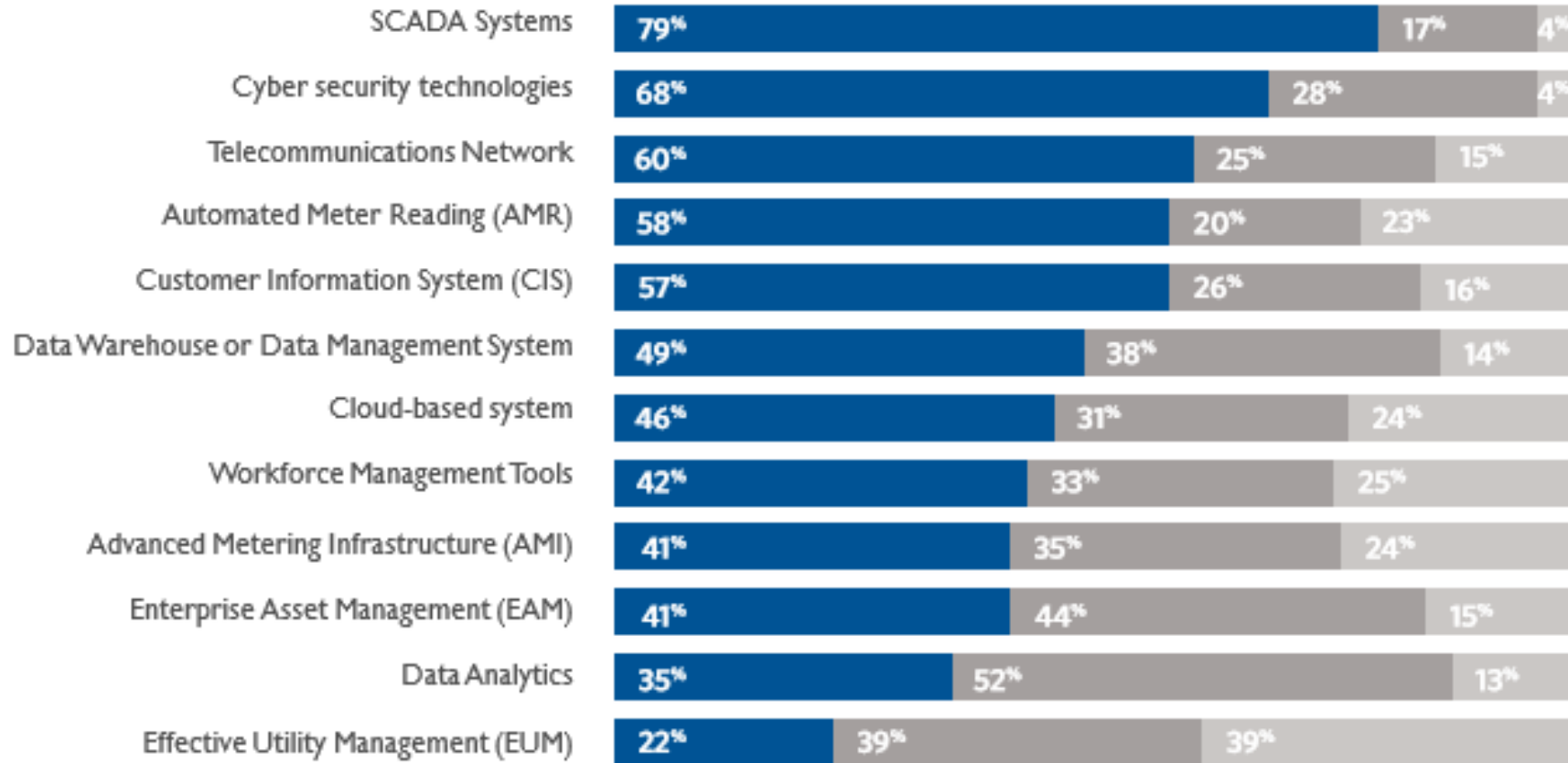


More data



Industry trends regarding information/operational tech

What information and/or operational technologies has your organization implemented or planning to implement?



● Already Implemented ● Plan to Implement ● No Plans

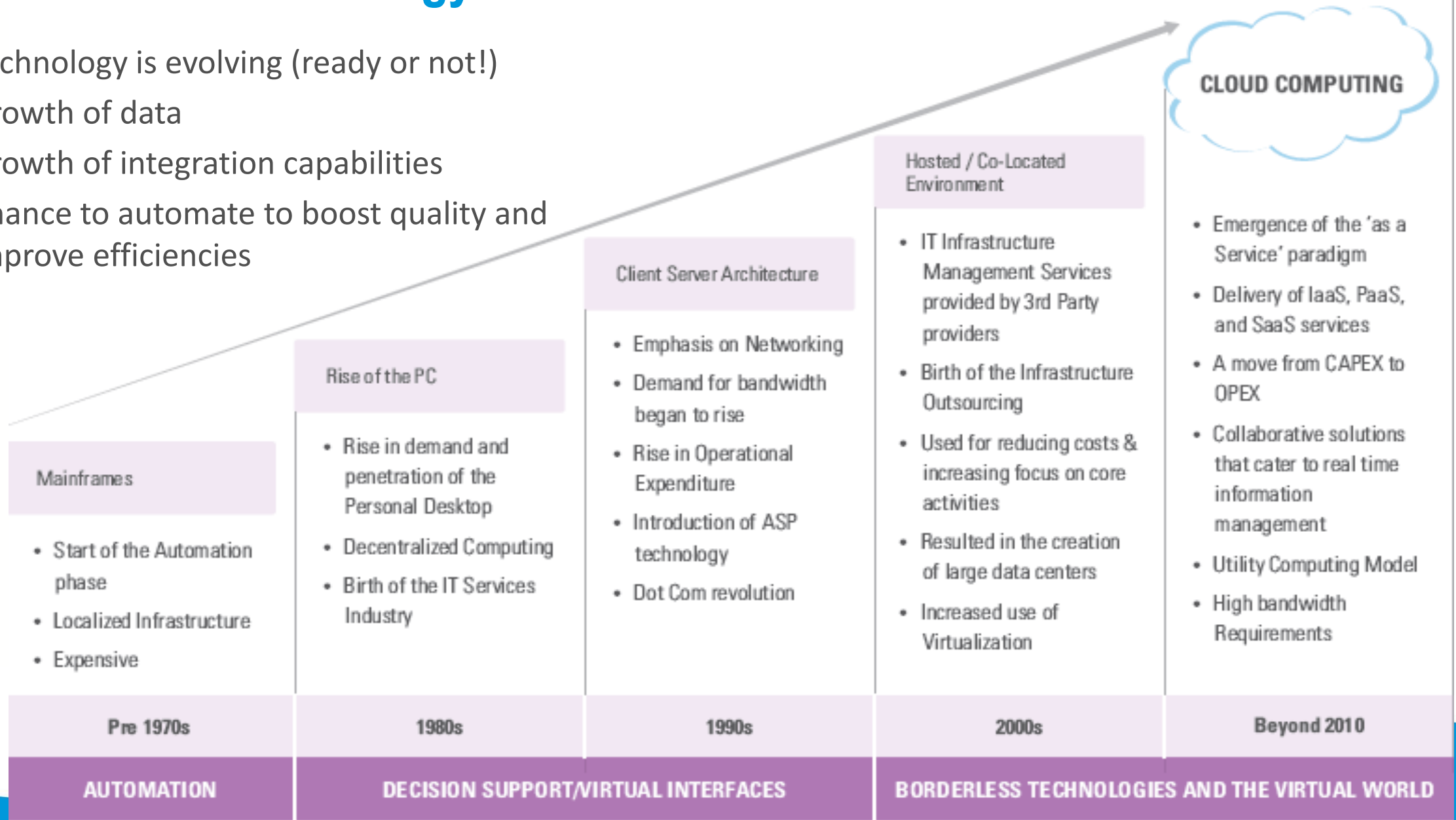
- Lots of “systems”
- Are the strategic goals aligned?
- Is anyone thinking of what information we need and why?

Source: Water Industry Report 2017, Black & Veatch



Evolution of Technology and information

- Technology is evolving (ready or not!)
- Growth of data
- Growth of integration capabilities
- Chance to automate to boost quality and improve efficiencies



The Value of Data

How do you know the data is accurate?

How are you notified?



What happens if data is inaccurate?

How do you resolve the situation?

THE DATA ABOUT THE DATA IS
JUST AS IMPORTANT AS THE MEASUREMENTS
THEMSELVES.




Data Visibility

What users see today

General data

Parameters



11:13 15 March 2015 18.8°C

NH ₄ -N mg/L	3.2
NO ₃ -N mg/L	5.9

What users see with Claros

Actionable data

Meta Data

East.no3 - N-ISE sc

Grab sample 3 days overdue: NO₃-N >

Cleaning due in 6 days >

< Job #38

North.nh4.no3 - ANISE sc

Parameter	Device	Lab	Updated
NH ₄ -N mg/L	32.2	28.2	28.2
NO ₃ -N mg/L	56.1	56.2	55.9


Sample taken: 15 July 2014, 13:23
Taken by: Rudi Schmitz
Notes: none
Sample analyzed: 15 July 2014, 14:33
Analyzed by: Jane Smith
DR 3900 methods: #30 NH₄-N
#31 NO₃-N

Date: NH₄-N and NO₃-N calibration needed
Action: Matrix correction for 15 July 2014
Address: 15 July 2014

7 Devices 3 critical 1 severe

North.nh4 - ANISE sc

Factory calibration lost!




11:13 15 March 2015 18.4°C

NH ₄ -N mg/L	33.3
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North.nh4 - PHOSPHAX sc

Amplifier pad replacement due in 1 day >




11:13 15 March 2015

PO ₄ mg/L	1.57
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East.no3 - N-ISE sc

Grab sample 3 days overdue: NO₃-N >

Cleaning due in 6 days >




11:13 15 March 2015 18.2°C

NO ₃ -N mg/L	55.3
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South.nh4 - AMTAX sc

Electrolyte and membrane replacement due in 1 day >



11:13 15 March 2015

NH ₄ -N mg/L	33.3
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Digital Water Solutions & Risk Mitigation



Digital Water Solutions

- We ALL face **UNCERTAINTY**
- Digital Water Solutions can help including:
 - Remote Data Visibility
 - Accuracy of Data Assurance
 - Data Management Tools for Organizing, Utilizing and Reporting ALL Data Collected
 - Process Optimization Software including Automation
- Let's take a look at each and how they can help bring you from a state of *uncertainty to clarity*.



What Tools Are Available Today

Tool #1: Instrument Management

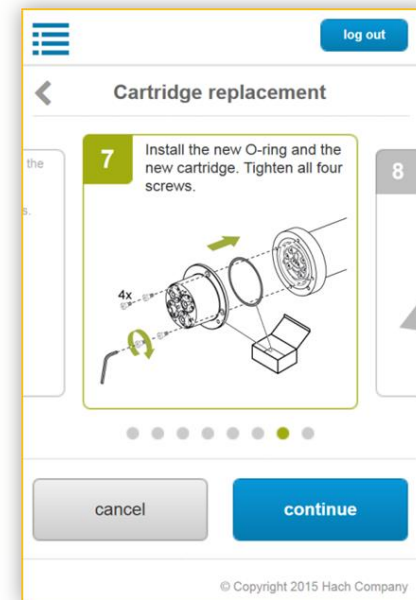
- Instrument Management – Ensures ACCURATE data
 - Remote visibility
 - Real-time data any time, any where
 - Remote sensor diagnostics
 - Emailed alerts for PM (preventative maintenance)
 - Emailed alerts for sensor errors that need immediate response
 - Graphical and spreadsheet functionality of the data available for viewing or download
- How does this help *INCREASE CLARITY?*
 - Able to see plant operation data remotely WITHOUT having to be on site
 - Know with confidence that the data you were seeing was in fact REAL and ACCURATE
 - Know immediately if sensor issue or a plant issue
 - Allows just-in-time maintenance



Example of Instrument Management – Ensuring ACCURATE Data

- Software that allows:
 - Remote access to sensors and measurements
 - AND live data anytime, anywhere
 - On ANY internet-enabled device
 - Solves maintenance uncertainty by telling the operator when maintenance is upcoming or required, and
 - Guides staff through maintenance procedures

Provides IMMEDIATE, ACTIONABLE data!



Learn more: <https://www.hach.com/claros-instrument-management>



What Tools Are Available Today

Tool #2: Data Management

- **Data Management – Manages ACCURATE data**

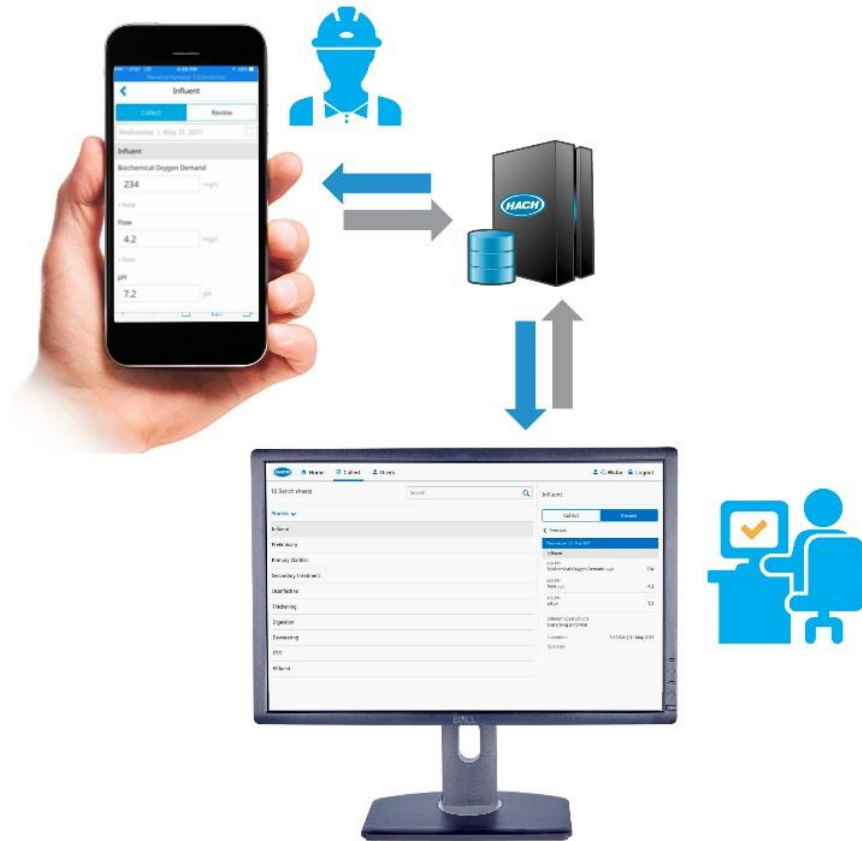
- Capture field data remotely and digitally
- Eliminate paper logs
- Increasing accuracy of data
- Easily manage ALL data from SCADA, field and lab in one location
- Eliminate duplicity of data
- Easily perform calculations and trend and analyze data from ALL sources of data
- Create standard forms and reports and schedule
- Create event logs that can email alerts for upset conditions
- Create customized dashboards allowing the view of critical data at all times

- **How does this help *INCREASE CLARITY?***

- Reduces the amount of time and FTE needed to collect and manage data
- Data is automatically in an electronic, usable format
- Data is only entered ONCE & is ACCURATE the first time
- Generates desired and required reports at the touch of a button
- Easily performs linear regressions at the touch of a button on ALL data (process, lab, field) to solve systemic process issues



Example #1 of Data Management – Managing ACCURATE Data



- Mobile and Web Data Collection
 - Allows users to collect data in the field and easily manage large amounts of data, reducing errors at the source of collection and facilitating decision making.

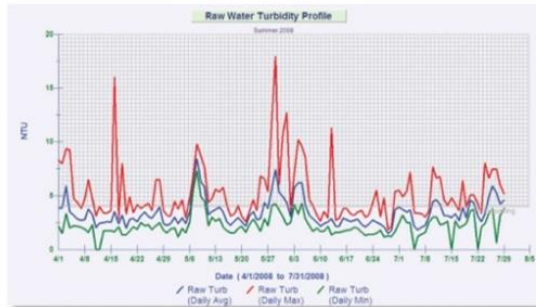
Learn more: <https://www.hach.com/claros-data-management>



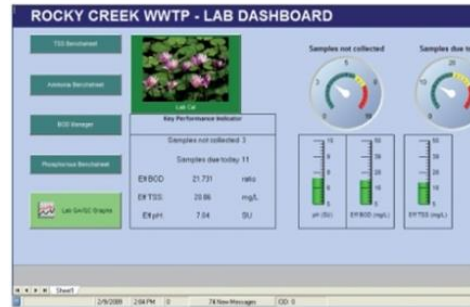
Example #2 of Data Management – Managing ACCURATE Data

- Data Management Software
 - Provides easy-to-understand dashboards, trend analysis charts, what-if models, and internal and regulatory reports

DATA ANALYSIS



CONFIGURABLE DASHBOARDS



REPORTS

PARAMETER (32-07)	PERMIT	MEASUREMENT	REQUIREMENT	REPORT	AVERAGE
BOD, 5-DAY (20 DEG. C)	00210 1 0 0	SAFIRE	PERMIT	569	144
RAW SEW/INFLUENT (20 DEG. C)	00210 1 0 0	SAFIRE	PERMIT	3000.00	0
EFFLUENT GROSS VALUE		SAFIRE	PERMIT		0
PH		SAFIRE	PERMIT		0

PERMITTEE NAME/ADDRESS (include Facility Name/Location if different):
Name: Rocky Creek WwTP
Address: Rocky Creek, Village of
400 Peggy Rd SE
Roanoke, NM 87124
Facility: Rocky Creek Wastewater Treatment Plant
Location: 1234 Los Lane
Attn: Clark Kent

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) DISCHARGE MONITORING REPORT (DMR)
G-18 (1748)
PERMIT NUMBER: NM0057493
DISCHARGE NUMBER: 001 A

Surface Water Treatment Rule
System Type - SW and GUI unfiltered systems with multiple disinfectants

System Name: Sandy Beach Water Plant
PWSID#: ME5435435
Reporting period: Jun, 2004

Disinfectant Residual in the system

REPORT	a =	b =	c =	d =	e =	# of samples w/Cl2 residual	# of samples where Cl2 is not meas. but HPC	# of samples with Cl2 not detected & no HPC	# of samples with Cl2 not detected & HPC	# of samples where Cl2 is not meas. & HPC
current month V =	0%									
V for previous month =	0									
Yes										

Useable, Actionable, Reportable, Supportable

Learn more: <https://www.hach.com/claros-data-management>

Example #3 of Data Management – Managing ACCURATE Data

- Data Management Software
 - Access data anytime & anywhere
 - Organize data to match your system
 - Schedule sampling/data collection events
 - Streamline lab data transfer & entry
 - Receive exceedance alerts
 - Produce regulatory & ad hoc reports easily



Learn more: <https://www.hach.com/claros-data-management>

What Tools Are Available Today

Tool #3: Process Management

- **Process Management – Utilizes ACCURATE data**
 - Smart algorithms to generate process set points
 - Utilizes real-time data to generate real-time set points
 - Provides 24/7 coverage of process operation
 - Immediate, addressable system alerts to assure in control process at all times
 - Creates smart, valuable graphing and reports
- **How does this help *MITIGATE RISK with less available FTE?***
 - Ability to watch and adjust a process 24/7 to assure it is always optimized at all times
 - Automatically adjusts process parameters as system conditions change to assure process control is maintained at all times
 - Generates routine process control reports which indicate the value of having a completely optimized operation



Example of Process Management – Utilizing ACCURATE Data

- Process Instruments and Software
 - Combination of process measurement technology and process knowledge that contain modules that react immediately to load peaks in the influent to guarantee consistent results and ensure process requirements are met at all times



Learn more: <https://www.hach.com/claros-process-management>



Use Cases for Instrument Management & Process Management



Example – Plant Information

- Rural wastewater treatment plant
- Max capacity = 6 Mgpd
- Average = 2 Mgpd
- Chlorine is used for disinfection – one-ton cylinders
- Solids handling facility on site



Example – Municipal Customer

- Using Data Management Tool to...
 - Track data from all sources – process, lab, operators
 - Create monthly compliance reports
 - Dashboards for “pulse” of operation
- Using Instrument Management Tool to...
 - Monitor “health” of process probes
 - Plan maintenance
 - React to warning and severe error notifications
 - Send data to Data Management tool for “whole picture of operation”
- Using Process Management Tool to...
 - Automate activated sludge process
 - Optimize treatment at all times
 - Ensure compliance
 - Data Management tool provides meaningful and timely graphs

Learn More:

Ask for a Demo

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THANK YOU!!!

