



# Space Observe, Orient, Decide, Act (SpOODA) Loop

Can you say that without smiling?

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# AGENDA

Introduction

OODA Loop

SpOODA Loop

Use Case – Lasers





# INTRODUCTION



## Wikipedia's Space Warfare

“Space warfare is hypothetical combat in which one or more belligerents are situated in outer space.”



## Space Warfare Scope

Ground-to-space, space-to-space, space-to-ground, and ground-to-ground. Scale and physics of space itself adds complexity. Limitations of the technologies and capabilities available can also increase the complexity.



## Video Game

Video Game reference about multi-dimensional ninja not approved by legal for use in this presentation



# N-TH DIMENSIONS

## Artillery Example

Time and Space (3D)

Weather (4D)

Logistics (5D)

Maneuver (6D)

Spectrum (power, frequency management,  
and antenna orientation)

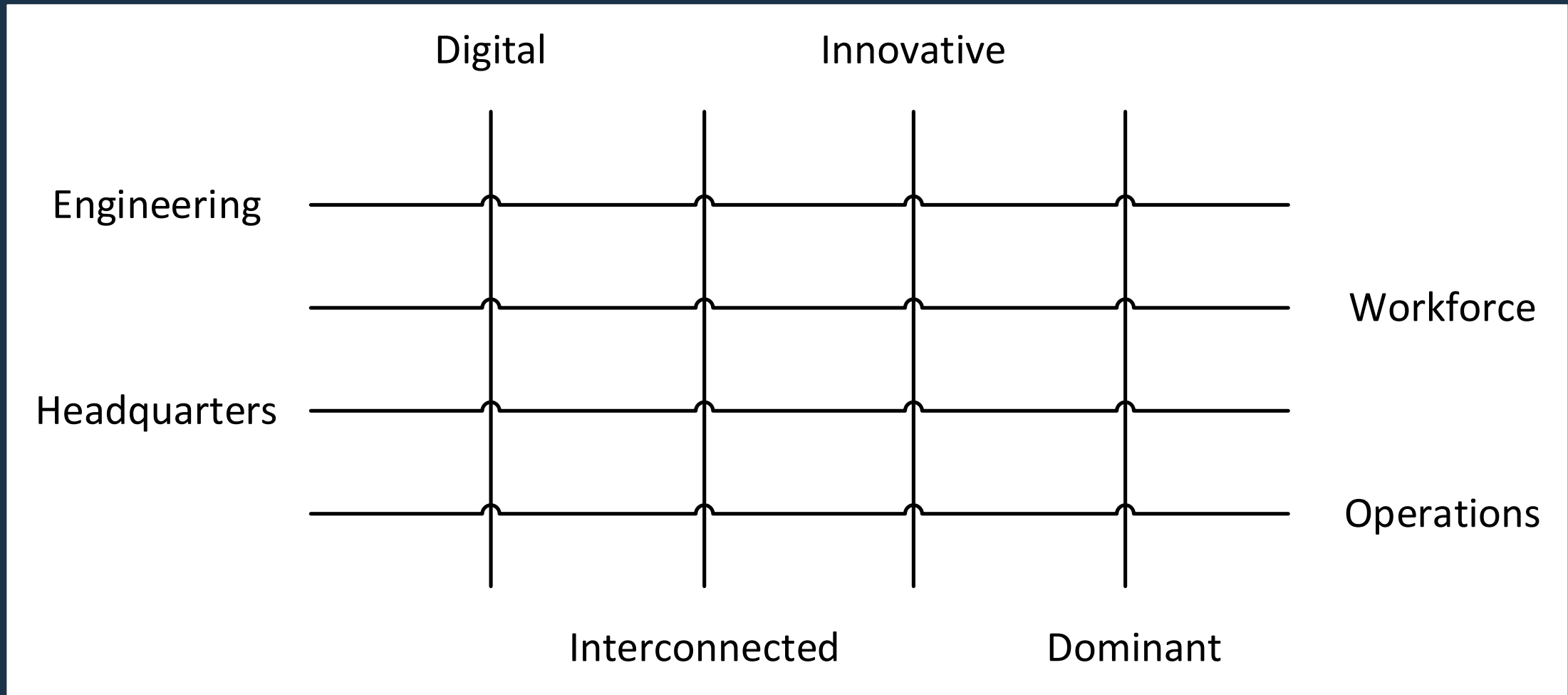
Cyber (OCO, DCO)

Multiple universe  
movie poster not  
approved by legal for  
use in this  
presentation

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# SPACE FORCE VISION FOR A DIGITAL SOLUTION

[https://media.defense.gov/2021/May/06/2002635623/-1/-1/1/USSF%20VISION%20FOR%20A%20DIGITAL%20SERVICE%202021%20\(2\).PDF](https://media.defense.gov/2021/May/06/2002635623/-1/-1/1/USSF%20VISION%20FOR%20A%20DIGITAL%20SERVICE%202021%20(2).PDF)

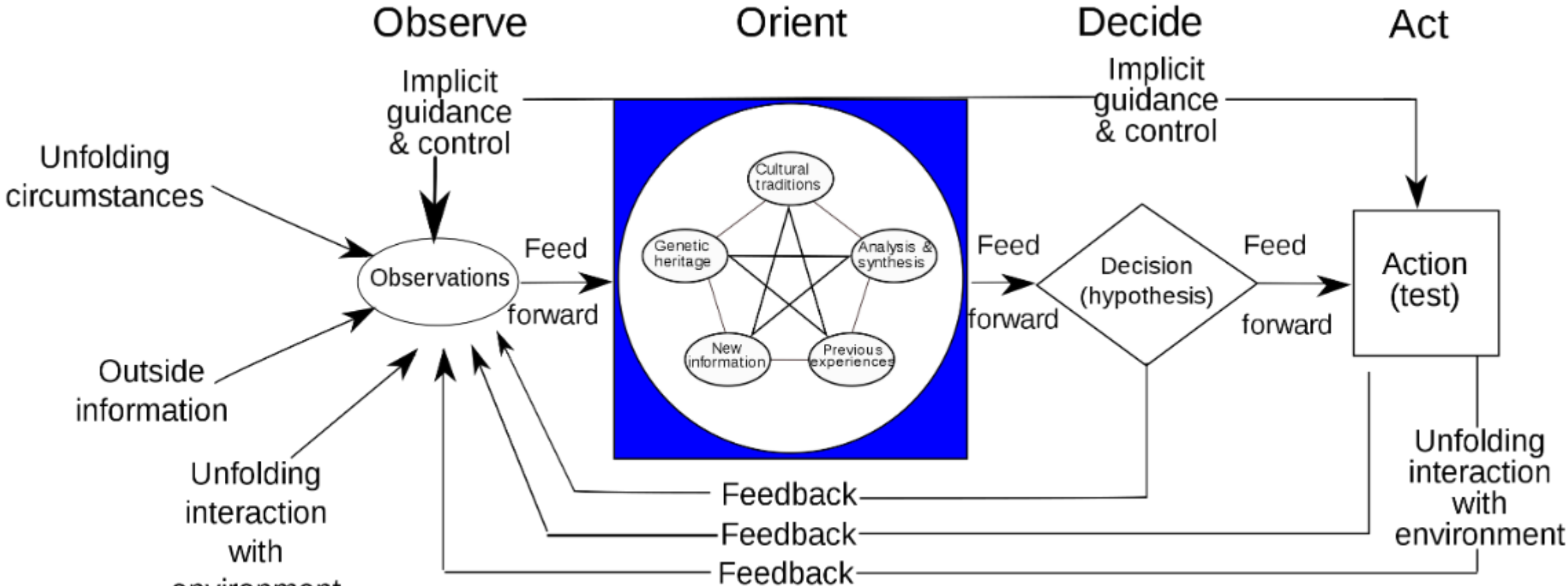




# OODA LOOP



# OODA LOOP



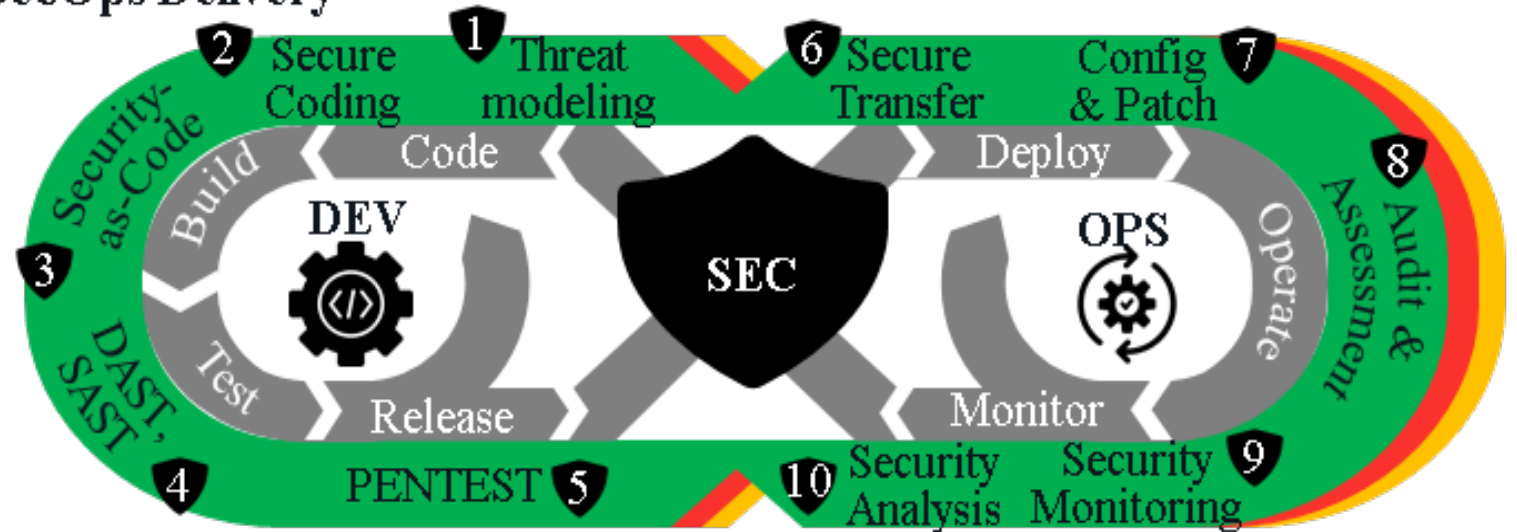
John Boyd's OODAloop

Meme about “lions doing yoga before taking down gazelle” not approved by legal for use in this presentation

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Agile  
or  
OODA  
or  
DevSecOps

### DevSecOps Delivery



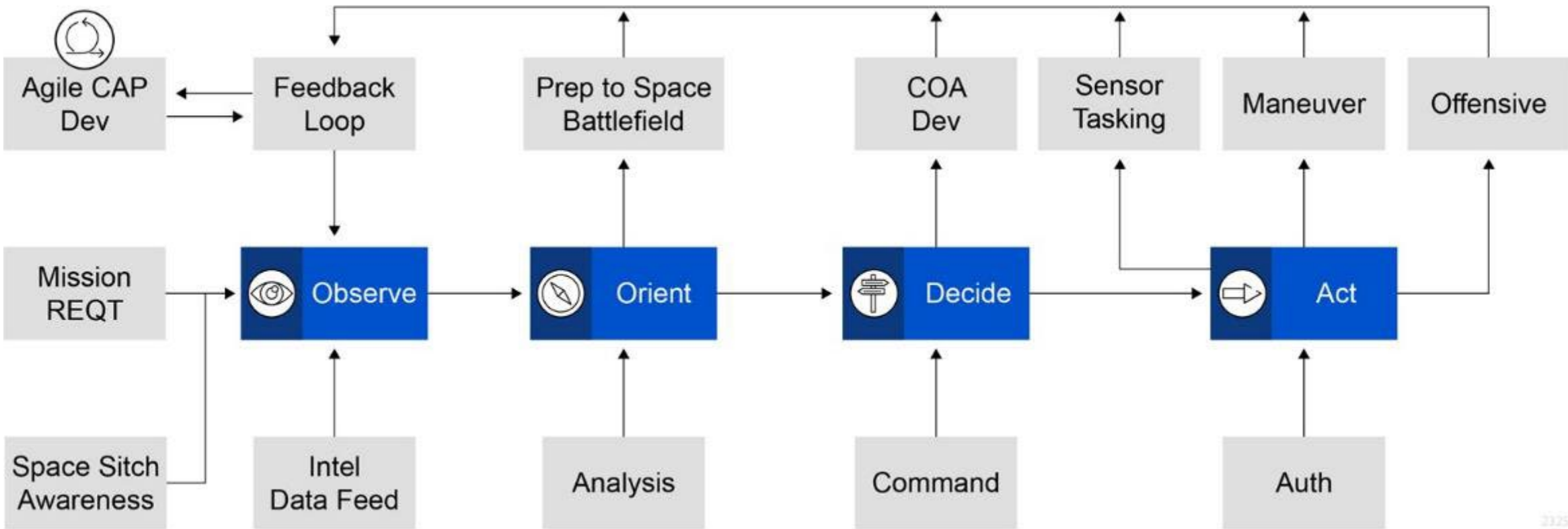




# Space OODA Loop



# SpOODA Loop



3125

# SpOODA In Action

Hmm

Meme about “itchy nose in space suit” not approved by legal for use in this presentation



## 1 Observe

includes mission requirements, space situational awareness, and intelligence data feeds. Having the common operating picture in completeness and layers is critical. The remote operations of Space adds complexity and layers of information that are not really dealt with in other warfare settings.

## 2 Orient

means analysis, preferably using AI/ML to speed things up. The resulting analysis should be used to prepare the battlefield. (Or is it battlespace now?) The preparation could be anything from adjusting long term launch schedules to investing in technology advancements.

## 3 Decide

means command input with commanders making educated decisions quickly. Information management is king here. Integrating tools to do that will lead to better and faster Course Of Action (COA) development.

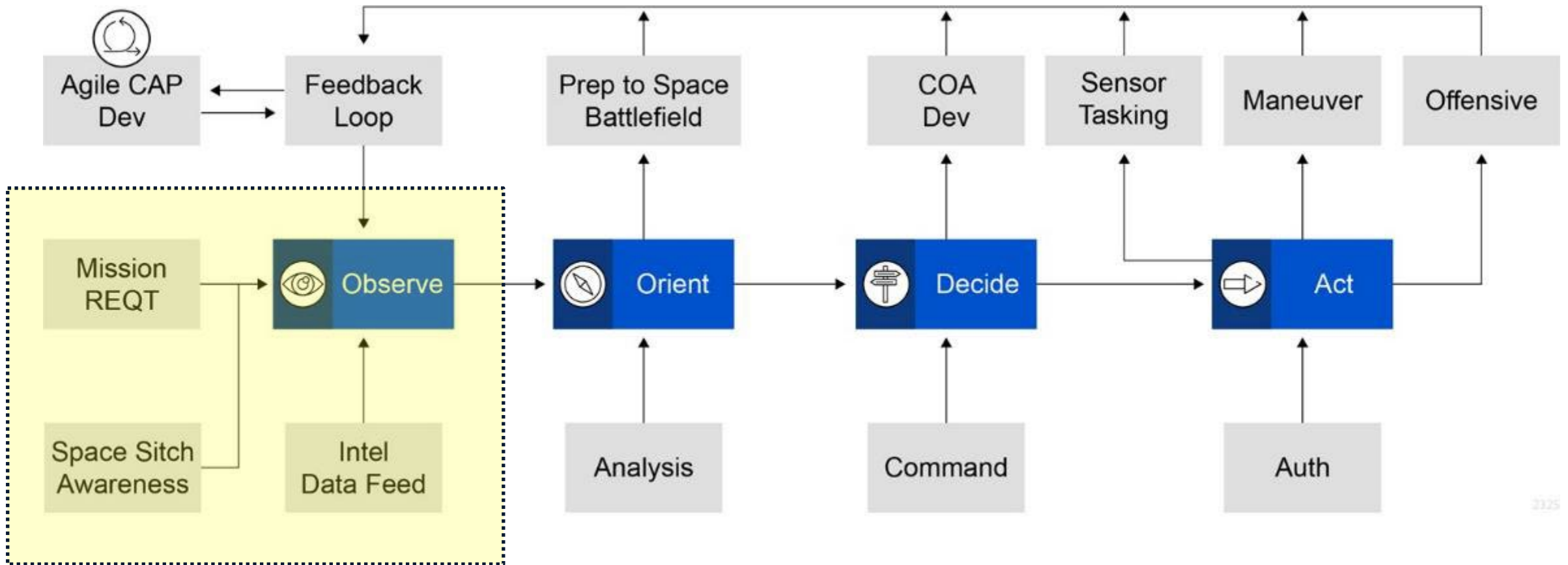
## 4 Act

includes having authorization to conduct sensor tasking, maneuvers, offensive actions, etc. These actions need to be controlled quickly and adjust as enemy actions require modifications. To expedite complex actions with complex authorities, authorization can be granted via parameter-based conditions.





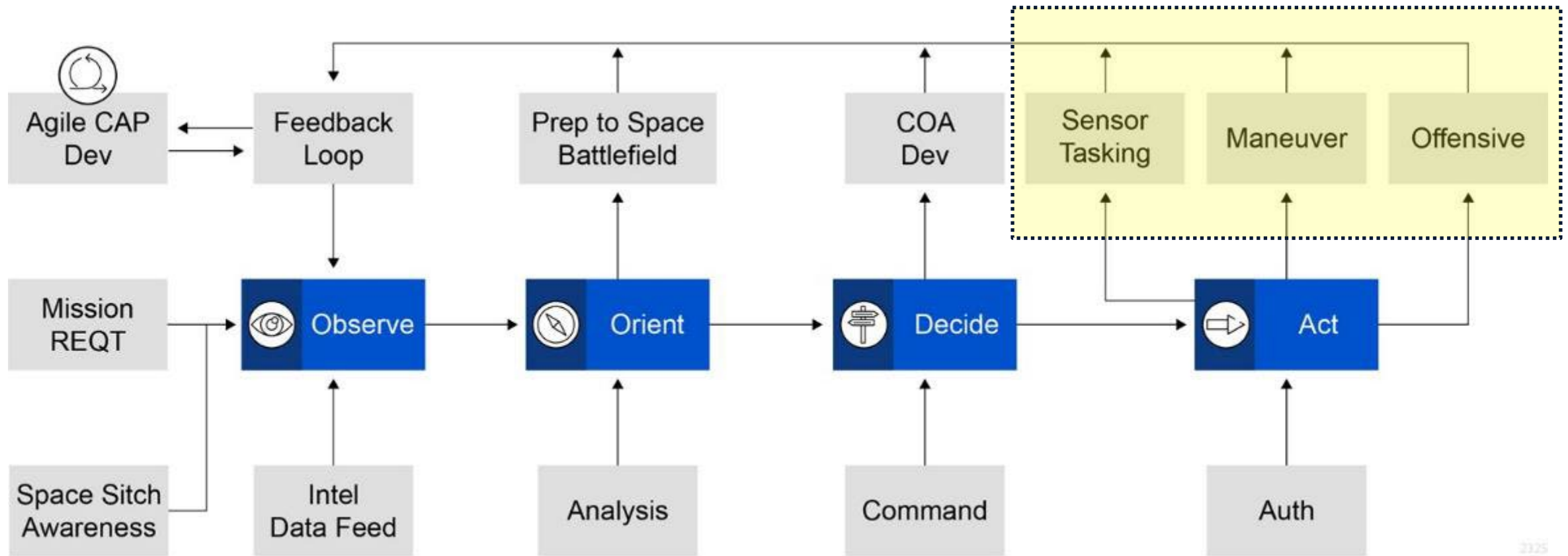
# SpOODA Loop – Observation Sources



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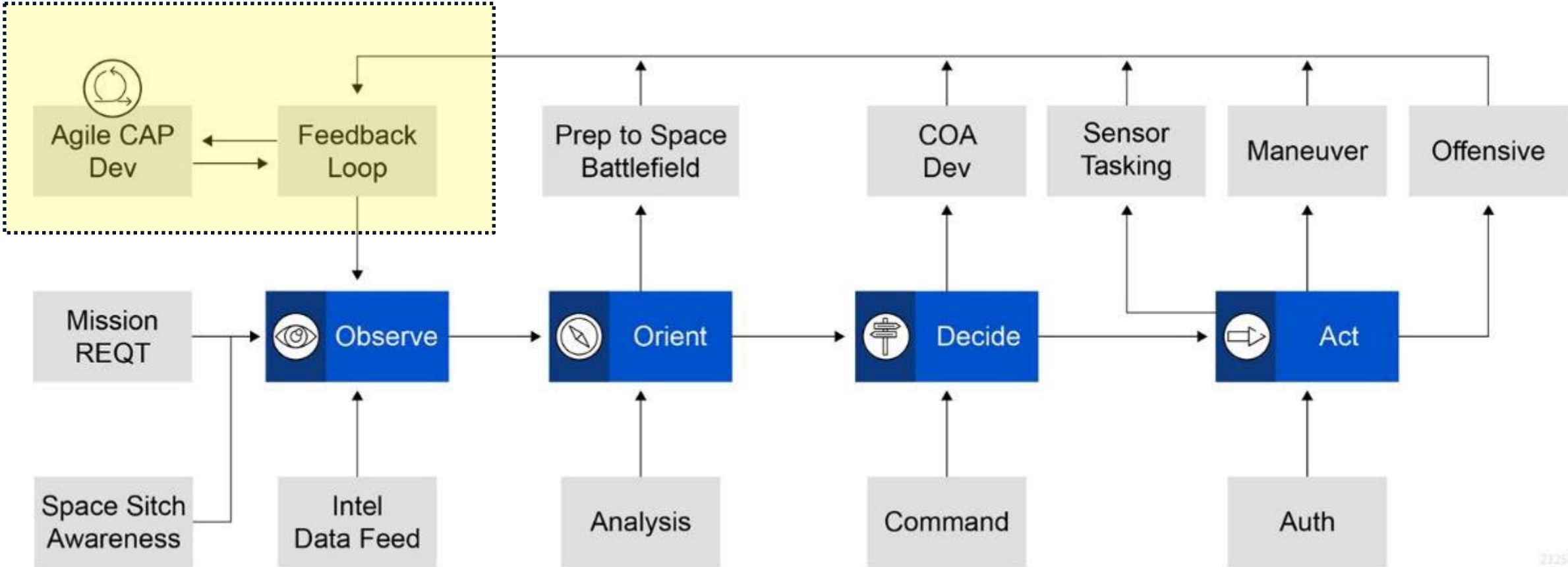
# SpOODA Loop – Actions



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# SpOODA Loop – Feedback



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# USE CASE - SPACE LASERS

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# ACTUAL LASERS

The Polyus was a prototype Soviet space vehicle with a megawatt carbon-dioxide laser. It launched in 1987 but failed to reach orbit.

Parsons has an operational ZEUS three- kilowatt laser neutralization system that has been proven to explode ordinances used as bombs from a safe distance.

The Israeli Iron Beam has been successful at destroying targets, in atmosphere, at 7km.

The Freakonomics perspective of reducing the cost of interception from over \$100,000 to under \$5 is quite impressive. If Polyus is 1MW, Iron Beam is 150KW, and ZEUS is 3KW, would a satellite with all three varieties be able to perform a diverse set of missions involved with that of deep space exploration?

Movie poster  
about  
airborne  
lasers and  
popcorn not  
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# SPACE LASER FUTURE

Parsons' ZEUS®



Space Ship Weapons

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Space Ship Weapon Control

Poster about popular  
Sci-Fi weapon control  
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# ORGANIC TEAMWORK

Connecting the OODA loop to Engineering, maintenance, logistics, acquisitions, and even training changes the ability of a team or unit to conduct a full spectrum of warfare ultimately required in Operations. The more robust skillset organic to the team or Workforce, the more diverse courses of action available to the team.



Poster about Space  
Military TV show 1  
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presentation



Do you want to be like  
Space Military TV  
show 1 or Space  
Military TV show 2?

Poster about Space  
Military TV show 2  
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# QUESTIONS?



UNITED STATES SPACE FORCE STANDARD DESKTOP