

A CONTINUOUS PROCESS VIEW OF SYSTEMS ENGINEERING FOR THE SUSTAINMENT PHASE

By: Paul Ratke

US Air Force

Oklahoma City Air Logistics Center

IT'S JUST ME

The views and opinions presented here are the author's. They are not necessarily representative of any official position of the US Government or any of its organizations.

What's this about?

- The acquisition lifecycle framework shows sustainment as a small and somewhat linear part of the lifecycle.
- An alternative view is useful to aid understanding of the sustainment phase.

Where is this going?

- Why have alternative views?
- What are the current views?
- What is the alternative view?
- What do we do with it?

Why have alternative views?

- ⦿ Different vantage points
- ⦿ “Pre-sustainment” phases emphasized
- ⦿ There is much to be gained

Why have alternative views?

(Different Vantage Points)

- ⦿ People have:
 - Different backgrounds
 - Different situations
 - Different understanding

- ⦿ Example:
 - Accident witnesses

Why have alternative views?

(Different Vantage Points)



What Did YOU See?

Why have alternative views?

(Different Vantage Points)



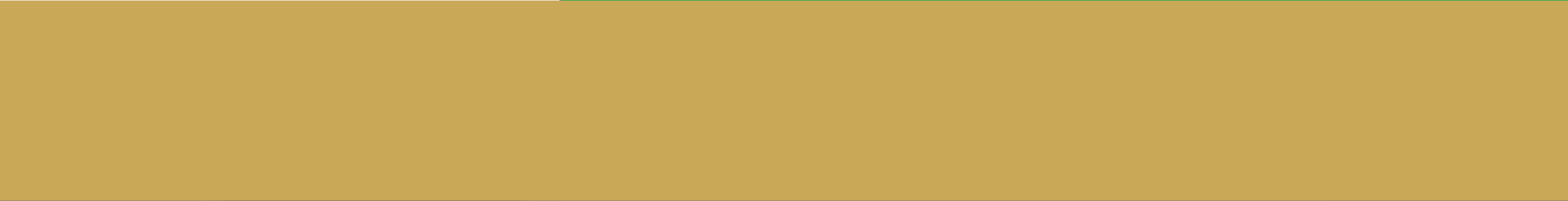
What Did YOU See?

Why have alternative views?

(Different Vantage Points)



What Did YOU See?



Why have alternative views?

(Different Vantage Points)

What Did YOU See?



Why have alternative views?

(Different Vantage Points)


- ⦿ Look at all sides of the issue
- ⦿ Different views ring with different people
 - Different backgrounds
 - Different situations
 - Different understanding
- ⦿ Both of these can clarify the common view


Why have alternative views?

(Different Vantage Points)

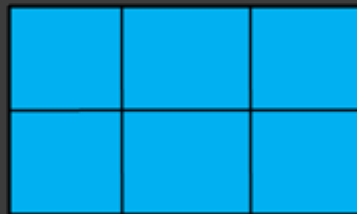
● Example: 2×3

• 1. Memorize it. $=6$

• 2. Explain it as $2+2+2$ or 

• 3. Explain it as $3+3$ or 

• 4. Explain it as



Why have alternative views?

(Different Vantage Points)

- ◎ Systems Engineering is loaded with many view points
 - Role (Government, Contractor)
 - Mission
 - Etc
 - Etc
 -Position in Life Cycle!.....

Why have alternative views?

(“Pre-Sustainment” Phases emphasized)

- LCSE, “Life-cycle”
- In vogue to say it
- Hard to grasp!
- Harder to do!!
- There are reasons to focus on early phases
- Where is SUSTAINMENT? – an example

Why have alternative views?

("Pre-Sustainment" Phases emphasized)

◎ DAU SYS302

- Capstone SE Leadership Course
- 80 Hrs, Six Team Exercises – Nice Course
 - Entry into Acquisition
 - Requirements Development
 - Technical Organization
 - Technical Baselines and Earned Value
 - Technical Reviews
 - Transition to Production

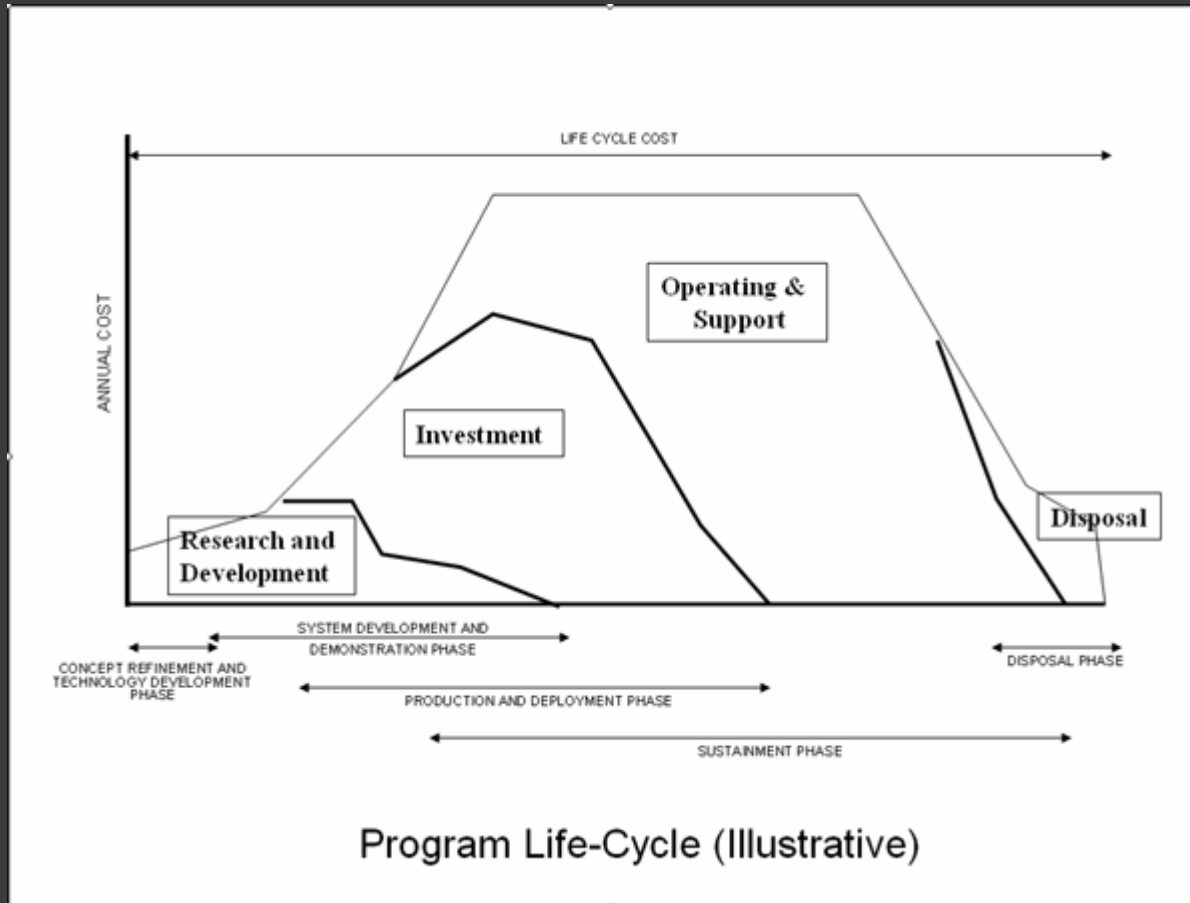
Why have alternative views?

("Pre-Sustainment" Phases emphasized)

- ⦿ Reasons ---
- ⦿ Start at the beginning
 - Hard to start at end, etc
- ⦿ Concept, Design, Mfg – \$1, \$10, \$100
- ⦿ These are good reasons!

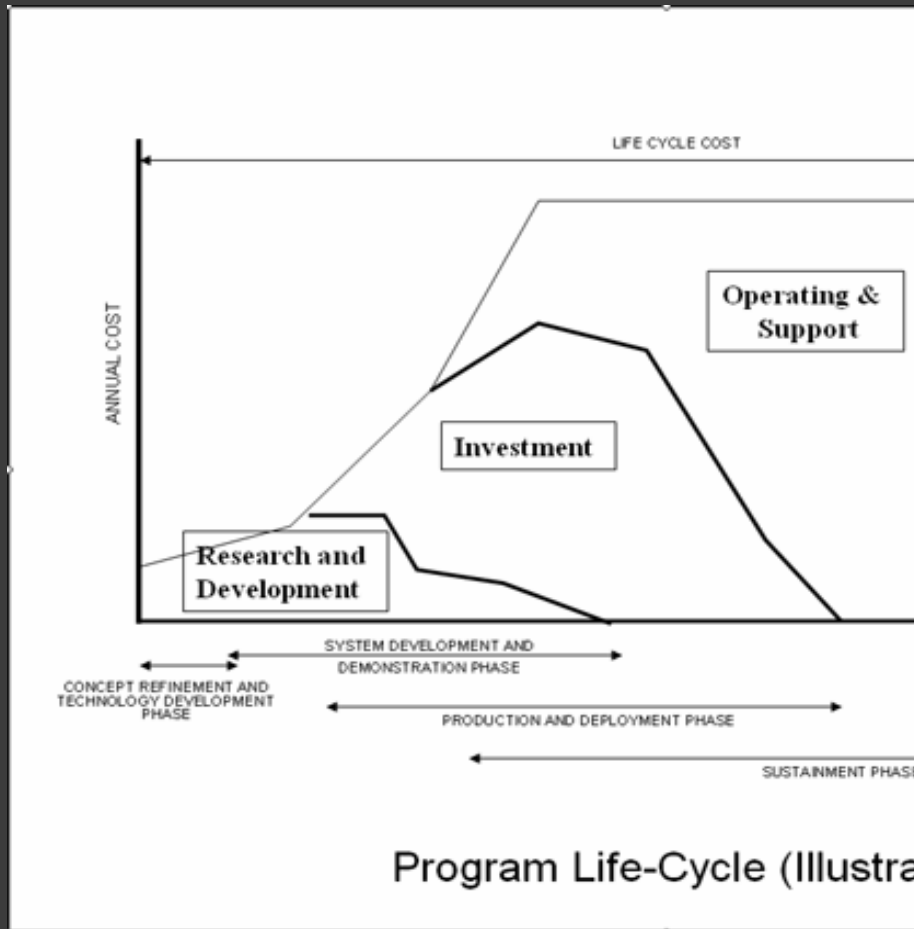
Why have alternative views?

(Much to be gained)



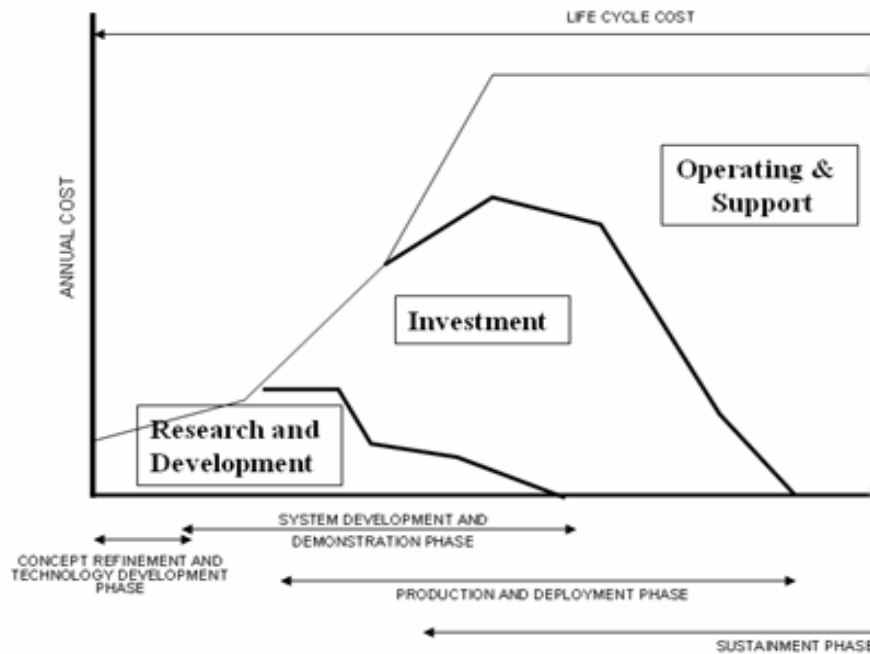
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Why have alternative views?

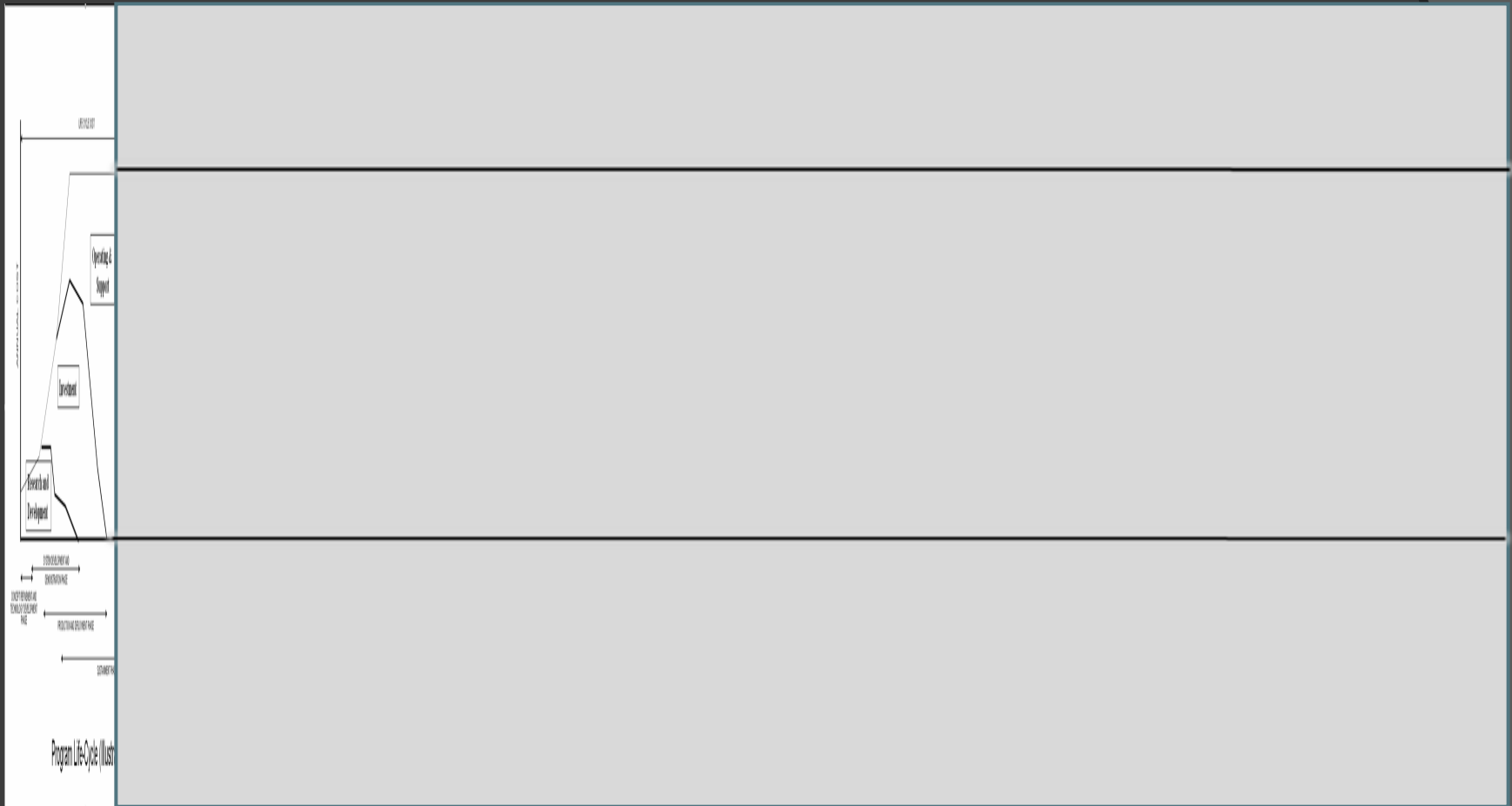
(Much to be gained)



Program Life-Cycle (Illustration)

Why have alternative views?

(Much to be gained)



Why have alternative views?

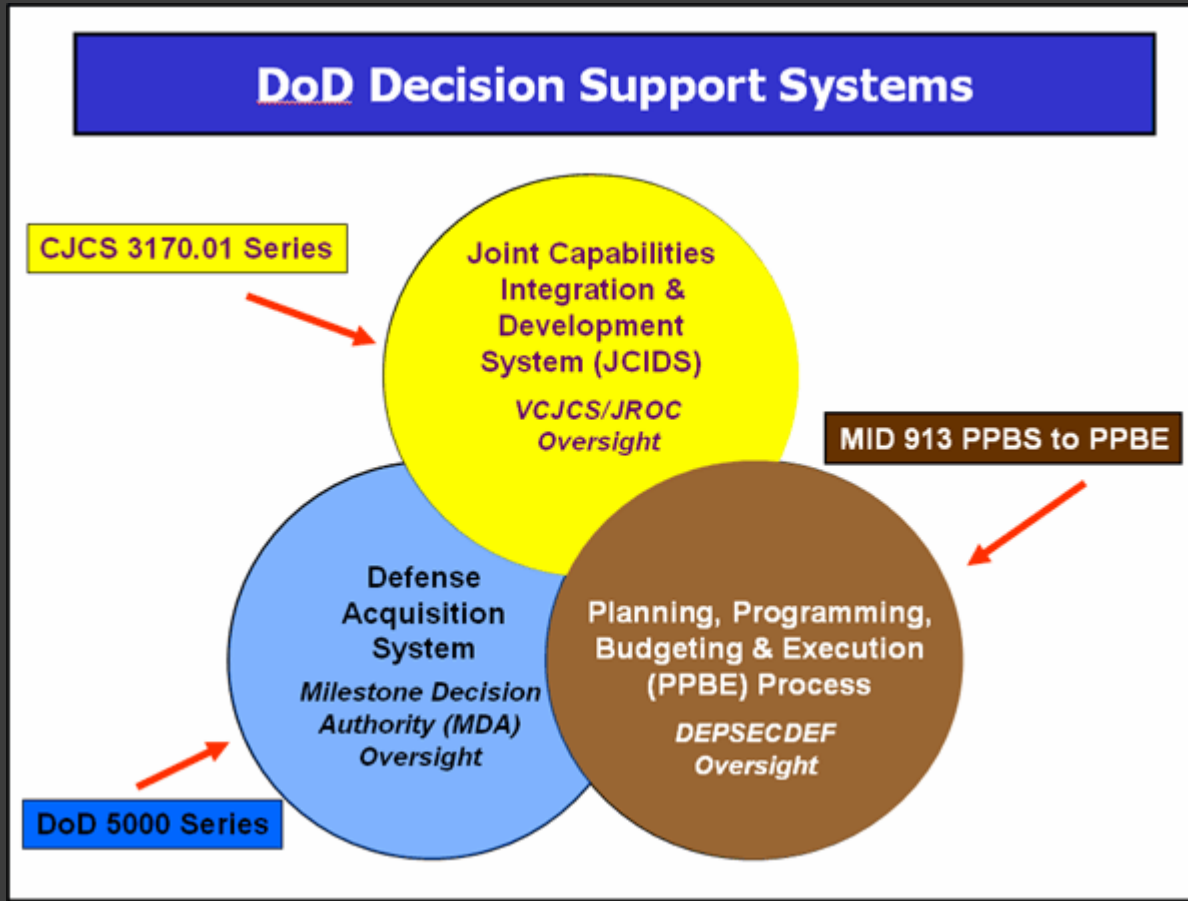
(Much to be gained)

- ◎ \$1, \$10, \$100 – Concept, Design, Mfg
 - What about cost in operation? – 1000?
 - Fuel, Parts, Mission loss
- ◎ Future program avoidance \$!
 - Ability to Modify – ‘Modifiability’ as an ‘-ility’
 - B-58 & F-111 – avoid B-1?
 - KC-135 – avoid KC-next?

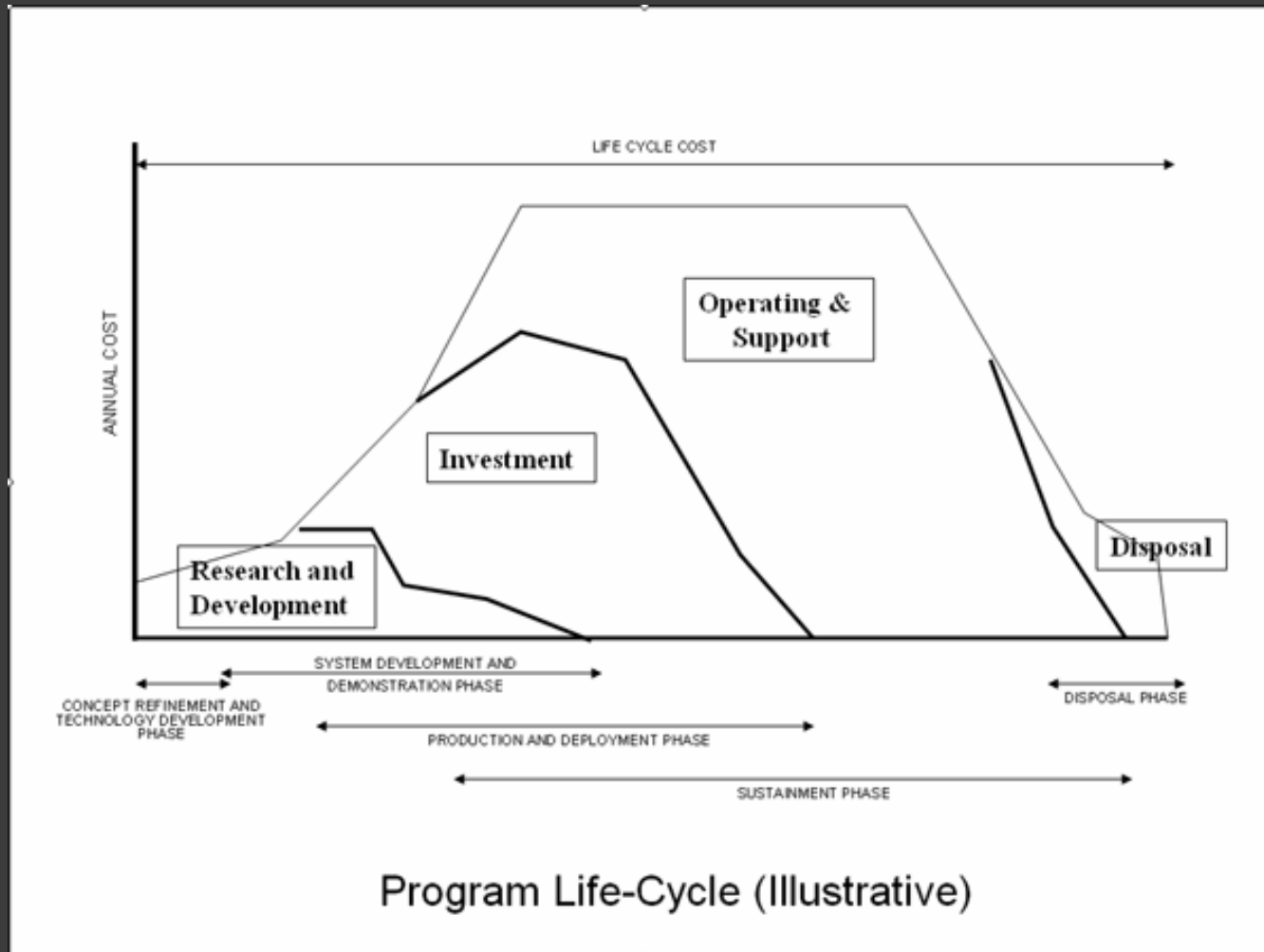
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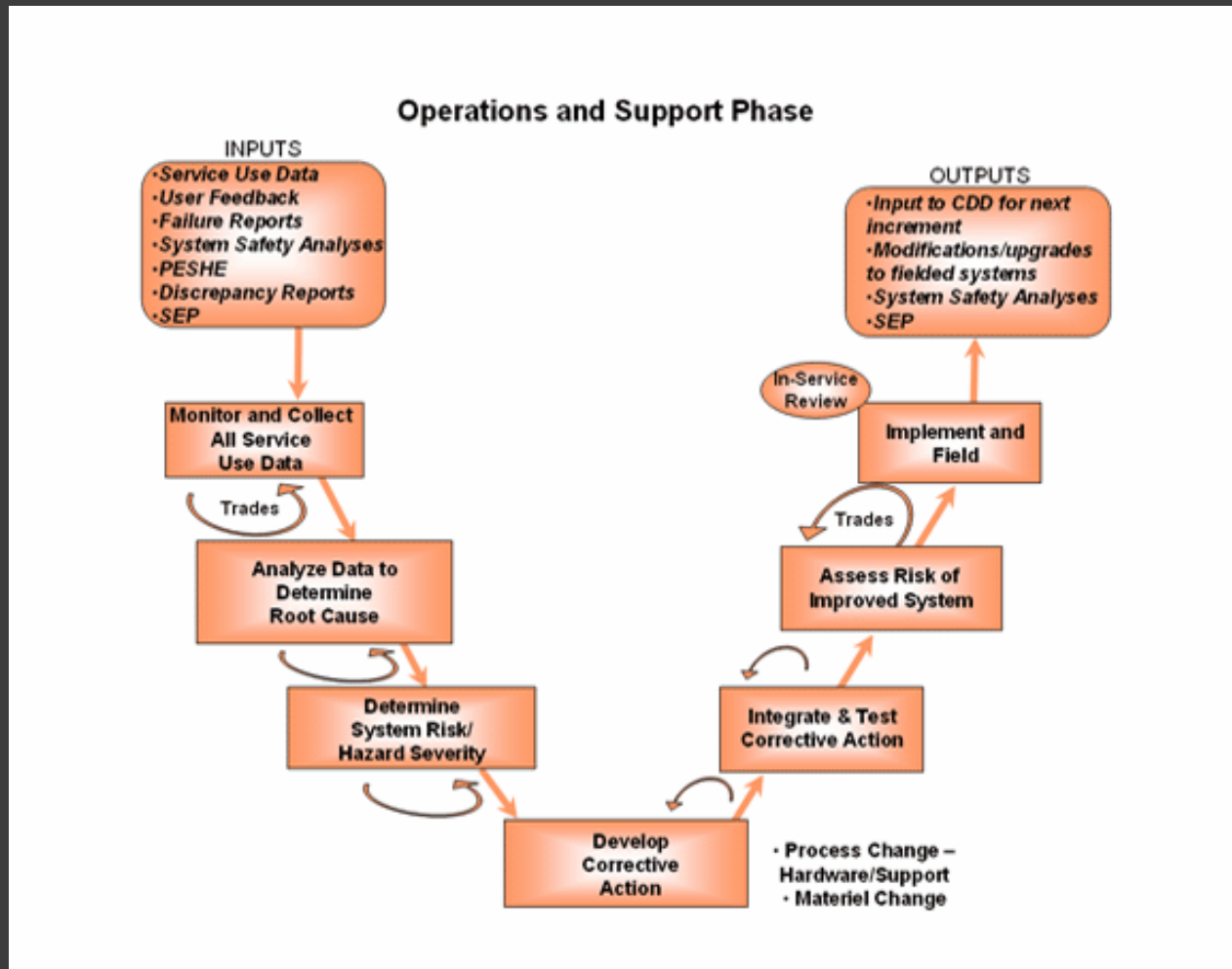
What are the current views?



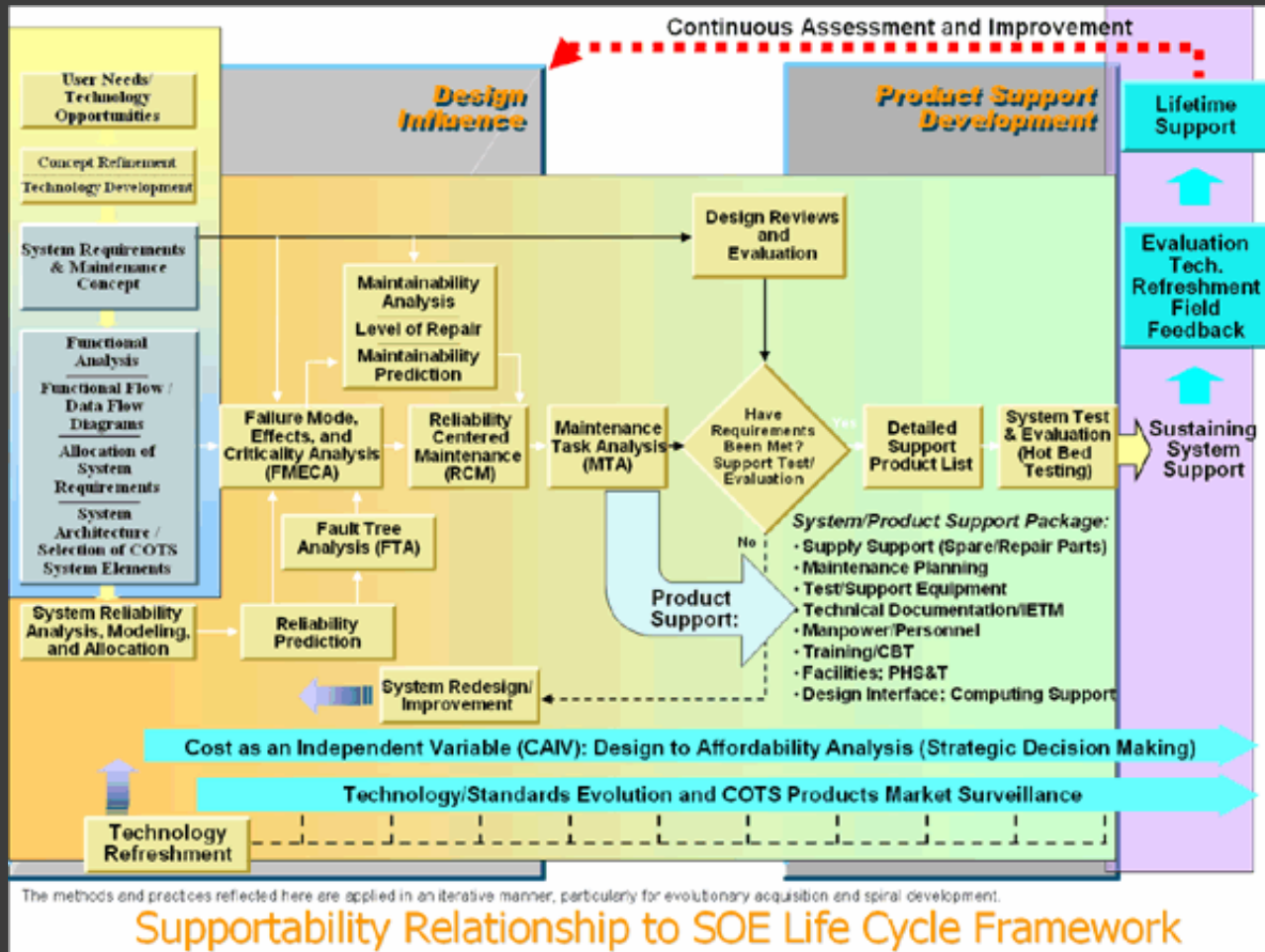
What are the current views?



What are the current views?



What are the current views?



The methods and practices reflected here are applied in an iterative manner, particularly for evolutionary acquisition and spiral development.

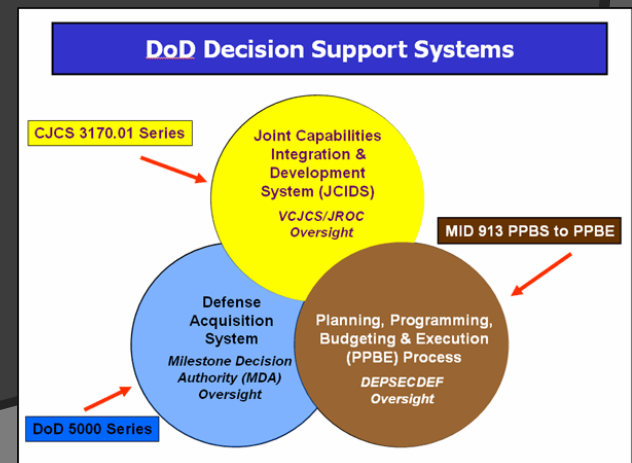
Supportability Relationship to SOE Life Cycle Framework

Where is this going?

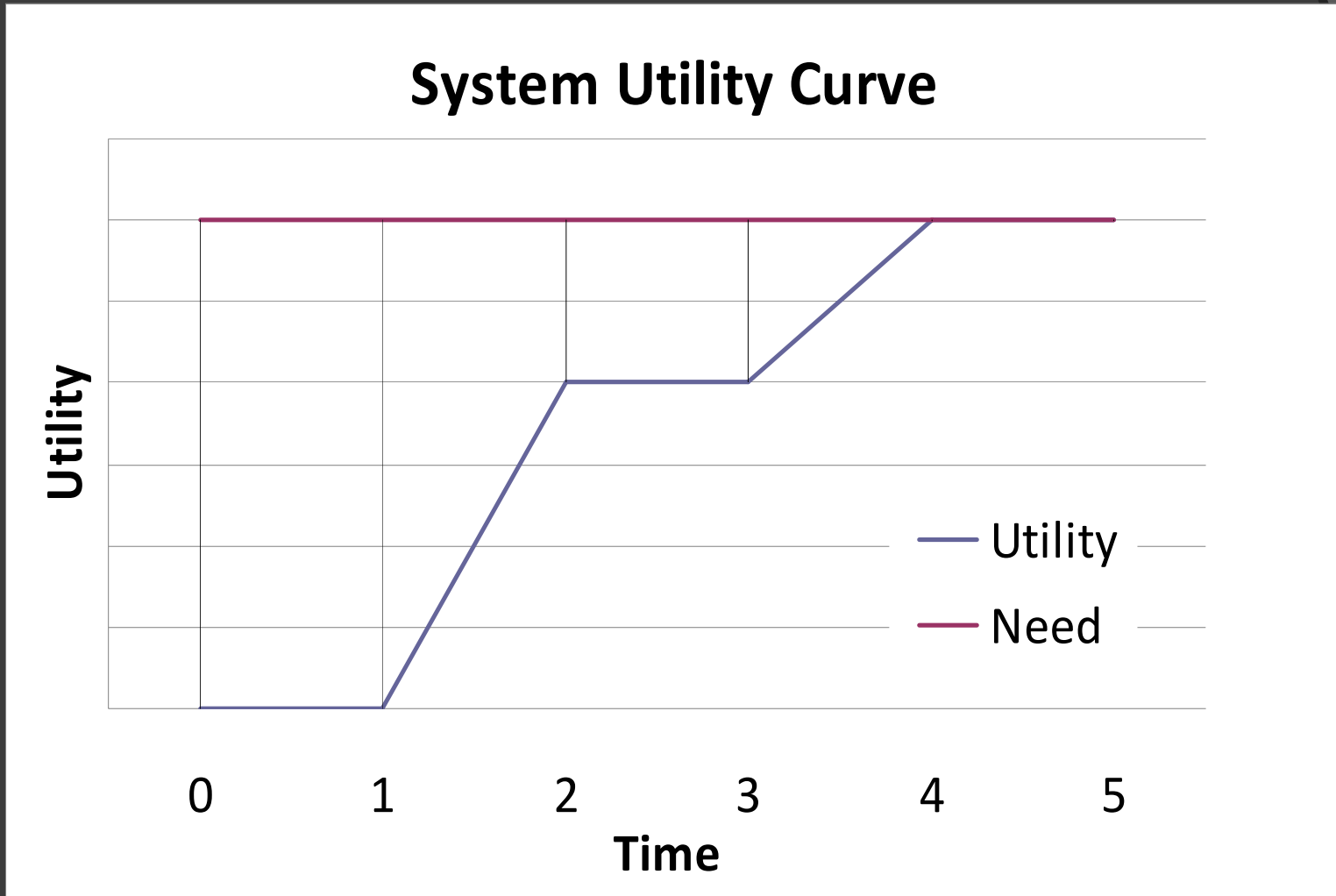
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What is the alternative view?

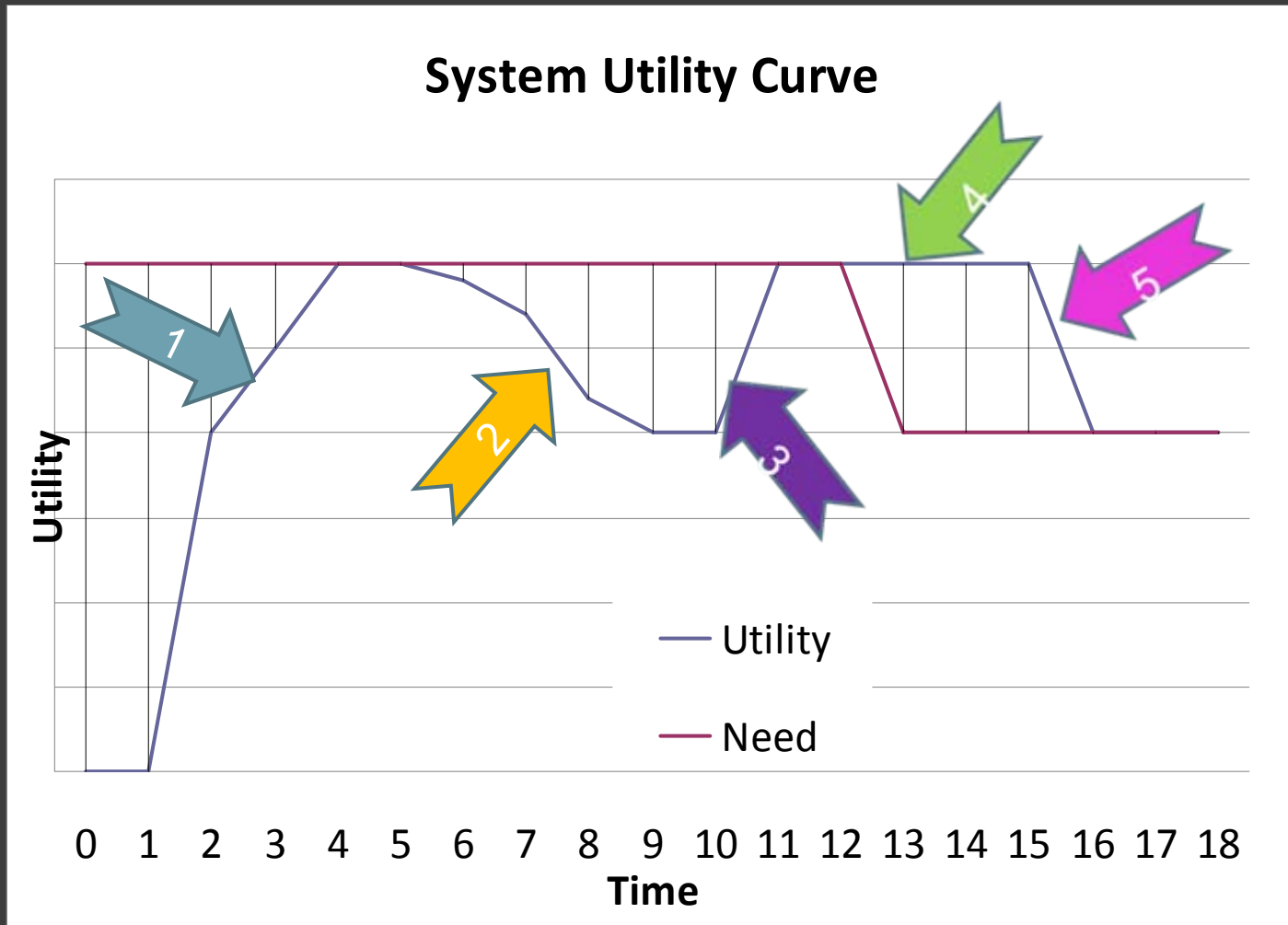
- Utility Curve view
- Utility is “the state of being useful”
- Consider all the operational “usefulness” as the system’s “Utility”
- Consider what the user needs to be the “Need”



What is the alternative view?



What is the alternative view?

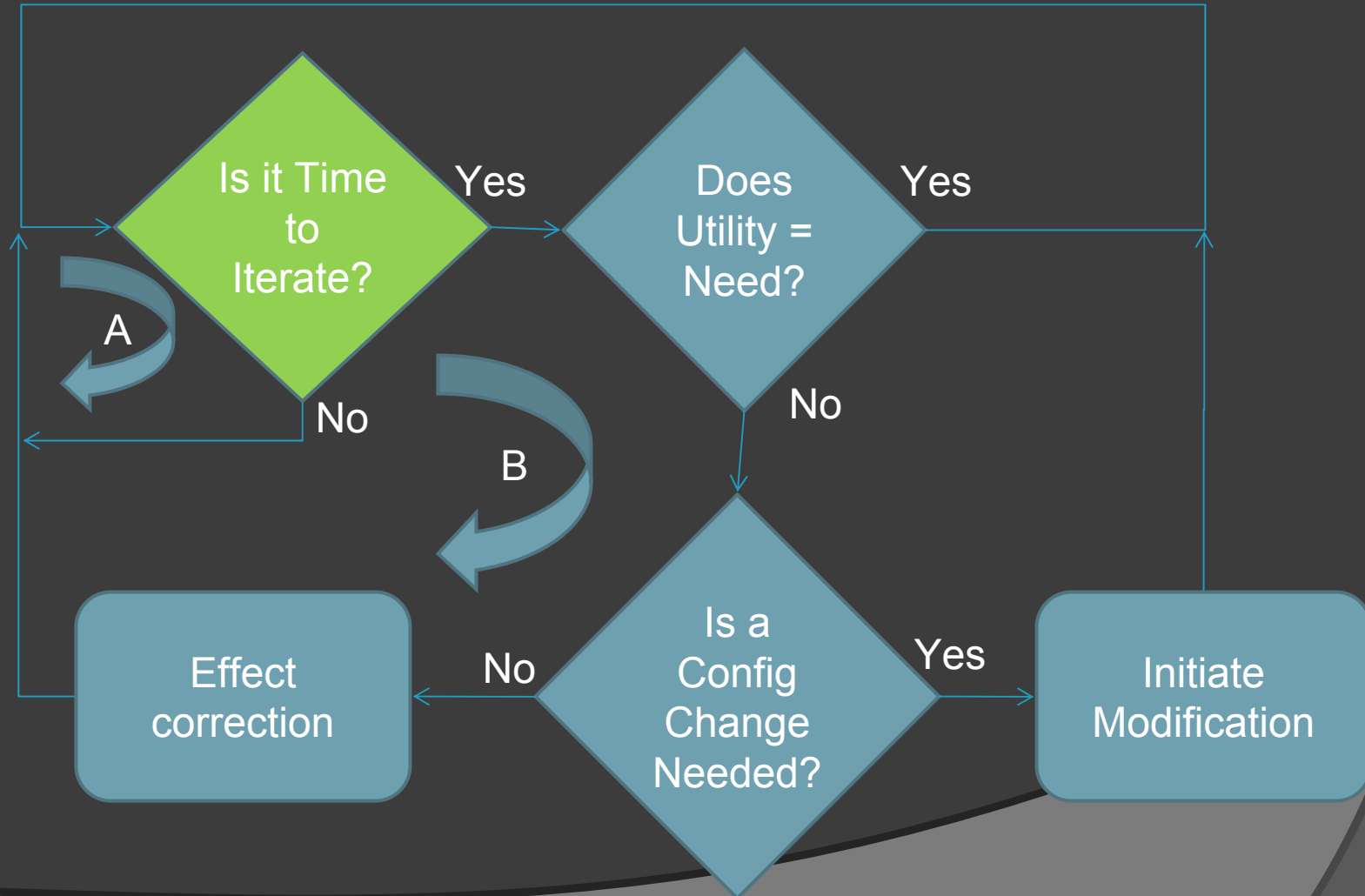


What is the alternative view?

- ⦿ DAG – Chp 5 indicates iterative monitoring
- ⦿ SE not once and done
- ⦿ When Utility does not match Need
 - Either- Effect a ‘non-material’ change
 - Or- Begin the modification process
- ⦿ Need an iterative engine during sustainment

What is the alternative view?

Utility Curve Engine for Sustainment



Where is this going?

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What do we do with it?

- ⦿ A different point of view?
- ⦿ How are we answering these questions?
- ⦿ What drives the cycle to start?
- ⦿ Do we know the current 'Need?'
- ⦿ Do we know the current 'Utility?'
- ⦿ How complete are our answers to these?

What do we do with it?

- BIG QUESTION

- What can we do to improve our answers?

Where have we been?

- Why have alternative views?
- What are the current views?
- What is the alternative view? – Utility Curve
- What do we do with it?

QUESTIONS?