AQUATIC Informatics

BELLWETHER CONSULTING

The Rio Mobile Journey

The Rio Mobile Journey
Agenda

- ReWa, AQI & Bellwether
- Rio Objectives & Scope
- Rio Value
- Rio Project (Deep Dive)
- Retrospective
- Next Steps

The Rio Mobile Journey

Renewable Water Resources (ReWa)

Greenville County, SC

Encompasses an area of approximately 795 square miles with a population of over 530,000. The wastewater infrastructure servicing the county is intricate and robust and provides for future growth and development.

Renewable Water Resources (ReWa)

Formed in 1925, ReWa is a regional wastewater utility that has provided affordable, quality services to a population of nearly 500,000 people across a service area that includes portions of Greenville, Anderson, Spartanburg, Laurens and Pickens counties. With nine (9) water resource recovery facilities (WRRF), 87 pump stations and more than 450 miles of pipe, ReWa purifies more than 42 million gallons of water per day from homes, businesses and industries. Each WRRF contains a self-sufficient water treatment process with on-site power generation and depending on the size of the facility, thousands of gauges, flow meters and storage tanks.

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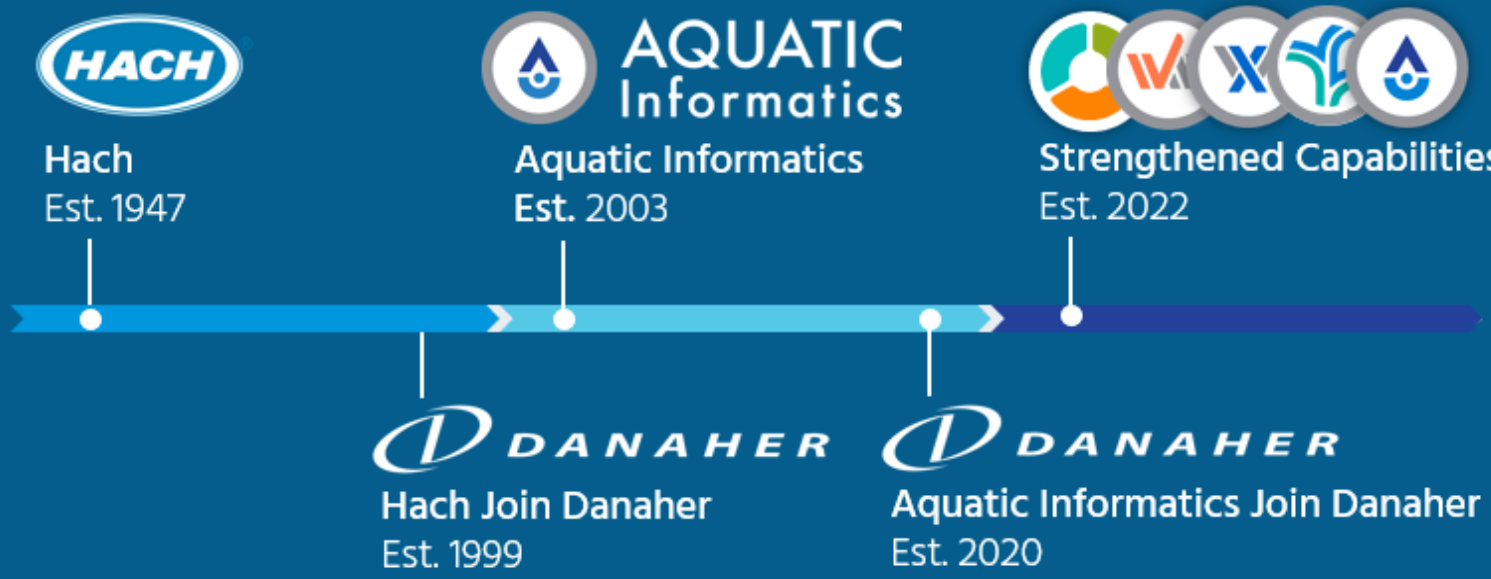
Rio

STRENGTH IN WATER QUALITY



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THE PORTFOLIO

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Bellwether Consulting

Bellwether Consulting (Greenville, South Carolina)
Started in January of 2023 with ReWa (Renewable Water Resources) as first customer!

Bellwether's Mission 
Support meaningful change by helping water utilities leverage technology to better serve their local communities

Bellwether's Vision 
Become the preferred implementation partner for technology-driven transformation within the water utility industry

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AQI & Bellwether: Strategic Business Partners

AQUATIC Informatics + BELLWETHER CONSULTING

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Purpose

Replace ReWa's WIMS paper roundsheets with Rio Mobile Forms to reduce data collection effort, and enable data accuracy & visibility

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Scope

9 WRRF's

40 Operators

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Value

Rio

Reduce data entry work effort

Eliminate need to populate
paper roundsheet
Then enter into WIMS at a later time

Improve data accuracy

A single point of data entry eliminates the need to re-key data from a paper roundsheet into WIMS

Improve data visibility

Data will be available to entire Operations Team within minutes after entering on mobile device

Highly Secure

Highly Secure System Architecture

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Risks

Likehood	Impact	Risk	Mitigation
Medium	High	Poor User Experience would diminish value case	Pilot Phase
Low	High	Risk of Data Exposure/Harmful Network Intrusions due to use of Rio Mobile Forms in Public Cloud	Need to vet landscape & security protocols used

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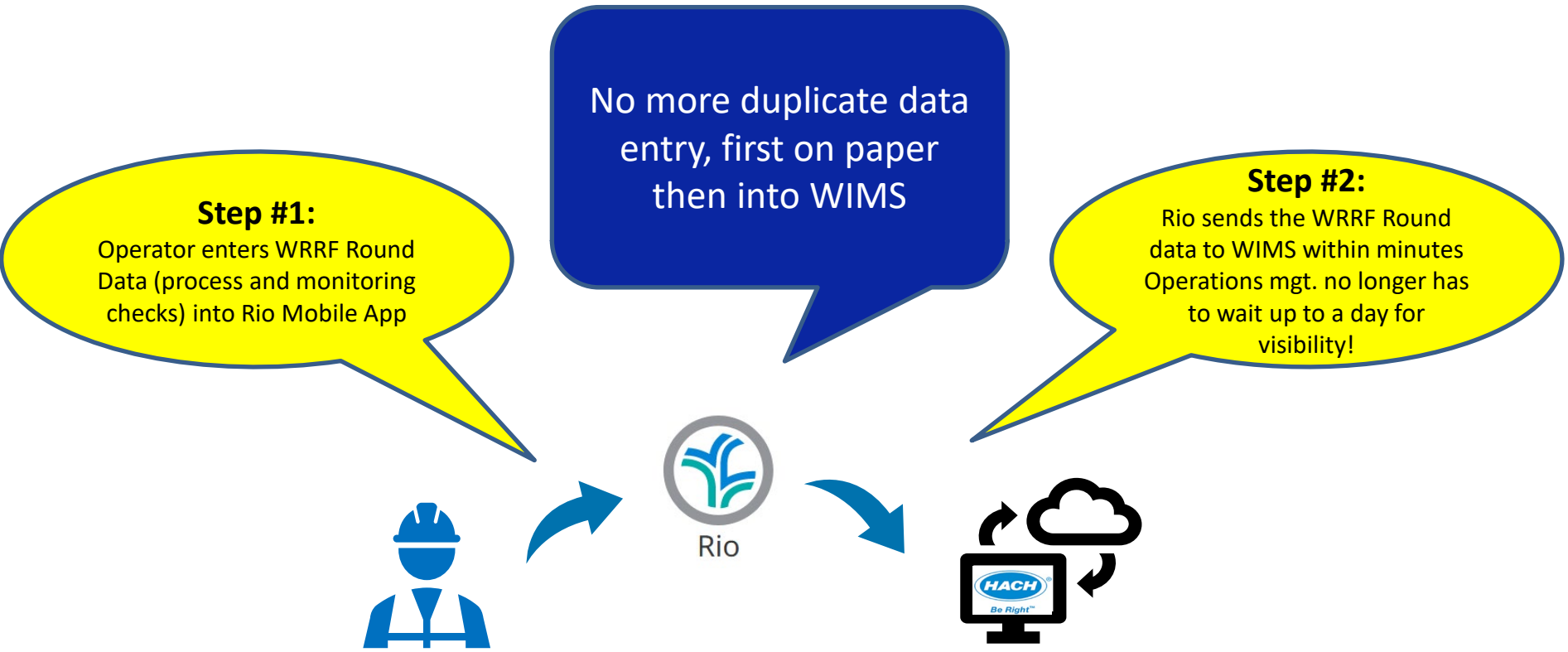
Value Case



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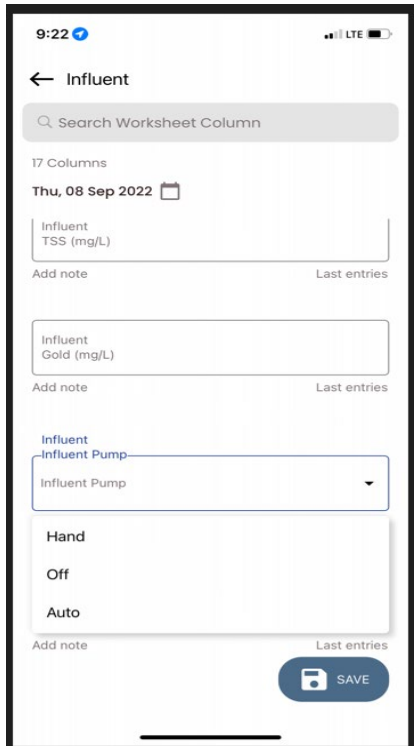
Value Case: Initial Concerns

- Valid concerns transitioning from WRRF Paper Roundsheets to Rio could reduce efficiencies

Initially Rio currently had Drop-down and manual data entry options, no Radio Buttons



AQI was very responsive to ReWa's request to add Radio Buttons (3 month turn-around!)

The Rio Mobile Journey
Value Case

- The current WRRF Paper Roundsheet Process involves a significant # of monitoring data points that can be circled on a piece of paper
- A successful electronic replacement of the current process needs to reduce the amount of time the current process takes for Operators to circle relevant monitoring check data points on paper

Current Monitoring Checks involve some manual data entry along with a majority of data points that involve circling a value on a piece of paper

Manual Data Entry

Circling data point on piece of paper

DATE:		Operator	Round #1		Round #2	
DAY:		Time				

INFLUENT HEADWORKS								
INFLUENT	Round # 1	Round # 2	**Barscreen**	Round # 1	Round # 2	**Verbatim**	Round # 1	Round # 2
Influent pump # 1	hand / off / auto	hand / off / auto	Influent color	ok / problem	ok / problem	Phone system working	ok / problem	ok / problem
Influent pump # 2	hand / off / auto	hand / off / auto	Barscreen Mode	hand / off / auto	hand / off / auto	Phone system plugged in	ok / problem	ok / problem
Influent pump # 3	hand / off / auto	hand / off / auto	Barscreen cleaned	ok / problem	ok / problem	Mission alarm check	ok / problem	ok / problem
Influent pump # 4	hand / off / auto	hand / off / auto	Rag trough percent full	%	%	Altamont amount of Defoamer used		

AERATION SYSTEM							
Aerator and Basin	Round # 1	Round # 2	**Pumps**	Round # 1	Round # 2	**Pumps**	Round
Mixer # 1	on / off	on / off	TWAS Transfer pump #1	hand / off / auto	hand / off / auto	Total time wasted	
Aerator # 2	on / off	on / off	Pump belts / leak check	ok / problem	ok / problem	Pump # 3 oil level /psi	% / psi
Aerator # 3	on / off	on / off	RAS/WAS pump #2	hand / off / auto	hand / off / auto	# caustic pump(s) in service	1 2
Aerator # 4	on / off	on / off	Pump belts / leak check	ok / problem	ok / problem	caustic system	dry / leaking
Mixer # 5	on / off	on / off	RAS/WAS pump # 3	hand / off / auto	hand / off / auto	Polymer system on / off	on / off
Any basin scum / foam	Lt / med/ heavy	Lt / med/ heavy	Pump belts / leak check	ok / problem	ok / problem	Polymer speed	%

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Value Case

- The Numbers
  - Average of 300 data points per WRRF (up to 700 Data Points @ largest WRRF)
  - Average of 2 seconds to "circle" a data point
  - An effective solution should reduce the 2 seconds
- Current WRRF Paper Roundsheet Process
- 2 Secs./data point * 300 datapoints = 600 seconds = 10 mins. to fill out a WRRF Paper Roundsheet
- Given the current Rio capabilities, do we think the average data point population time of 2 secs./datapoint can be reduced?
- If Rio had radio button capability do we think the data population time can be reduced?
- If data population efficiencies cannot be gained what is the Value Proposition?

- Automation & Efficiencies
  - Easy/Efficient access to "unlimited" electronic monitoring check historical records (versus retrieving historical paper records)
- Business Resilience
  - Easy/Efficient access to "unlimited" electronic monitoring check historical records (versus retrieving historical paper records)

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Value Case: Time Study

- If Data Population efficiencies can be gained what would the time savings look like?

Current WRRF Paper Roundsheet Process				
	Time	Units		Units
Current Average Data Population Time Per Datapoint	2	Seconds		
Average # of Data Points/Roundsheet	300			
Current Data Population Time Per Roundsheet	600	Seconds	10	Minutes
# of WRRF's	9			
Average # of Rounds Per WRRF	2			
Average # of Rounds Per Day	18			
Current Data Population Time Per Day (across all WRRF's)	10800	Seconds	180	
Current Data Population Time Per Week (across all WRRF's)	75600	Seconds	1260	
Current Data Population Time Per Month (across all WRRF's)	302400	Seconds	5040	
Current Data Population Time Per Year (across all WRRF's)	3628800	Seconds	60480	

Rio WRRF Roundsheet Process				
New Average Data Population Time	1	Seconds		
Average # of Data Points/Roundsheet	300	Seconds		
New Data Population Time	300	Seconds	5	M
# of WRRF's	9			
Average # of Rounds Per WRRF	2			
Average # of Rounds Per Day	18			
New Data Population Time Per Day (across all WRRF's)	5400	Seconds	90	inutes
New Data Population Time Per Week (across all WRRF's)	37800	Seconds	630	Minutes
New Data Population Time Per Month (across all WRRF's)	151200	Seconds	252	Minutes
New Data Population Time Per Year (across all WRRF's)	1814400	Seconds	30	Minutes

Results				
Time Savings Per Year	504	Hours		

Value Case:
504 man-hours
savings annually

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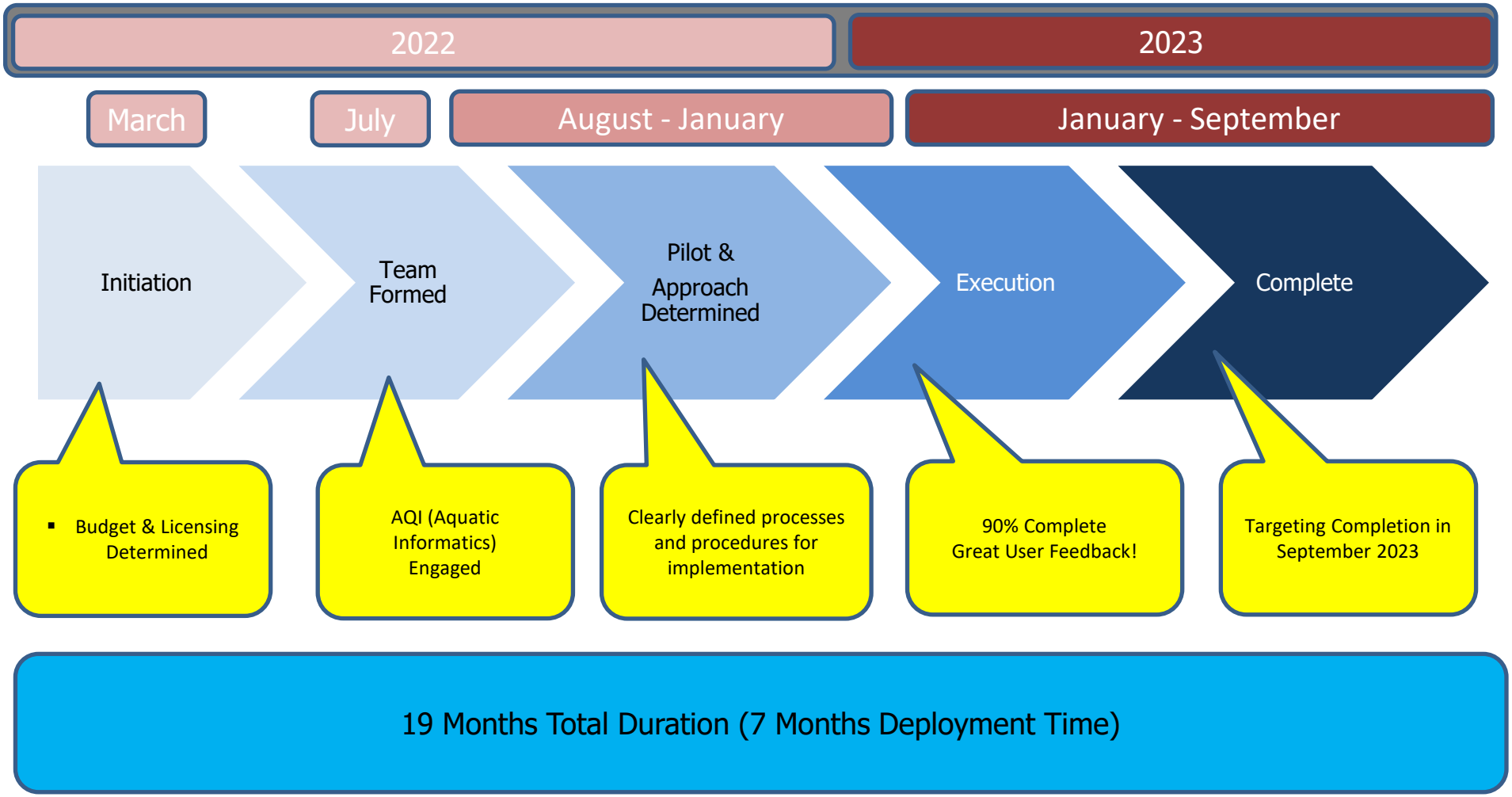
Project Overview



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The Team

Core Team

AQI (1 Person)

ReWa IT (2 People)

ReWa Ops Support (2 People)

Bellwether (1 Person)

24 manhours per WRRF

Operators

Operations (40 People)

4 manhours per WRRF

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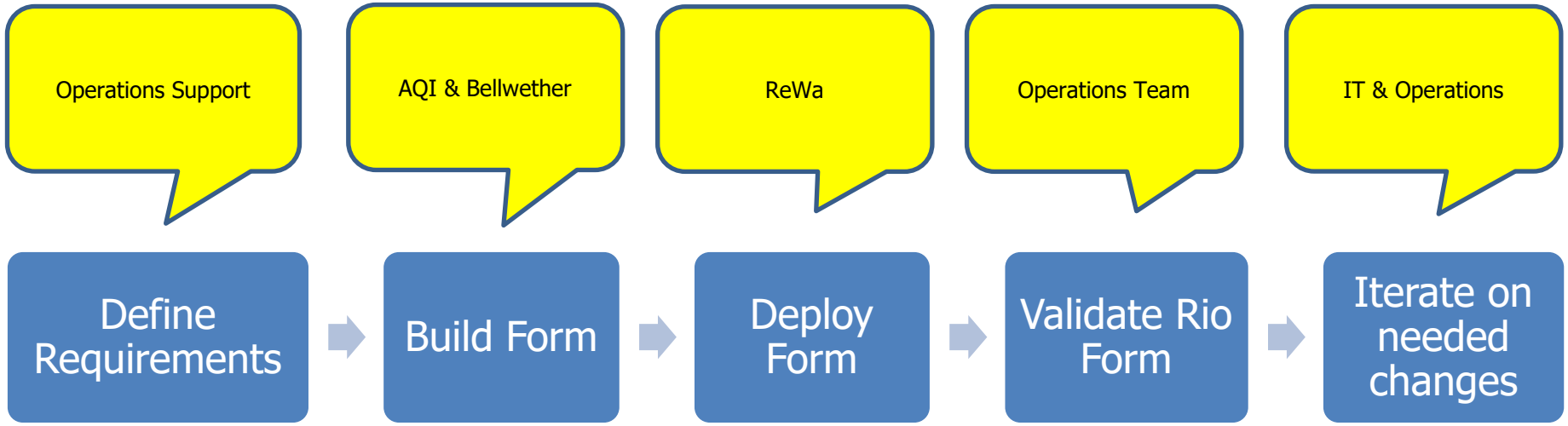
Approach & Responsibilities



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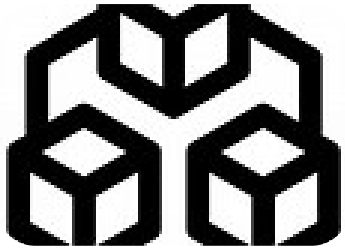
Retrospective

Clarify Scope



Define System Architecture

Clarify Value Case & Success Criteria

Great User Experience

Easy Configuration

Phone Device of choice (not iPad)

Minimal Time Draw on Ops Team

High Value Proposition

Internet Connectivity Key to Strong User Experience

Opportunity to standardize

Sign-off Challenge remediated by Logbook

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Next Steps

Leverage the Power of Rio for Lab Data

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Next Steps

Leverage the Power of Rio for Lab Data

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