

Managing Health Risks in the Cow Herd

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What makes cattle get sick?

What do cattle need to be healthy?

- Maybe also
 - Stability
 - Safety
 - Human Interaction



Review-A Word of Caution

- You cannot manage what you don't measure, but what you measure you will manage
- Do you want to
 - Manage failures?
 - Manage successes?

Remember from introduction to Systems Thinking: systems produce exactly what they are designed to produce, even if we don't like the outcomes



Addressing Systemic Problems

Above the Water Line: Problem, trends, and patterns

Below the Water Line: Structure—components, relationships, rules, traditions, beliefs, assumptions

Problems arise from deep within the Iceberg and the deeper in the structure changes are made, the more leverage those changes will have in solving the problem



Leverage for Change

slido



What is the most common preventive tool we use in cattle production?

i Start presenting to display the poll results on this slide.

Thought Provoking Questions

- What is a vaccine?
 - Microbes
 - Whole or components
 - Adjuvants-chemicals that activate the immune system
- What is vaccination?
 - A low-grade infection
- Why do we vaccinate?
 - An insurance policy



https://www.lehighvalleylive.com/warren-county/index.ssf/2018/02/allegedly_drunken_speeding_dri.html

The Power of Thought

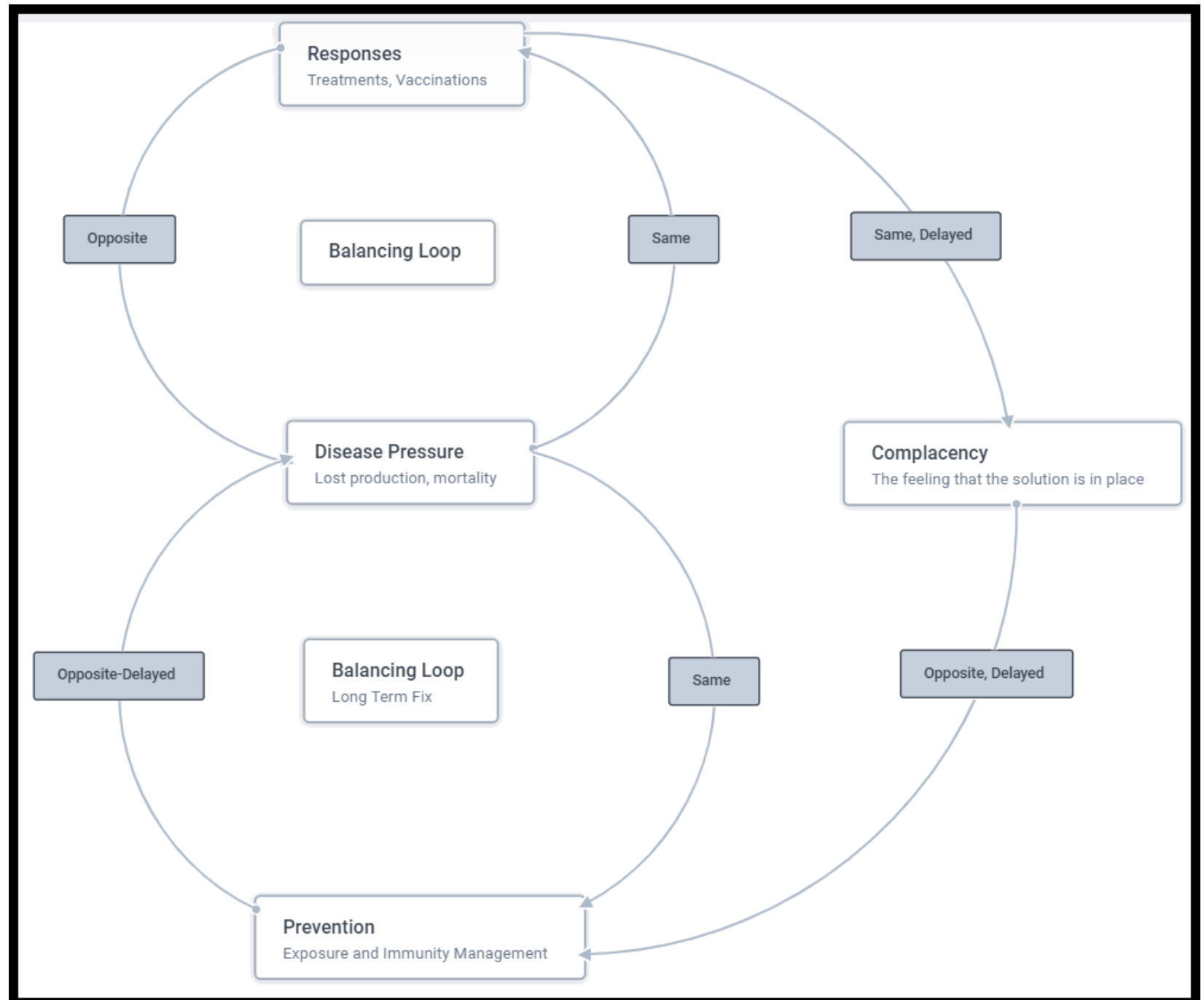
How we feel about a problem and our response to the problem can alter how we respond to the problem

Figure Key

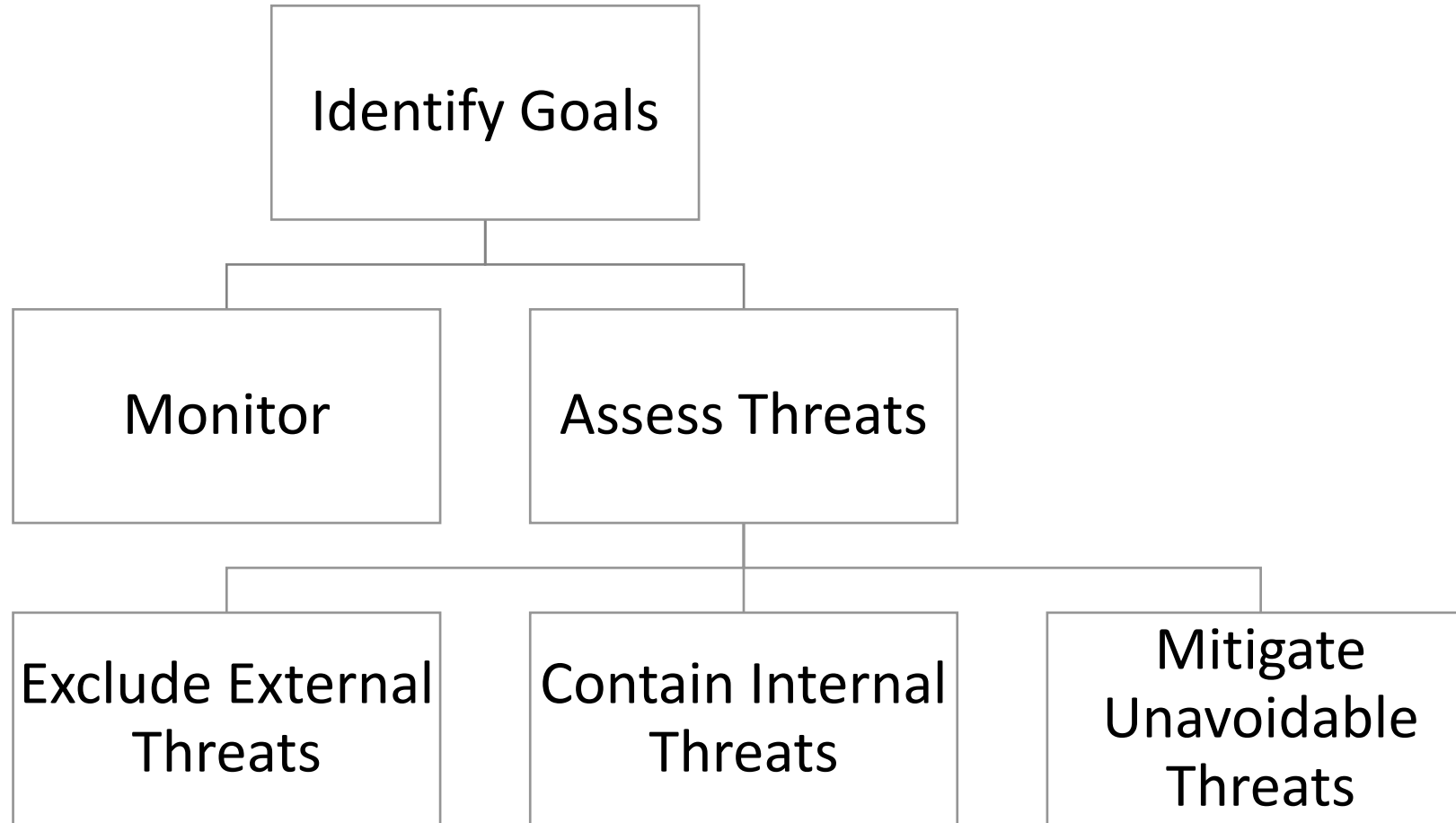
Same: components are related and move in the same direction

Opposite: components are related and move in the opposite direction

Delayed: components are separated by a long delay



Managing Biological Risk



Identify Goals/Motivations

- Answer the question “Why do you ranch?”
 - The “why” drives what you do and how you do it
- Be honest
 - Economic viability is important but we do things for many reasons beyond money
- Be careful of “Best Management Practices” Mentality



Assess Threats

- What would put you out of business?
- What would make it impossible to reach your goals?
- Prioritize

Control Priorities		Likelihood	
		High	Low
Impact/ Cost	High	Implement Control	Prepare Contingency Plan
	Low	Monitor to Assess Impact	Ignore

Understand The Threats-Use a Veterinarian

- Understand Epidemiology and Ecology
 - Routes of transmission
 - Infectivity
 - Incubation/Pre-patent period
 - Environmental persistence
 - Diagnosis/Diagnostics
- Use to identify control opportunities
 - Break transmission
 - Build resistance

BVDV-Cow/Calf

- RNA Virus that mutates rapidly
 - Causes abortions, immunosuppression, and fetal abnormalities
 - Spreads primarily from persistently infected calves which are present in 8.8% of U.S. cow calf operations
 - Direct contact and large droplet aerosol (<10 feet)
 - About 0.5% of southeastern weanling calves are PI
- Control Opportunities
 - Test
 - Exclude
 - Vaccinate

Exclude External Threats

- Develop exclusion plans for high priority diseases that you don't already have
- Consider standard practices that limit risk of introduction



Bioexclusion

- How would I exclude BVDV from my herd?
- What are my monitoring options?



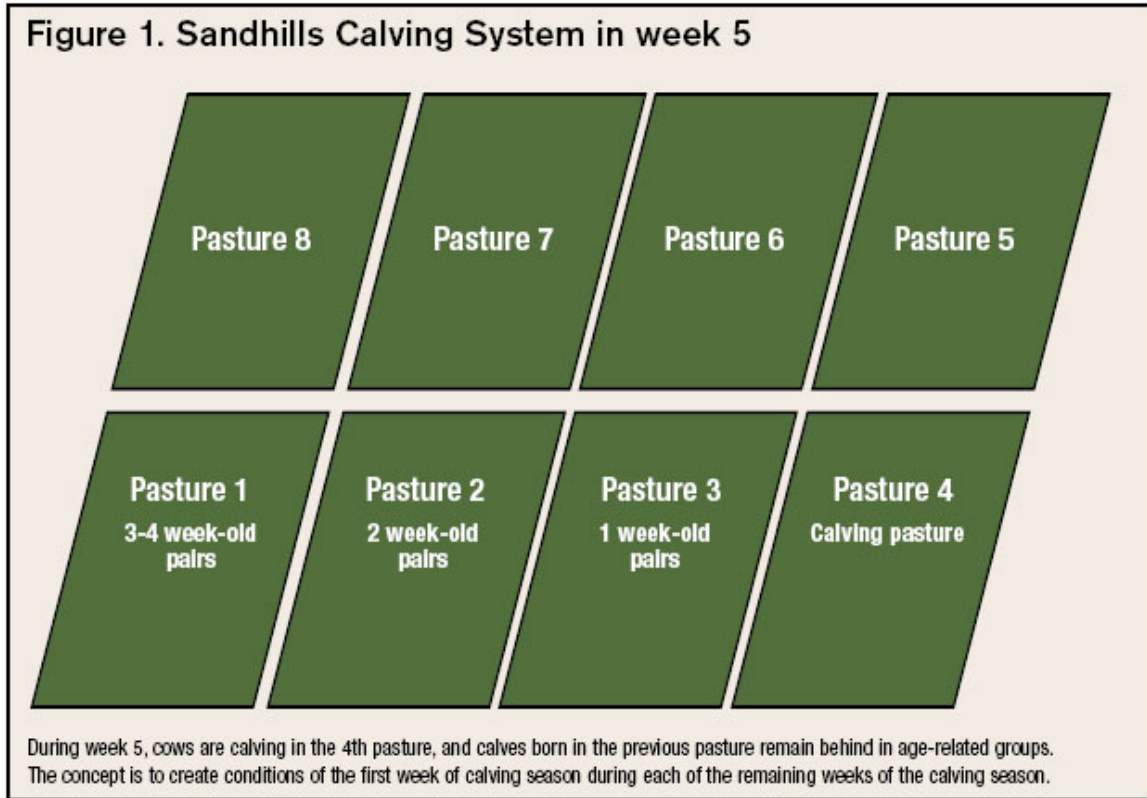
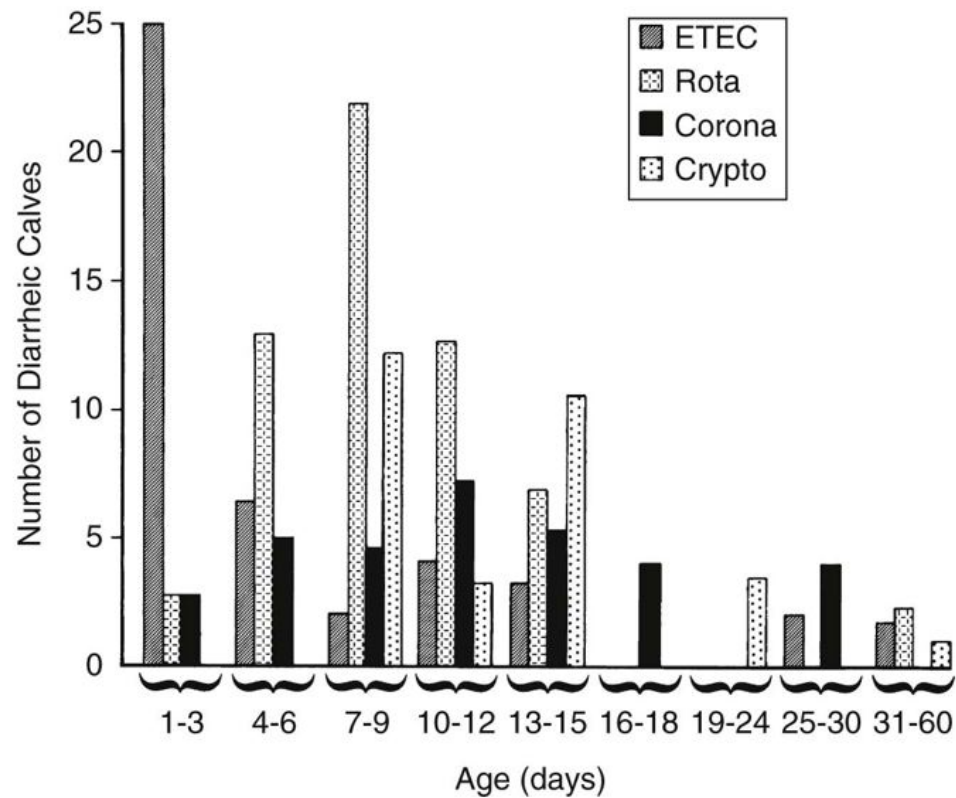
Contain Internal Threats

- Develop plans for high priority disease that are already present in the herd or in the environment
 - Consider making them an “External” threat-clean up
- Understand disease transmission/ecology to find control points



Containment-Calf Scours Example

FIG. 20-2 Age incidence of isolation of different enteropathogens from diarrheic beef calves. The data are based on a retrospective records survey of 245 diarrheic calves admitted to the Western College of Veterinary Medicine over a 2-year period.



Mitigate Unavoidable Threats

- Develop mitigation plans for high priority disease that cannot be avoided?
 - Treatment
 - Vaccination
 - Isolation
 - Euthanasia
- Preserve animal health, welfare, and salvage economic value



BVDV Vaccination



Available online at www.sciencedirect.com



Theriogenology 73 (2010) 1154–1163

Theriogenology

www.theriojournal.com

Comparison of three commercial vaccines for preventing persistent infection with bovine viral diarrhea virus

Soren P. Rodning^{a,*}, M. Shonda D. Marley^b, Yijing Zhang^c, Andrew B. Eason^b,
Callie L. Nunley^a, Paul H. Walz^d, Kay P. Riddell^b, Patricia K. Galik^c,
Bruce W. Brodersen^e, M. Daniel Givens^b

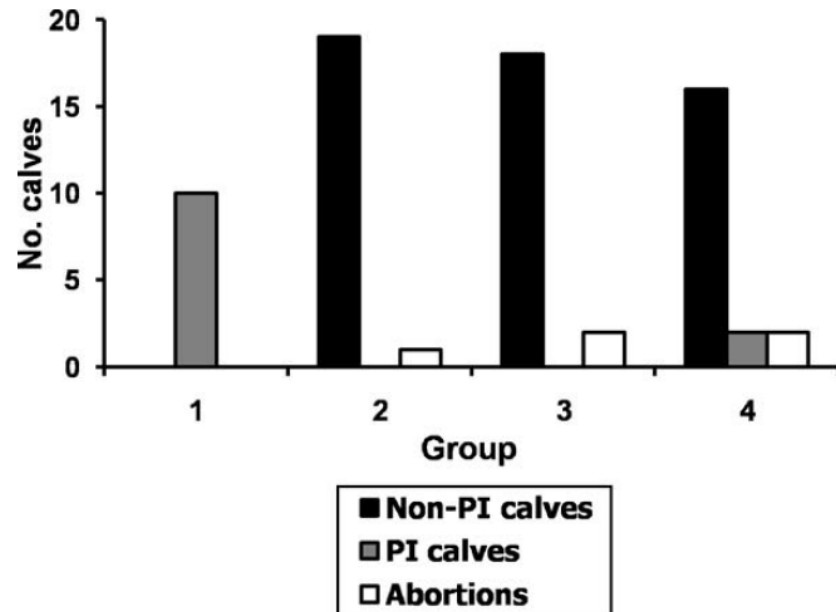


Fig. 3. Number of non-PI calves, PI calves, and abortions in four groups of pregnant heifers exposed to PI cattle.

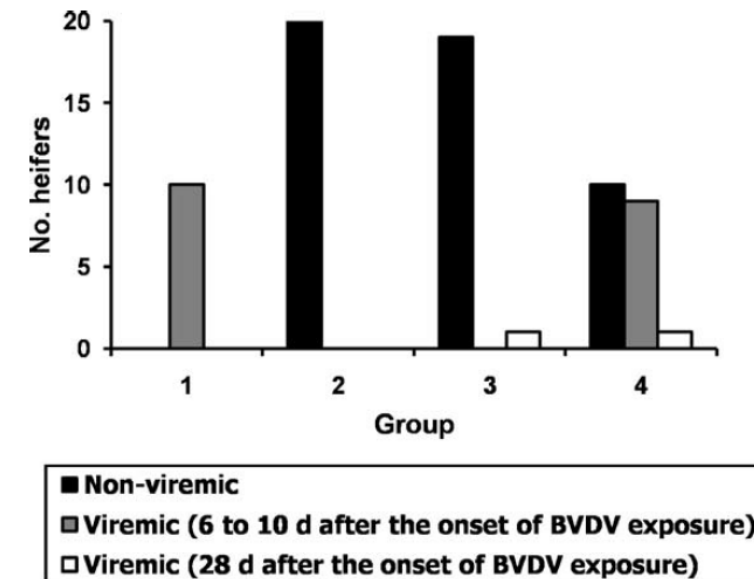


Fig. 2. Heifer serum and white blood cell virus isolation results 6 to 10 and 28 d after the onset of BVDV exposure.

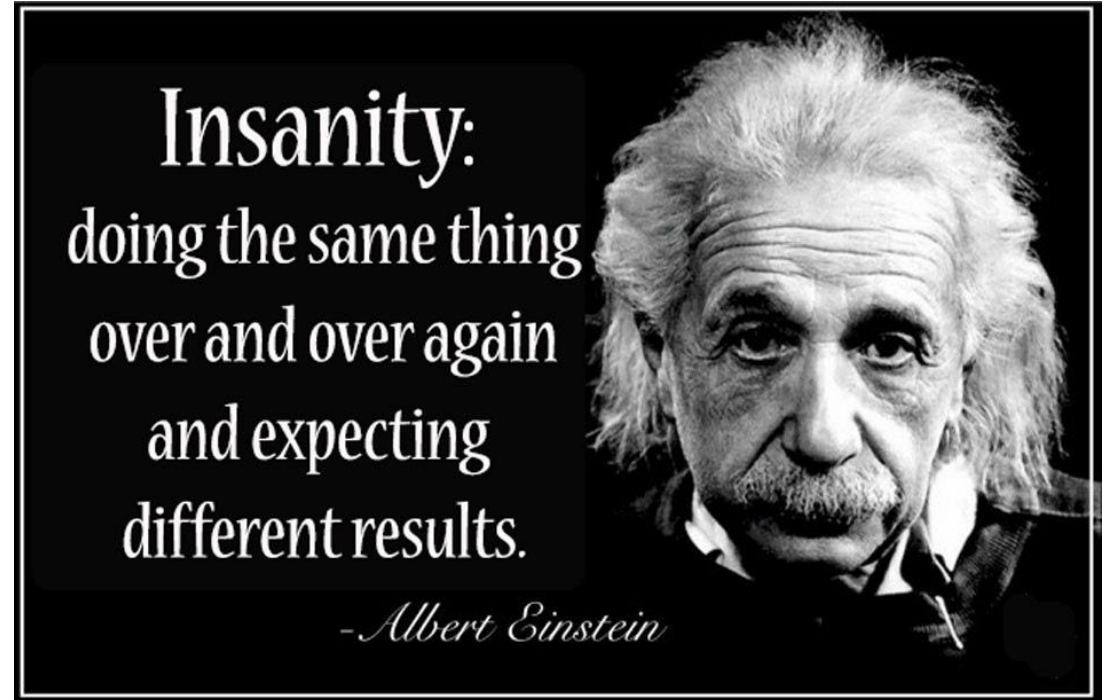
Monitor

- Track progress
 - Are plans functioning properly (Has the system structure been altered to attain the desired trends and events?)
- Assess prioritization
 - Should threats be reprioritized? (What did we miss the first time?)
- Identify new threats



Conclusions

- Consider the structure of your system
- Consider how that structure has driven unintended/unwanted events in the past
- Use those lessons to anticipate unintended consequences in the future.



Questions

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