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# Fundamentals of Allocation







# Subsystems





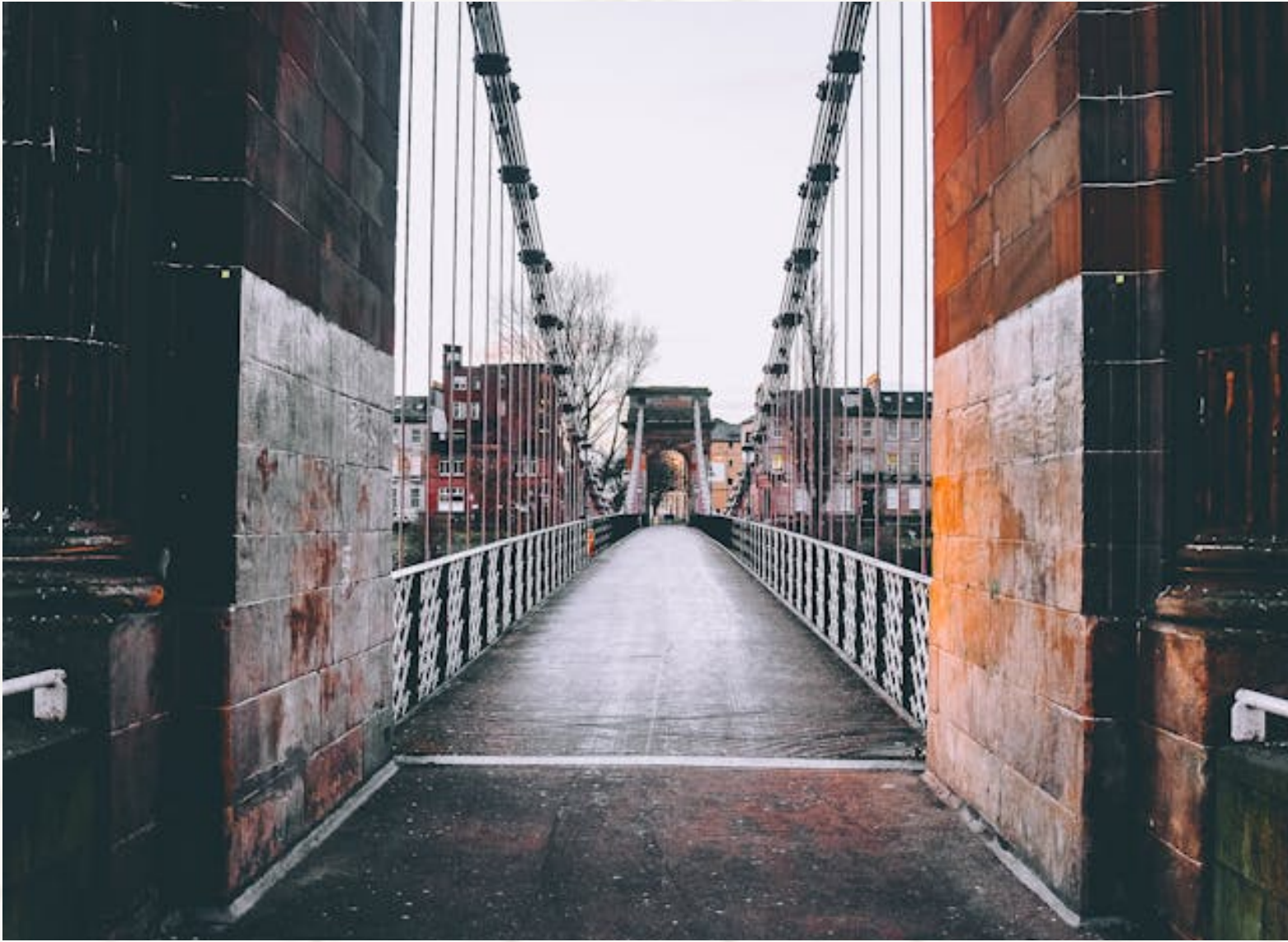
# Components





Why do *Allocation*?







# A bad example

Bad, good, & great

System reliability goal

95% R over 1 year

Each major subsystem

designed to meet

95% R over 1 year

Overall system reliability ~50%





# A good example

Bad, good, & great

System reliability in place

Allocation to major vendor-supplied elements

Used to specify reliability with purchased elements of system

Internal designed elements did not have allocated reliability targets





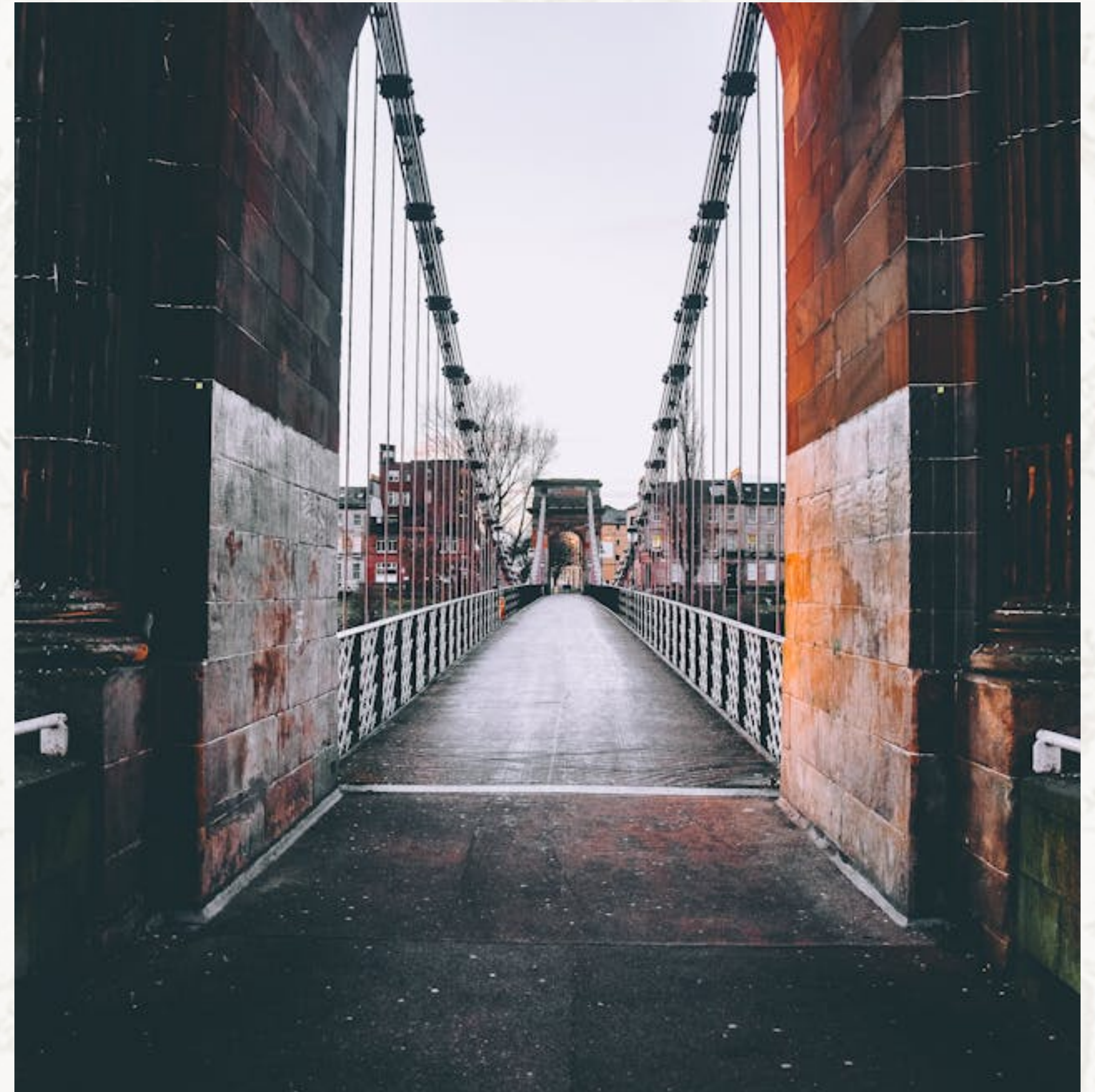
# A Great Example

Bad, good, & great

System goal in place

Allocation revised each week as  
new information became available

The series system allowed team to  
focus on the weakest link each week

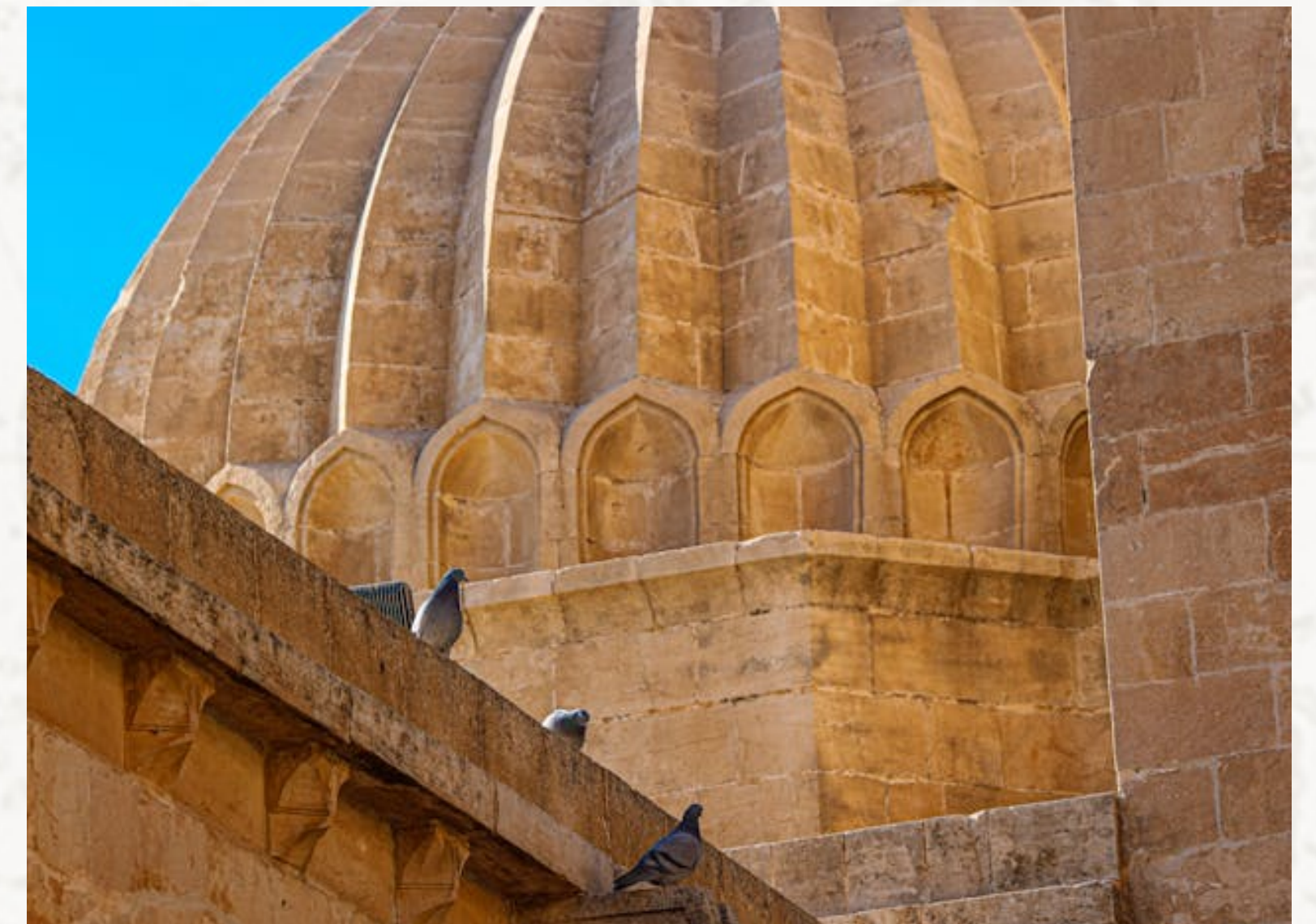




**What is the value  
of Allocation?**



# Purpose & Value





# Communicate & Align

## Purpose & value

Goals and estimates/  
measurements all on team to  
have clear goals and monitor  
progress

A goal without measurements is  
wishful thinking

Measurements without a goal is  
rather random





# Prioritize resources

## Purpose & value

Improving the most reliable element is both expensive and with little effect on overall system reliability.

With limited resources focus on elements that make the biggest difference

Avoid competition for scarce resources



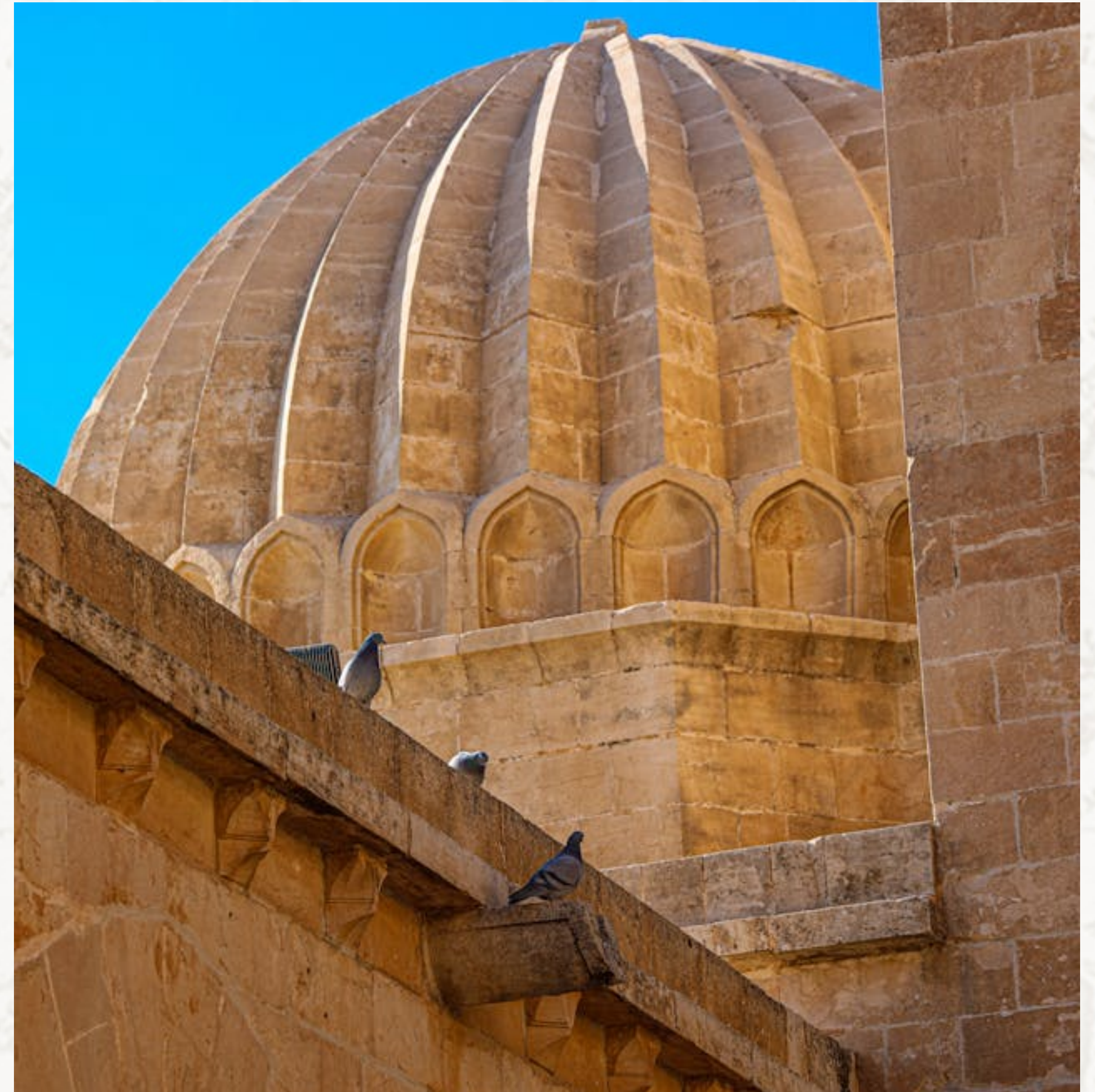


# Explore tradeoffs

## Purpose & value

In some systems, improving an element's reliability has a few options at different costs & risks

Two similar opportunities may provide different costs & risks, yet either may provide improvements





How to do

Allocation?



# Simple Methods





# Straight line

## Simple Methods

For example, do the simple math:

If each element of a system has the same reliability, and when multiplied together equals or exceeds the system goal,

What is that reliability?

System R 95%, with 5 subsystems, what is the subsystem reliability allocation?





# Prior performance

## Simple Methods

Use what you know:

For example, keyboards are robust and rarely fail, while power supplies are rarely better than x reliability.

engineering estimates

field data analysis

etc.





# Negotiate

## Simple Methods

In a design team ask various lead engineers for software, mechanical, electrical, etc for what they can commit to achieving.

If that doesn't meet the system goal, what can/should be improved?





**Will this work**

**in your organization?**



# Additional Comments and Questions



# Thanks

**see more at [AccendoReliability.com](https://AccendoReliability.com)**