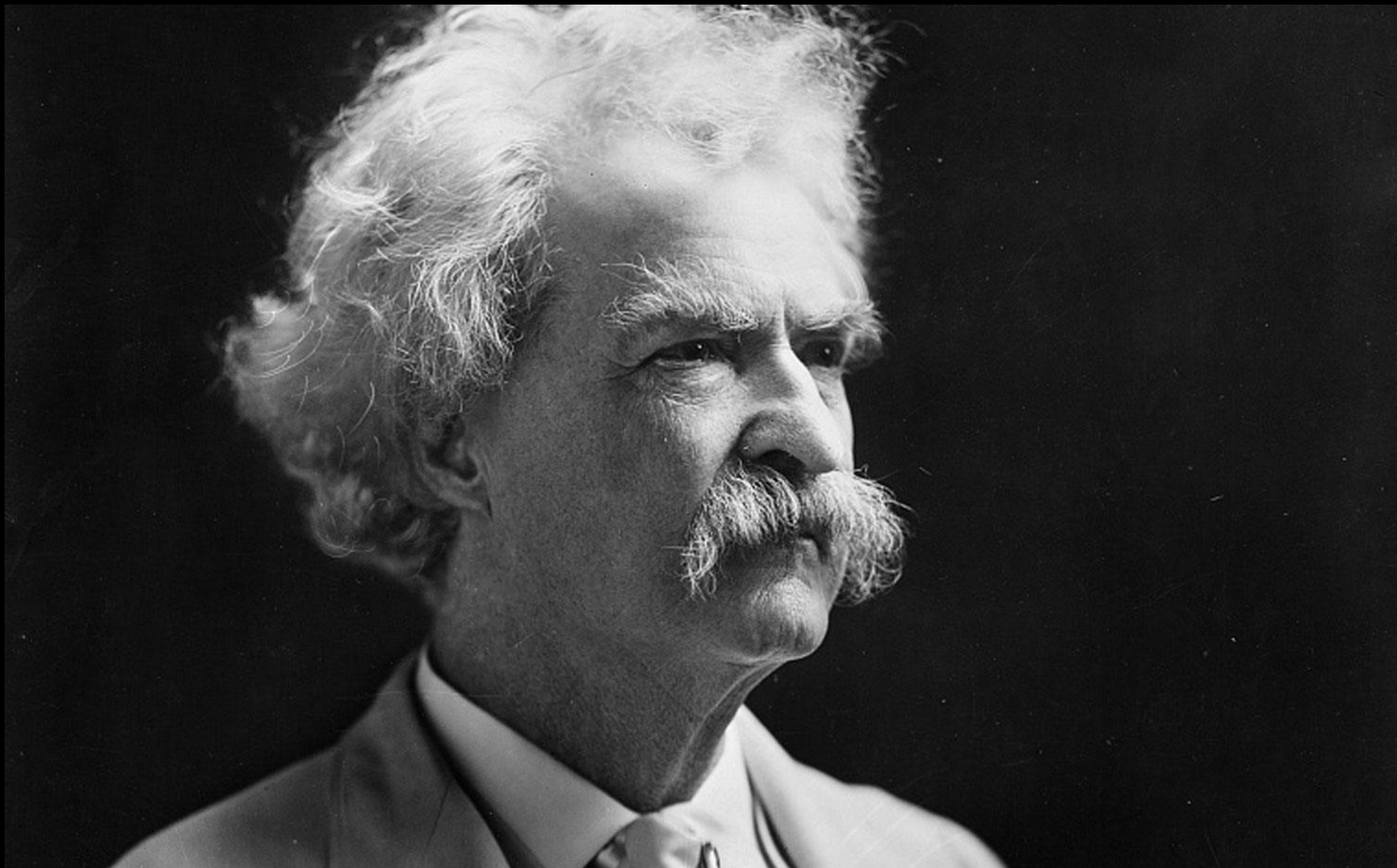




**Approximately Right  
or Precisely Wrong?  
Challenges  
for road concessions  
Cost Modeling**

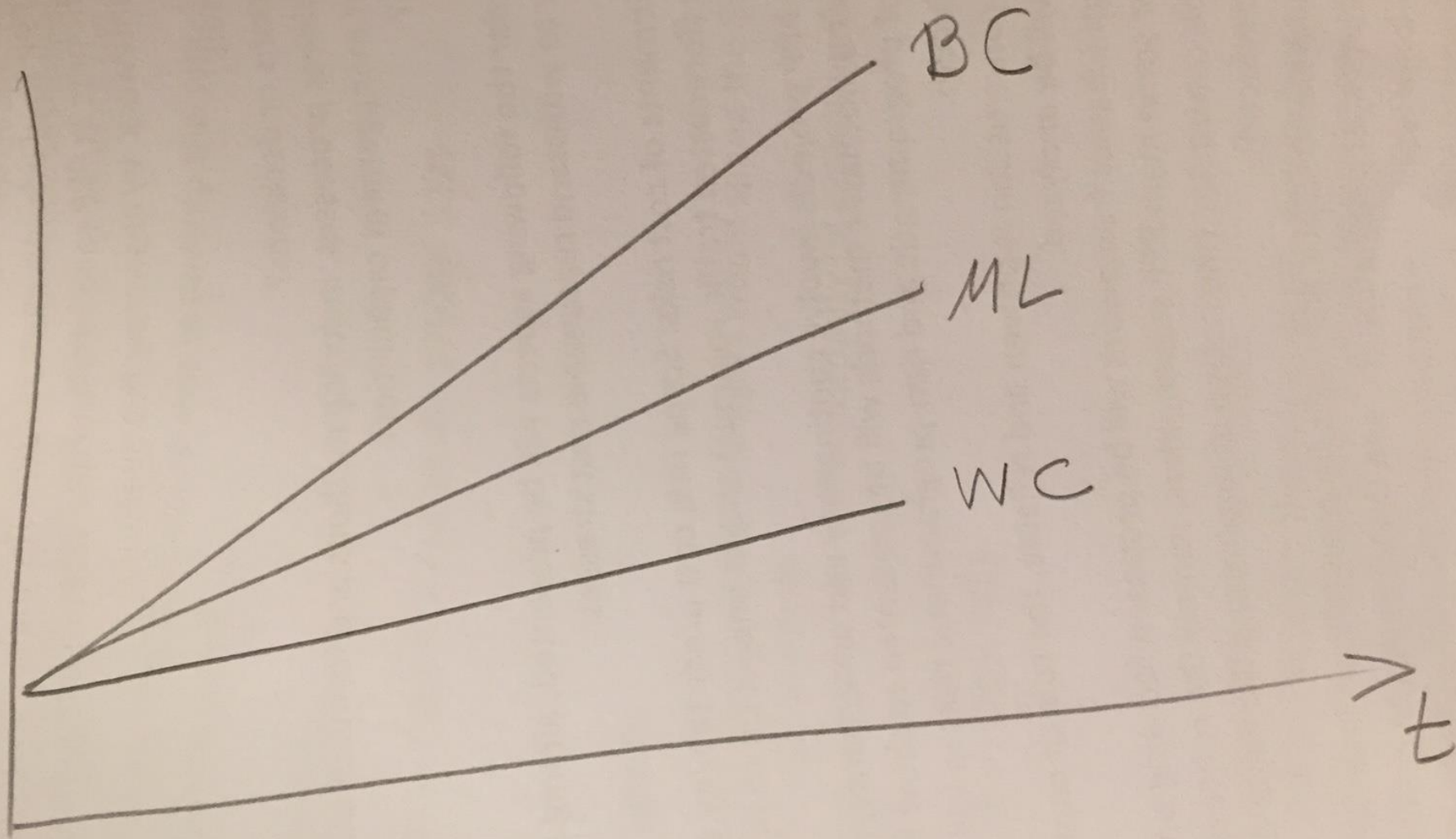


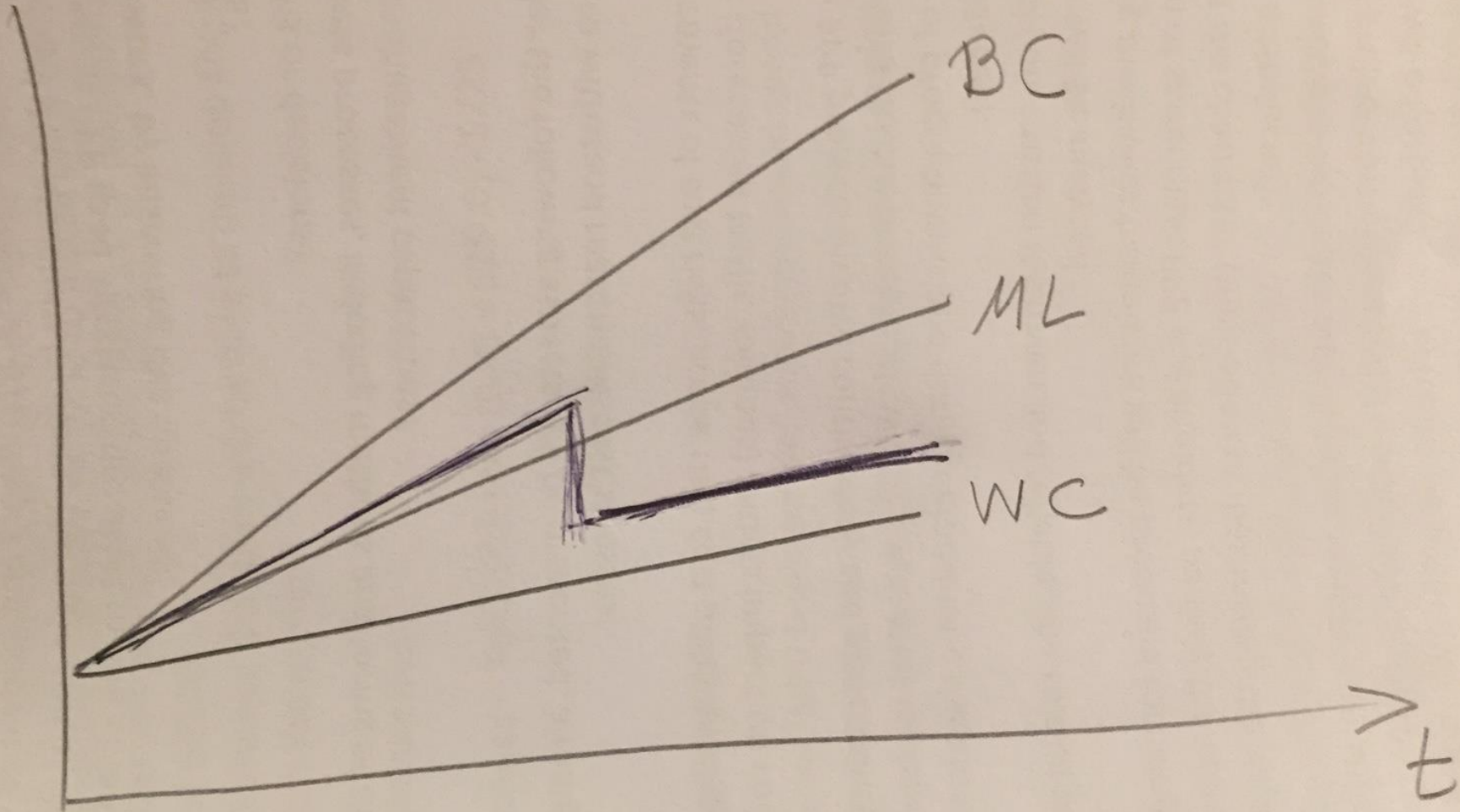


“It is hard to make predictions,  
especially about the future.”









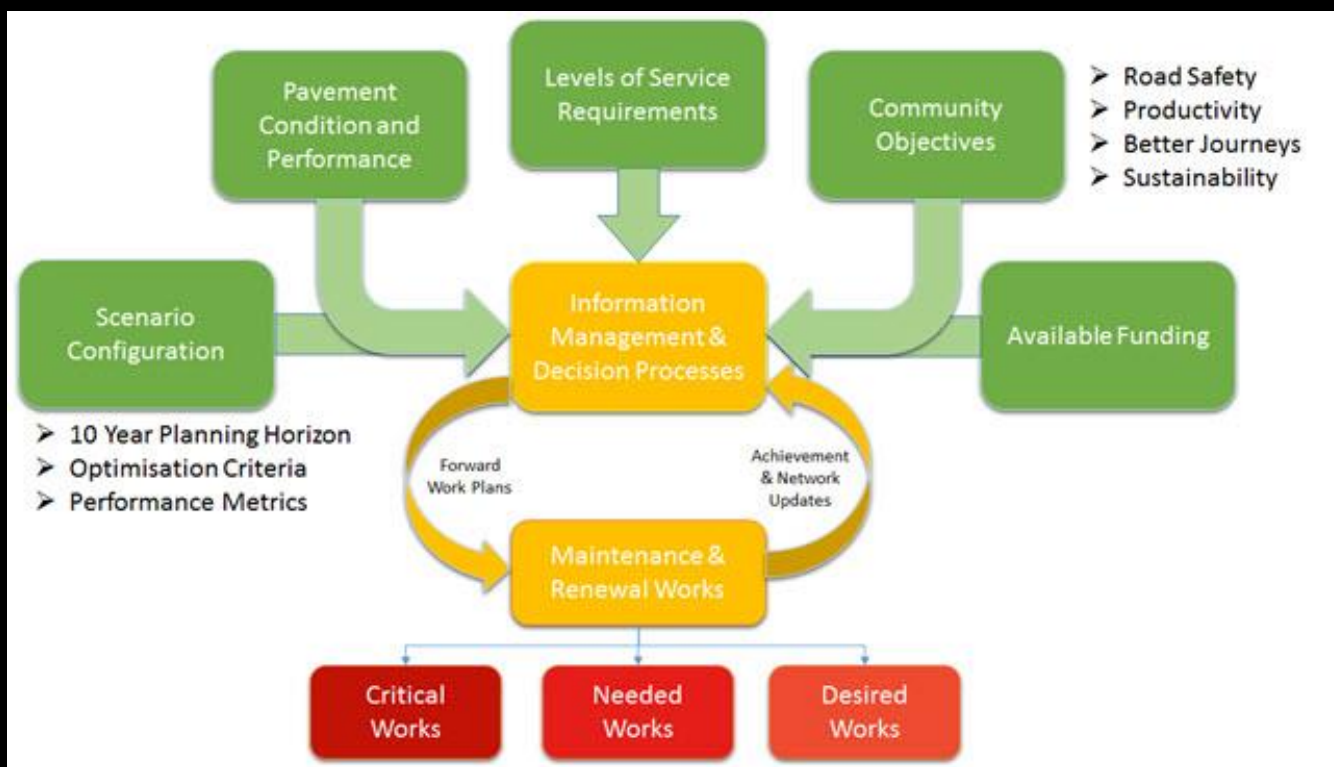
# Uncertainty vs. Risk

**Uncertainty** is a situation in which the probability and severity of a potential loss (or gain) is not well understood (unknown unknown).

**Risk** is characterized by both probability and severity (known unknown).

**Uncertainty** is the mean absolute deviation (MAD) from the Expected Value.

**Risk** is the mean absolute deviation (MAD) from a given target, objective, or threshold.



At the moment we decide on a Pavement Management Plan, the **Risk Management** takes precedence over **Uncertainty Management**

# Highly confident people do these things...

What does it mean for a Project Manager  
to demand high confidence and narrow intervals  
from his team?





An eager Design & Engineering team thinks that they can develop a **new design framework** that could radically change the way to deliver transportation projects.

R&D costs: \$25

Implementation costs: \$200

If succeed: \$2,500 FCF

Chances: 5%



Would you give the team the money?



## A “conventional” NPV calculation:

Expected DCF net revenues – Total DCF Cost

$$(0.05 \times \$2,500) - \$225$$

$$= \$125 - \$225$$

$$= \mathbf{-\$100}$$



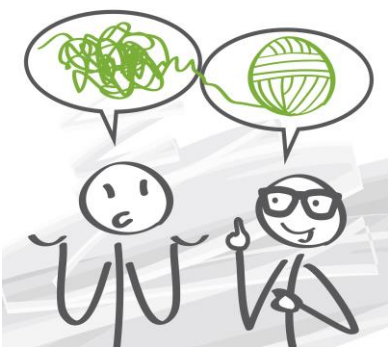


The CFO orthodoxy

$$\begin{aligned} & \text{Expected DCF net revenues} - \text{Total DCF Cost} \\ & (0.05 \times \$2,500) - \$225 \\ & = \$125 - \$225 \\ & = \mathbf{-\$100} \end{aligned}$$



Reduce the diversifiable risk by making small experiments to test the hypothesis



Exit Gate or Re-iterate

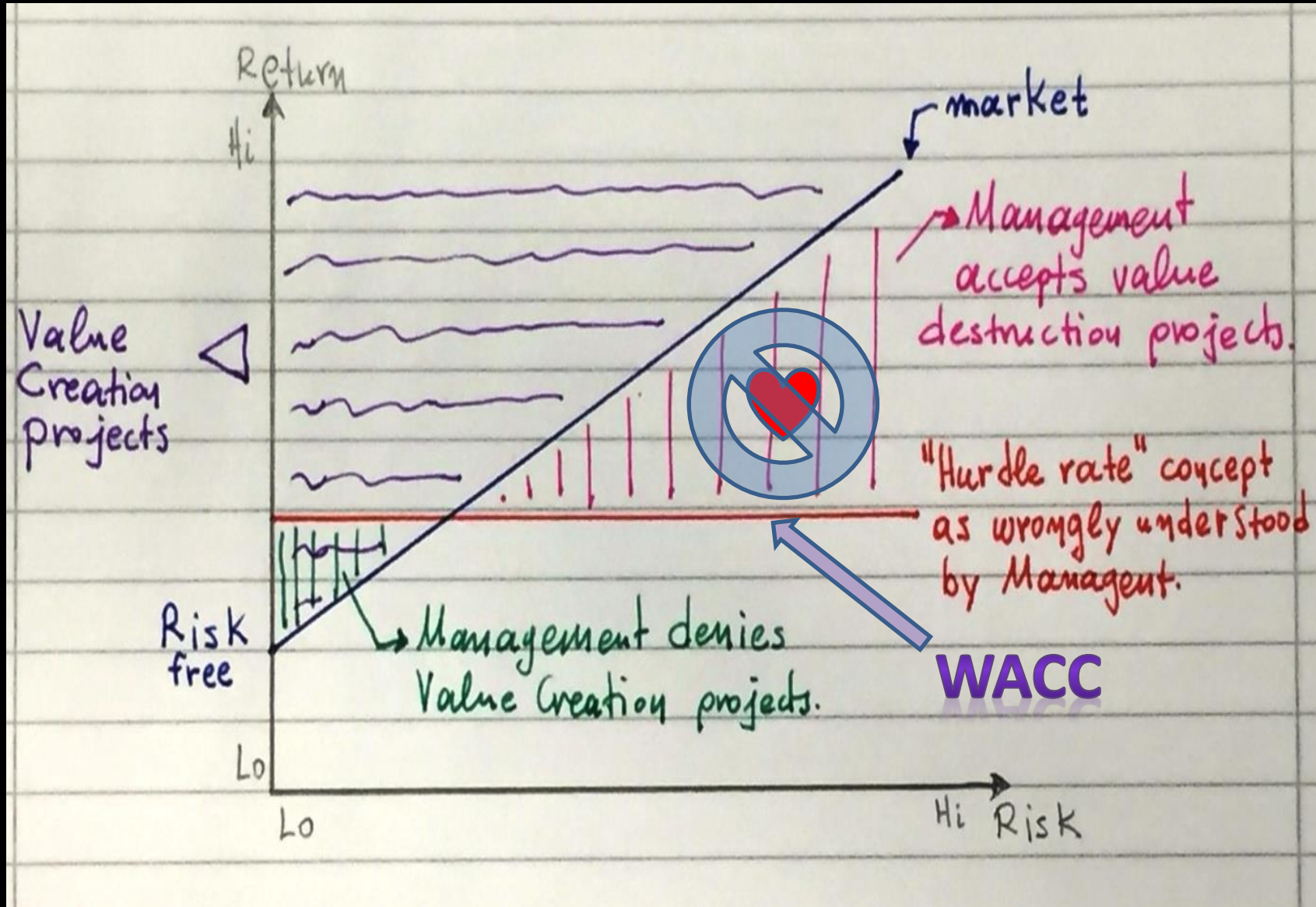
$$\begin{aligned} & -\$25 + 0.05 \times (-\$200 + \$2,500) \\ & = -\$25 + \$115 \\ & = \mathbf{\$90} \end{aligned}$$



To innovate: Factor in the process the opportunity to walk away.

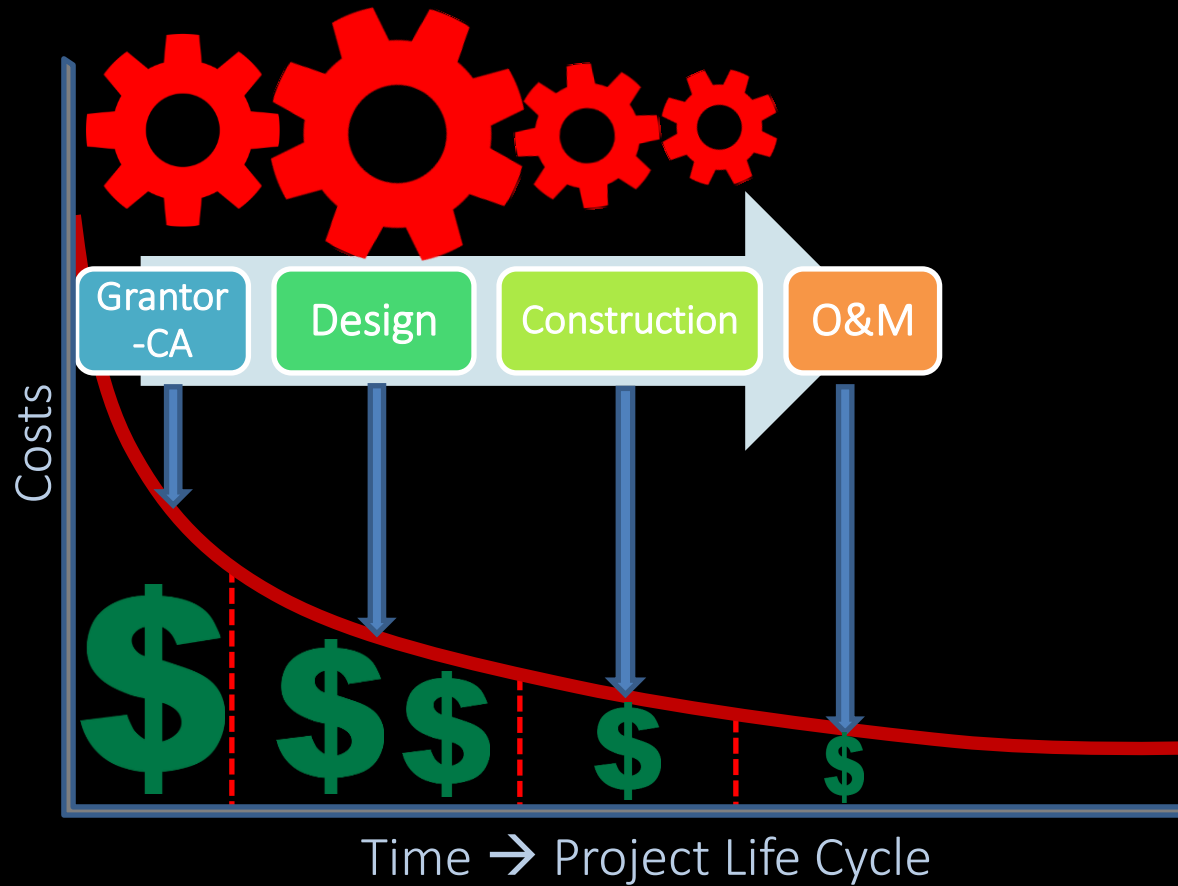


# The RISK belongs to the project, not to You!





# Who generates the costs



# Absence of Strategy



1. The sponsor's strategy for allocating resources between construction, O&M, and LC will **drive the cost profile of the project**.
2. The **ultimate strategy** is based on the sponsor's economics for the project.
3. Understanding the sponsor's strategy for the project is key to developing appropriate **cost sensitivities**.



# Structure matters



Our experience in PPP road projects shows that **improper structuring** rather than the intrinsic value of projects has been the cause of many failures.

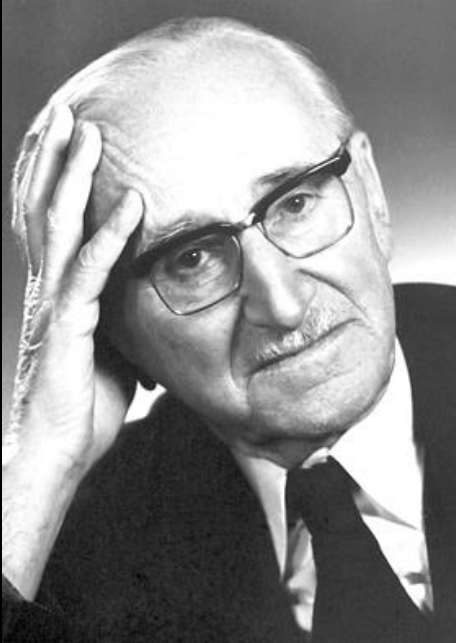




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# Precisely Wrong

Austrian economist **Friedrich von Hayek**  
in his Nobel Prize speech entitled  
**'The Pretence of Knowledge'**

warned politicians, thinkers, and business leader would be  
wise not to try to bend history as  
*"the craftsman shapes his handiwork, but rather to  
cultivate growth by providing the appropriate environment,  
in the manner a gardener does for his plants."*

When we, as engineers, are merely creating something, as a Cost Model,  
**...we have a sense of control.**

Being a gardener is different...

**You have to prepare the project environment.**

# Value Creation Imperative requires... Independence & Courage

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# Christos Rados

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