The 3rd Annual Federal Asset Management Policy Forum & Expo

Work Group: **Asset Management Decision Making**

Host: **Uberlytics**

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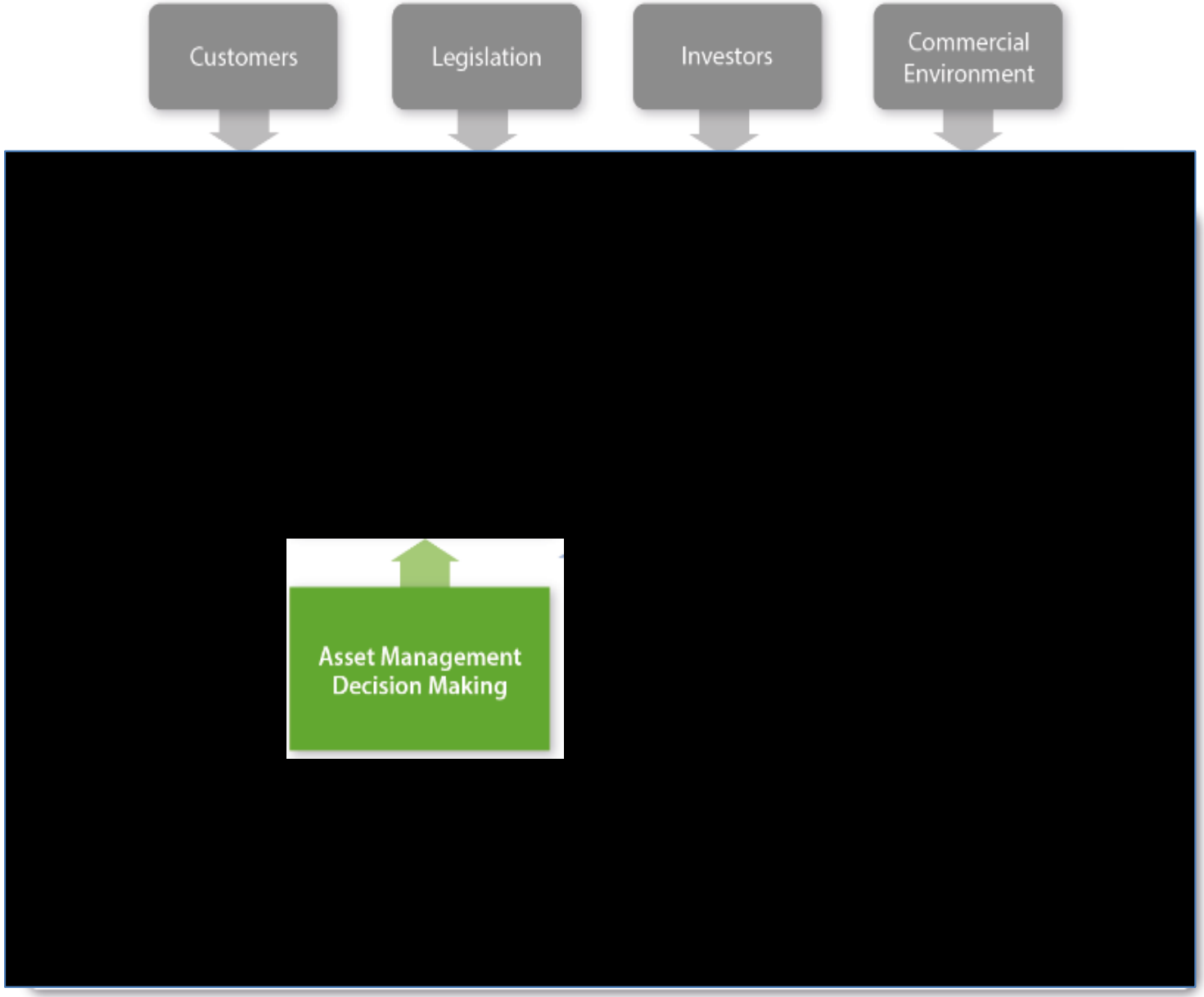
Asset Leadership Network

Institute of Asset Management Conceptual Model



WG Core Members

(invited)

- Leader: Marty Rowland, , Technical Contact for ASTM WK53277-Public Infrastructure Management Guide & Senior Project Manager for Environmental Remediation at NYC Department of Parks & Recreation
- ALN Facilitator: Jennifer Zach, Chief Operating Officer/Chief Marketing Officer, Uberlytics
- Case Study: Tacoma Zach, Chief Executive Officer, Uberlytics
- Marc Yarlott, Project Engineer at Veolia Environnement North America
- Rob Leibrandt, Asset Management Advisor at Camcode, formerly with Office of the Secretary of Defense
- Jim Begis, Director Logistics Policy at Health and Human Services (retired)

Asset Management Decision-Making

- Capital Investment Decision Making
- Operations and Maintenance Decision Making
- Lifecycle Value Realization
- Resourcing Strategy
- Shutdown/Outage Strategy

Effective decision making is central to good asset management.

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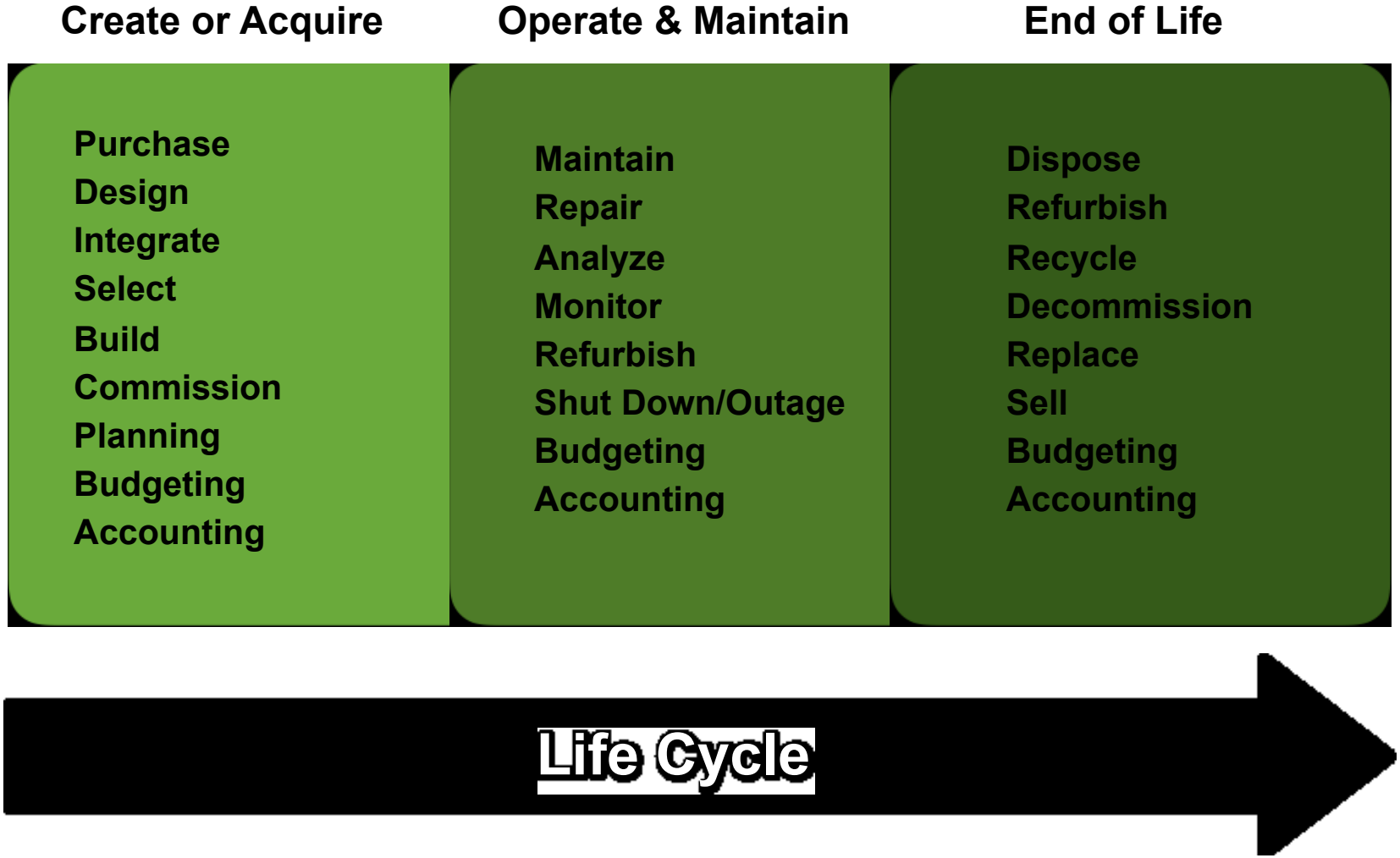
Optimal decisions arrive at the best value compromise between competing factors.

What types of decisions are made?



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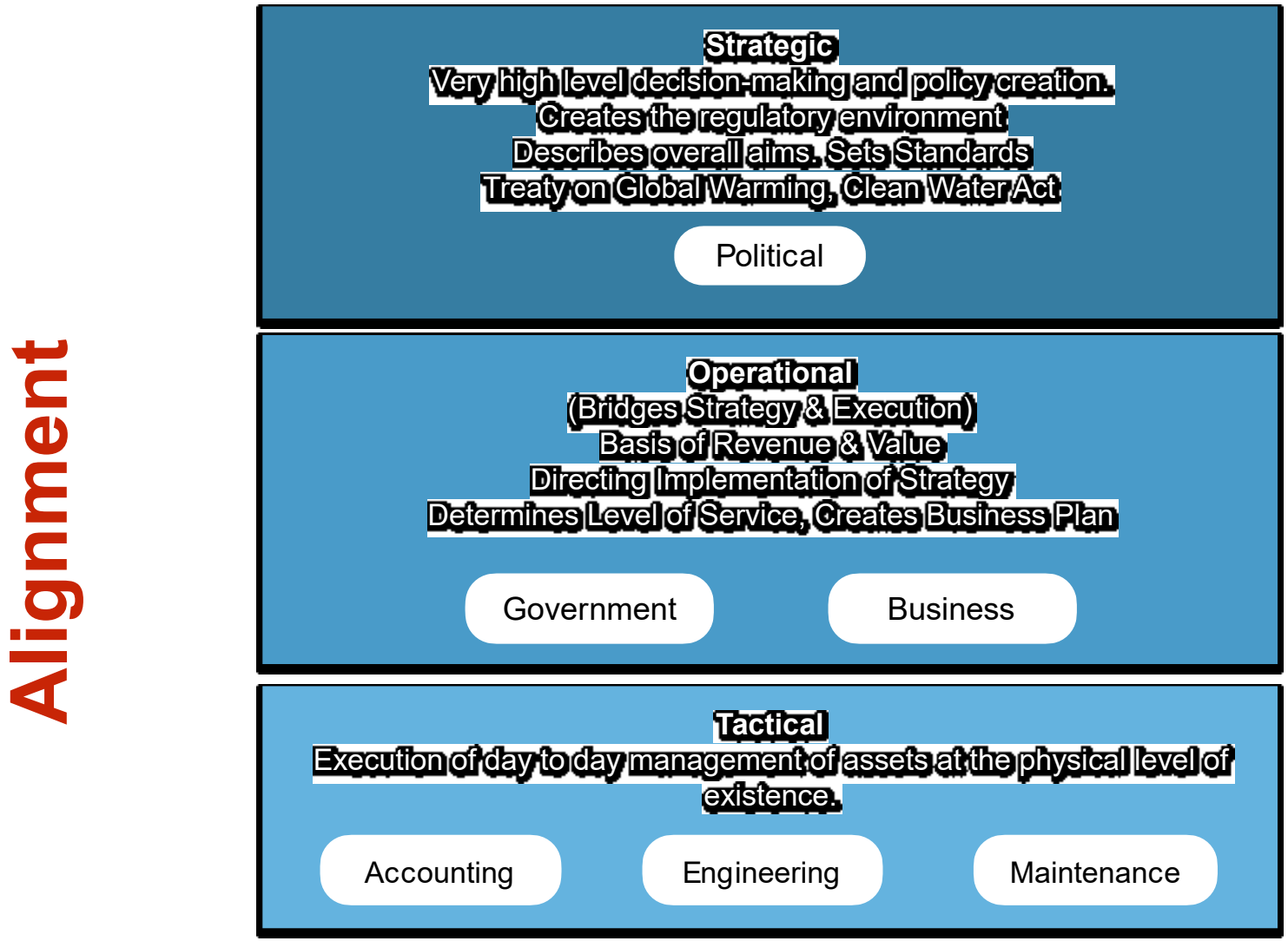
Levels of Decision Making



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Good Decisions

- Plans are aligned on a risk basis with anticipated and available revenues (specific recommendation in ISO 5500x)
- Assessing minimization/optimization of waste (Lean 6 Sigma) throughout the process instead of at end
- Intentional framework for decision-making established
- Dependent on good asset knowledge (data)
- Identify all stakeholders that need to be involved – internal and external (relevant)
- Aligned with overall objectives and values of organization (level of service, risk to objectives) to set priorities
- Prioritization – means of ranking – risk based
- Risk - considered throughout
- Envelope (scope, field of view) is drawn/defined accurately to capture relevant factors – regulatory, contractual, EH&S, etc.

Four themes for optimal asset management decision-making.

- Aligned to overall aim(mission) of the organization
  - Line of Sight, Cross Functional Collaboration
- Risk-Based
  - Clear understanding of risk factors for setting priorities
- Balances short term vs long term
- Informed by good asset knowledge
  - Complete, accurate, organized meaningfully

Key Existing Statutes, Regulations, and Standards

1. ISO 55000
2. ISO 33000
3. CFO Act
4. Capital Programming Guide – supplement to OMB A 11
5. FAR (Federal Acquisition Regulation)
6. Appropriations Bill (annual)
7. E53 (ASTM and other ASTM)
8. EPA funding State Revolving Fund – for small water/wastewater plants
9. GAO-15-290 (Risk)
10. GASB
11. GPRAMA
12. FERC (electric utilities)
13. Category Management (resourcing strategy)
14. Sarbanes-Oxley Act (mandates publicly traded companies to substantiate their control systems and best practices and standards)

Key Issues & Impediments

1. Lack of alignment to mission
2. Decision making in silos instead of comprehensive/coordinated – ie. Congressional Bill makes broad and then specific mandates
3. Lack of a justified decision-making process (strategy to get money about timing and getting into the process instead of AM justification, risk-based, prioritized, lifecycle cost analysis)
4. Incomplete and unreliable asset information
5. Short term view of decision makers/legislators related to election cycle, budget cycles etc.

Observations

- There are already a lot of good statutes, standards and regulations.
- Need for accountability
- Need for focus
- Need for cross-functional collaboration
- Different stakeholders make decisions about the same assets in different ways and use different information (ie. accounting vs operations)

What can we do?

1. Promote whole life cycle based decisions (ASTM WK53277)
2. Tie funding to having an articulated asset management plan and best practices.
3. Promote alignment and line of sight in resourcing decisions.
4. **Promote adoption of ISO55000 (of course)**

Discussion of Recommendation #1

Whole Lifecycle Decision Making Balancing Short-Term Constraints with Long-Term Goals

Adopt ASTM Standard WK53277 Public Infrastructure Management Guide

Marty Rowland, Technical Contact

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Discussion of Recommendation #2

Promote risk-based decision making and priority setting through tying funding to asset management best practices.

Example **EPA Clean Water State Revolving Fund**

Marc Yarlott, Veolia Water

Discussion of Recommendation #3

Promote alignment and line of sight in resourcing decisions.

Require that an acquisition must demonstrate how it will serve defined organizational objectives.

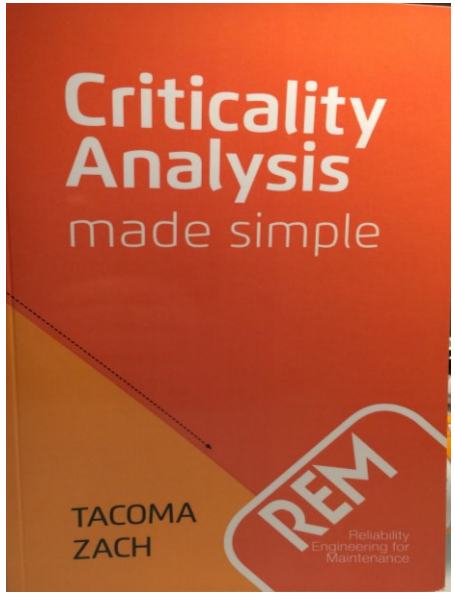
Tacoma Zach, Uberlytics

Case Study

- A Risk-Based approach to Decision Making

Uberlytics

- Experts and Innovators in Risk Based Decision Support and Criticality Analysis
- Founded in 2007
- Platform Agnostic
- Former VP and Western Area Manager for Veolia Water Industrial Group (P&L)



Key Elements Presented

- Alignment
  - with objectives and values
- Risk based Decisions
  - What it looks like
- Asset Data
  - Not all data is equal
- The Long View…
  - Lowest Cost of Ownership

Case Material Source

- 4 water and wastewater entities:
  - 2 Districts and 2 Cities
- Population: 120K to 3.5 million
- Budgets: <$30 mill to >$1.3 bill
- Capacity: 5mgpd to 0.5 bgpd

Actively engaging in starting an Asset Management Program

ALIGNMENT

Tactical activities to the corporate objectives and values

West Coast

- As a Public Health Mission
  - 3.5 MM People
  - To protect public health and the environment through innovative and cost-effective wastewater and solid waste management and, in doing so, convert waste into resources such as recycled water, energy, and recycled materials.

North Central

- Sustainability in quality and quantity, with integrity
  - Our mission: is to provide wastewater services and integrated planning to ensure sustainable water quality and water supply for the region
  - Our values: are excellence, inclusiveness, integrity, respect and commitment.

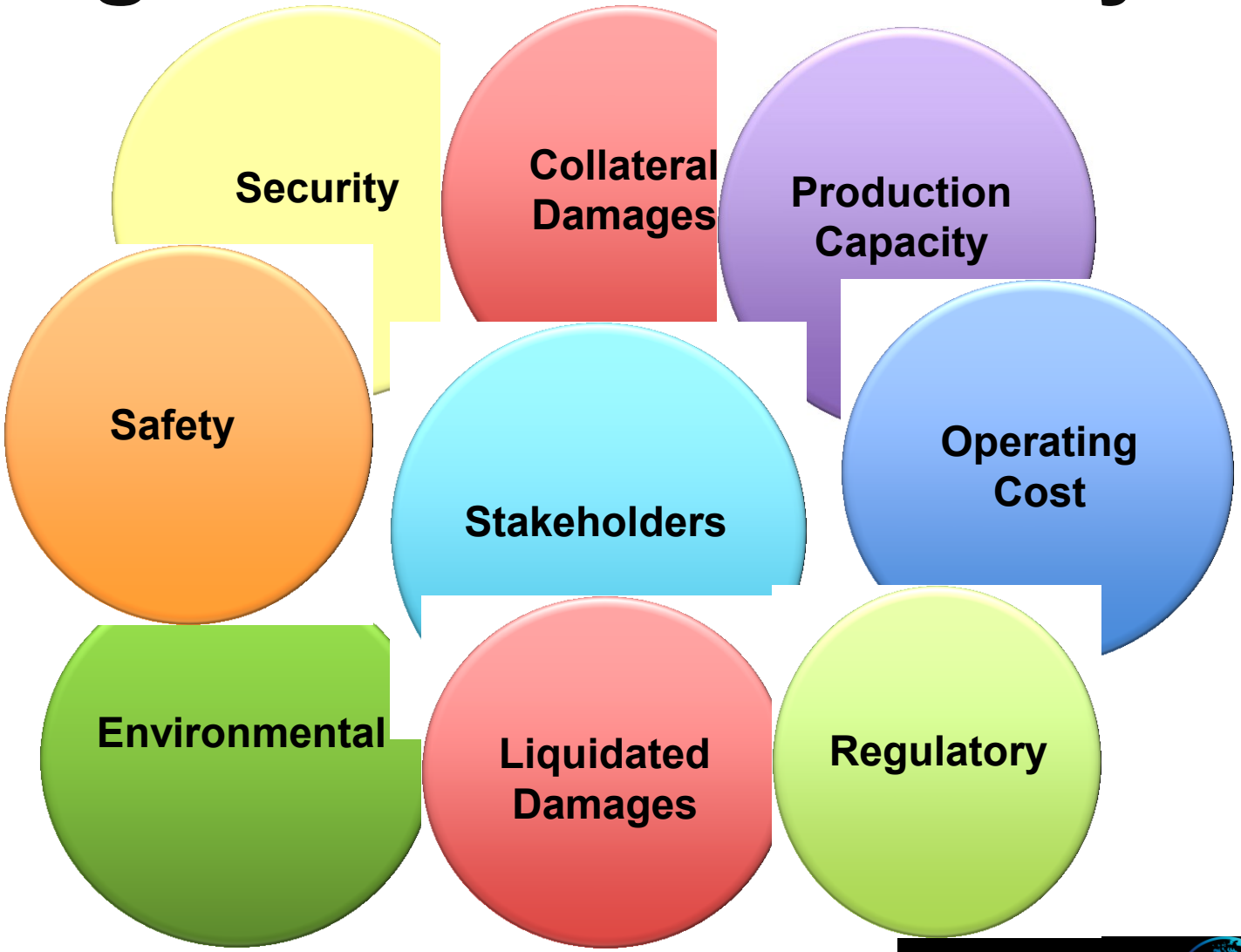
South Central

- Sustainable, safe, cost effective, efficient, & in support of the community.
  - overall vision and priority is to ensure the long-term sustainability of 'our' water and wastewater systems by providing safe, reliable, and high quality water and wastewater services that are cost-effective, resource efficient, and support other relevant community goals.

Translation of Mission Values to Level of Service

- What is meant my safety, regulatory compliance, PR, production,
- Never not take sewage? Never have sewage in the streets
- Never provide unsafe water?
- Never provide bad tasting water?
- Never have an ice accident due to insufficient sand/road salt application
- Never have a road closure during holiday weekend
- Never have internal building temperature fall below 55F

Alignment and Relativity



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MUST CLEARLY ARTICULATE A MINIMUM LEVEL OF SERVICE

Influenced by the Utility ‘Corporate’ Values and Stakeholders

RISK BASED DECISIONS

Addressing what puts the Level of Service at Risk

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Urgency of Risk Based Decisions

- Massive amount of assets
- Lots of moving parts
- Lots of ways the mission can get thwarted
- Lots of stakeholders (3.5 mil)
- Many ways things can go wrong (negative impact) … But not all negative things are created equal
- Not all risk to our LOS is created equal either
- And so not all assets are equally important

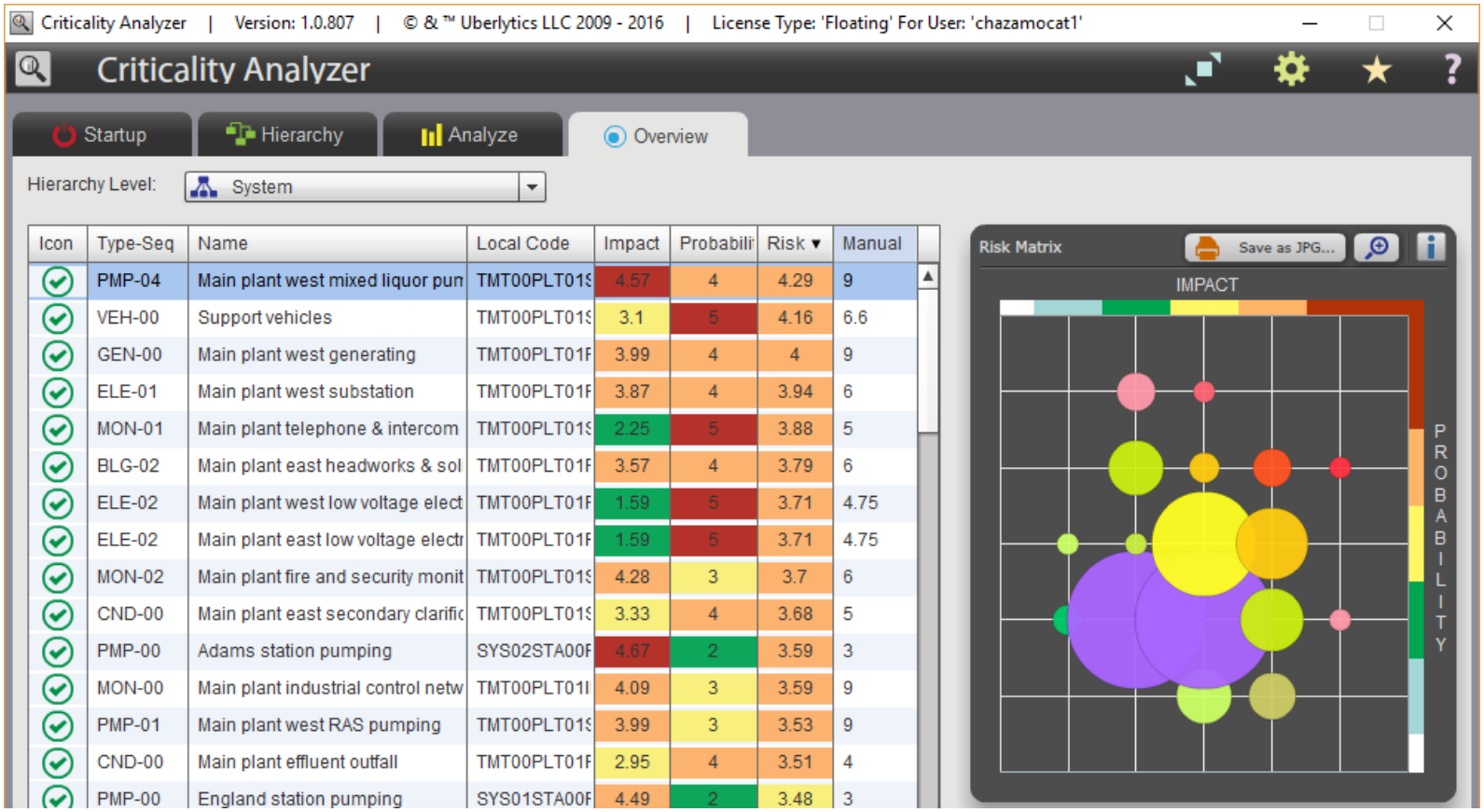
Getting to Risk Based Decisions

- When an ‘event’ happens
  - what is the impact, and
  - what is the risk.

Key to making risk based decisions is knowing what puts our LOS at risk.

- When our assets and systems don't perform as they are meant to, expected to, what is the net effect?
- Is it major, or minor, or somewhere in between & more or less?
- How likely is it going to take place? How often has it?

Northern US Facility



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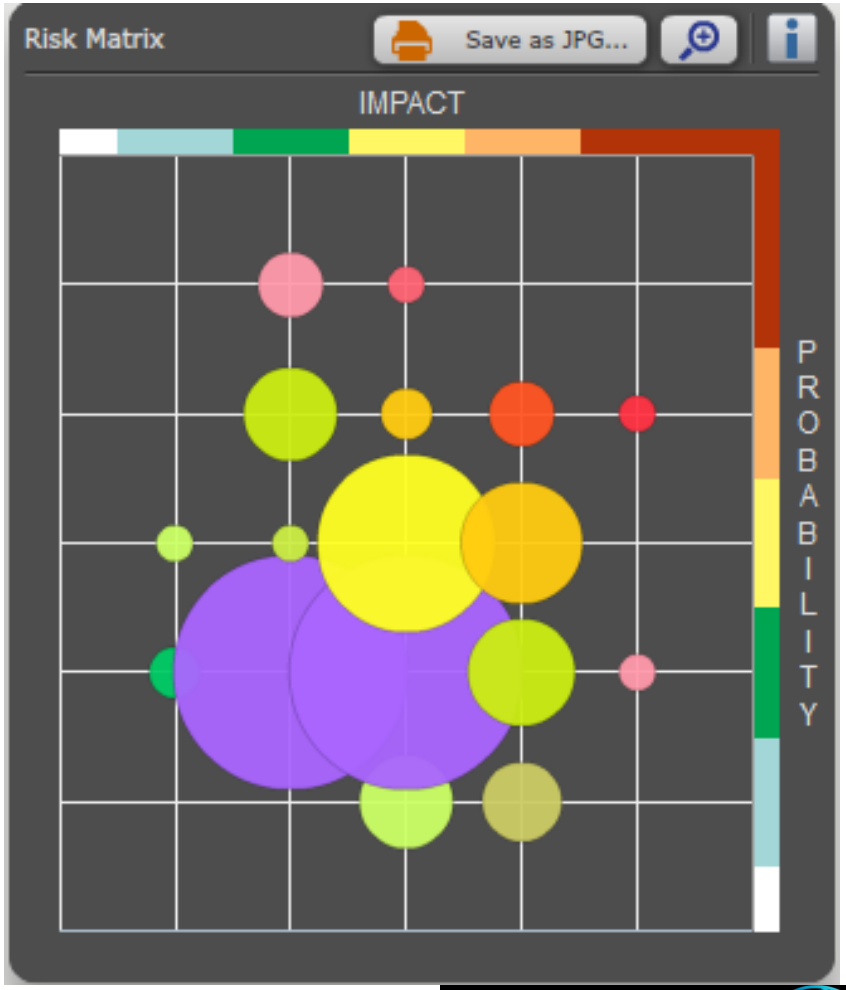
A View to Maintenance

- Did tactical activities correlate to high risk areas?
- Did the kind of monitoring, the right kind of maintenance correlate with the critical assets?
- Did they have the right kind of information to even make that call.



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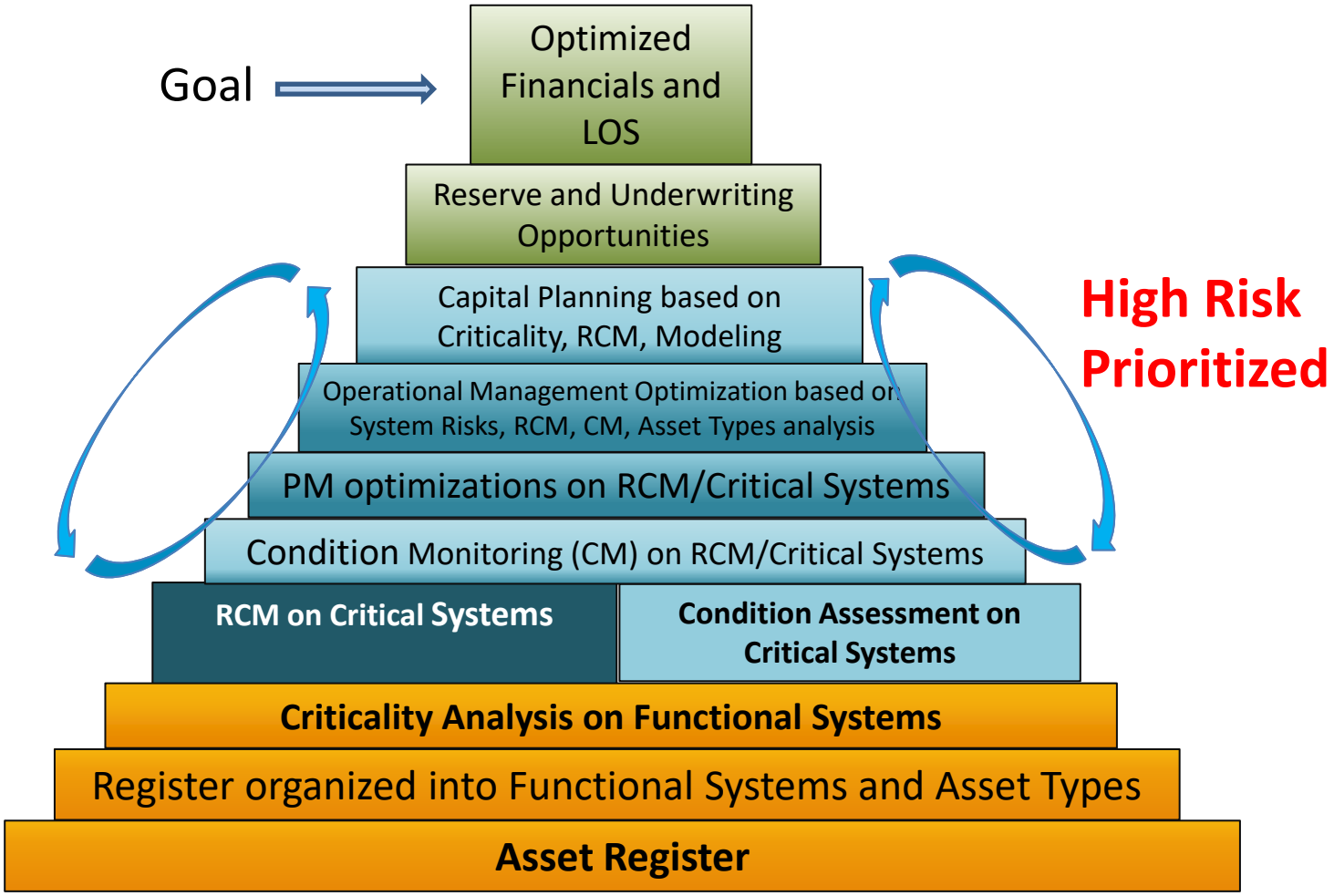
Successful Tactical Pyramid



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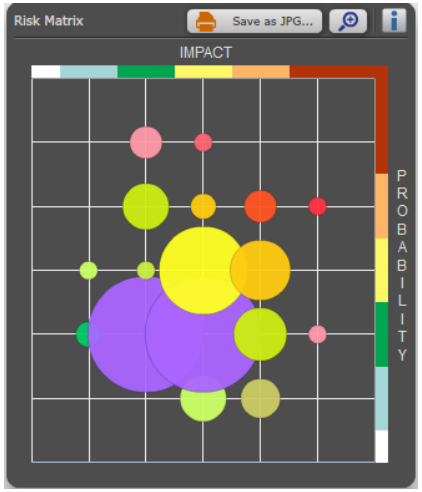
Risk Based Decisions driving the Tactical Level

- **High Risk is Priority**
  - When deciding where to get more info – (condition, etc.)
  - When deciding where to delve deeper in to the ways assets fail – (RCM, FM, FMECA)
  - When deciding on best approach to maintaining assets – (PMO)
  - When deciding where to apply capital
    - (first to the trough, unimportant falls away)

Based on Risk: Same set of questions as above PLUS



- What can we do to mitigate the risk?
- Did it need capital (need to correct the issue)?
- Was this capital project already on the books?
- What about the existing capital plan – did it address the high risk areas or was it too diffuse?
- Were capital projects allocated to relatively low risk areas.

ASSET DATA

Not all data is created equal

Comprehensive and ‘Complete’

- Make sure its uniform
- Include all the assets with NO $ limit
- Determine what data for each asset actually matters
- Organize by function, Not geography/accounting

Uniform…
1 Utility, 11 facilities, No Standard

Raw Water Transfer to Main Plant	Pump #1
	Motor

PUMPS		
B1	Peerless Pump	Model # 42MF
	Serial # 306543	35800 GPM
	530 RPM	27 H-ft.
B2	Peerless Pump	Model # 48HH
	Serial # 309870	35800 GPM
	625 RPM	75 H-ft.

L160-CHL1-MTP01	METERING PUMP
L170-RDT1-TSP01	TWAS PUMP 01
L180-DIG1-STP03	PUMP DIGESTED SLUDGE #3
L180-DIG3-DSP01	DIGESTED SLUDGE PUMP #1

All Assets

- Increased asset register 400%!
- Usually 40% to 50%.
- NO lower $ limit
  - Bridge between Accounting and AM

Every Valve & Every Pipe

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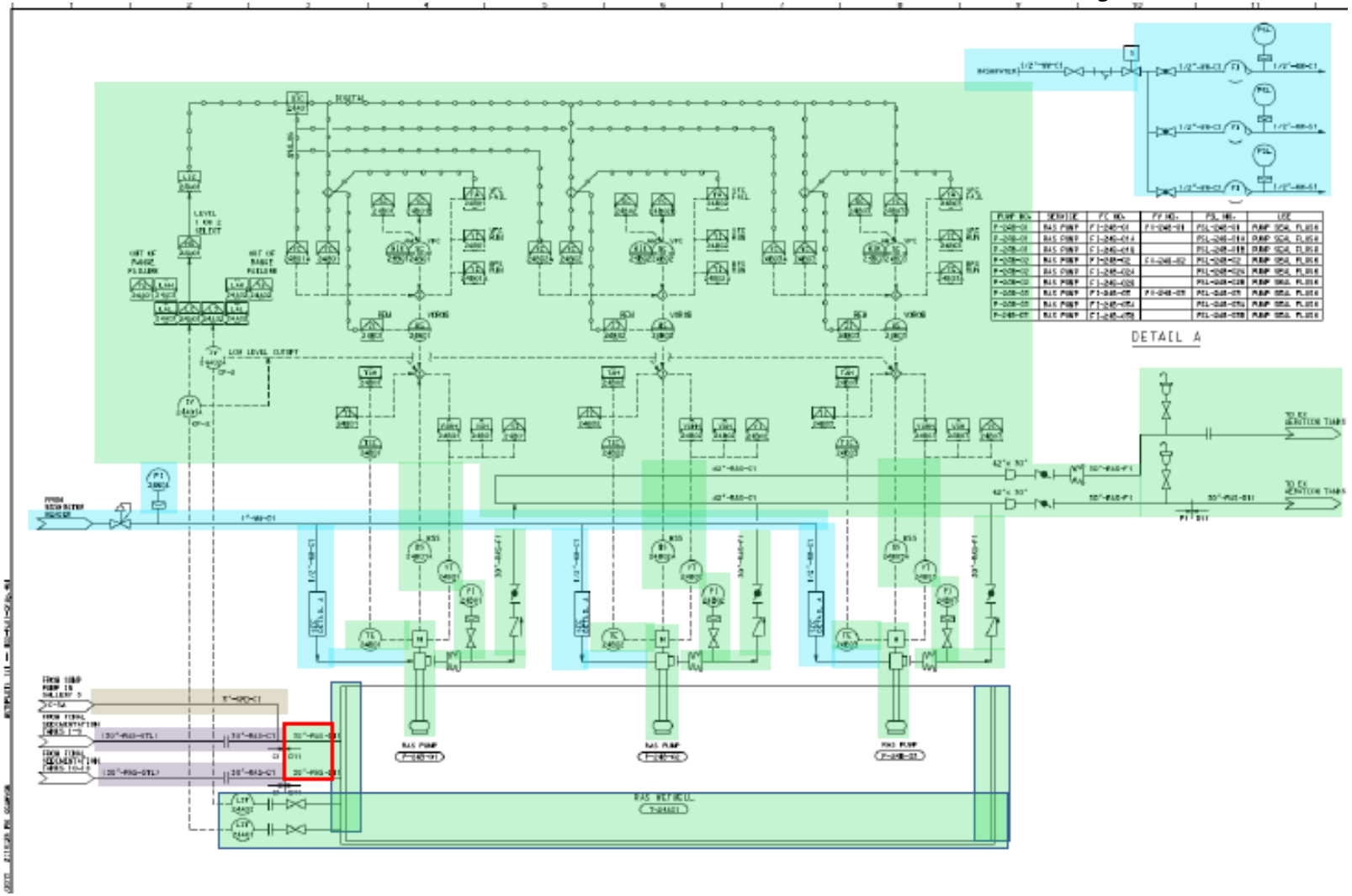
Careful Selection of WHAT data

- To make the right call on how to maintain it today,
  - Is it too involved and expensive to keep going rather than buying new or replacing
- You need in 10 years:
  - does is scale, can I analyze for what I need to?
- Compare maintenance risk to a capital alternative
  - or even a fundamental shift in LOS?…
- …some assets might be too expensive to own…

Function Based Hierarchy



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THE LONG VIEW

Getting to Lowest Cost of Ownership

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West Coast, last week

"Our ability to maintain at any of our plants is seriously hampered. To many types of pumps even within same systems. This is a clear result of historic low bid policy. Almost nothing is the same out there. We have no ability to standardize…"

Issues presented:

- different repair kits
- different repair /service procedure
- different tool inventory
- different service life
- different warrantee terms
- different OEM delays

Impact on Budgets, Resources and Efficiency:

- requires additional training
- more shelf spare parts
- more capital tied up in inventory
- more capital in tools
- longer total time to repair
- scheduling for trained mechanics
- some pump assets take up larger % of work

THEY ARE VALIDATING THEIR SUSPICIONS THAT SOME CHEAPER PUMPS ARE JUST TOO EXPENSIVE TO OWN.

Enabling Next Step: Cost of Ownership Comparisons

Comparing Ongoing Asset Total Cost

- the cost of shelf parts
- the kits
- the reliability
- the individual service load and context
- the extra staff training and
- the extra time-to-complete posed by some pump designs

THANK YOU

Tacoma Zach, P.Eng.,

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