

# Designing an Effective Physical Protection System

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Over 20 years of security management, physical protection and law enforcement

- DOE/NNSA/PNNL Physical Protection Specialist – Global Threat Reduction Initiative
- Managed security programs at a number of global high-tech companies
- GSA and FAA security response
- Police officer

# PPS Performance Measuring Tools

## ■ Practical Exercise

- Force on Force in the field
- Decision-making close to real-time
- Evaluate encounters based on pre-established rules
- Time consuming
- Limited scenarios
- High cost

## ■ Tabletop Exercise

- Simulation in a controlled environment
- Decision-making delayed
- Easier to implement
- Less expensive

## ■ Calculation Method

- Estimation/projection of performance
- Formula based
- Easy to implement
- Highlights deficiencies and areas that need improvement

# Physical Protection System

- A PPS is the combination of the following working together:
  - Personnel
  - Procedures
  - Systems
  
- An effective PPS can successfully interrupt and neutralize:
  - An Attack
  - A Theft
  - A Sabotage
  - Other Act



# Physical Protection System (PPS) Elements

- ▶ Detection
  - First step in PPS
  - Detection of intrusion/attack
- ▶ Assessment
  - Verification of Alarm
  - Confirm Intrusion/Attack
- ▶ Delay
  - Extending Adversary Timeline
  - Buys PPS Time
- ▶ Response
  - Interrupt Attack
  - Neutralize Attack

# PPS Elements

## ▶ Detection

- Motion Sensors, glass-break, magnetic switch, IR etc.
- Personnel observe intrusion act

## ▶ Assessment

- The processing of an alarm event to determine its validity: false or not

## ▶ Delay

- Distance, doors/locks, grating, light, personnel

## ▶ Response

- Timely and appropriate
- Able to neutralize attack or act



# Identify and Define Your Threat

## (Design Basis Threat)

- ▶ Who are they?
  - Terrorist, criminal, demonstrator etc.
  
- ▶ What are their capabilities?
  - Weapons
  - Tools (hand tools, electric tools, vehicles, planes etc.)
  - Financing
  - Motivation
  
- ▶ How many?
  - 1 or more
  
- ▶ Assistance from an insider?
  - Yes or no



# PPS Performance Test

- ▶ Evaluate all adversary pathways to the target
  - Consider unconventional approaches (roof, wall, basement etc.)
  
- ▶ Generate the Adversary Timelines
  - Break down each phase of the attack and calculate time required, particularly as related to delay
  - Total all times
  - Select the pathway with the smallest time
  
- ▶ Generate your PPS time.
  - Break down the PPS timeline in detection, assessment, delay and response
  - Total all PPS times to respond to location of attack
  
- ▶ Compare Adversary Timeline with PPS Timeline
  - Was it timely? (PPS Timeline < Adversary Timeline)
  - Was it able to interrupt and neutralize the attack?



# Attack Pathway Analysis

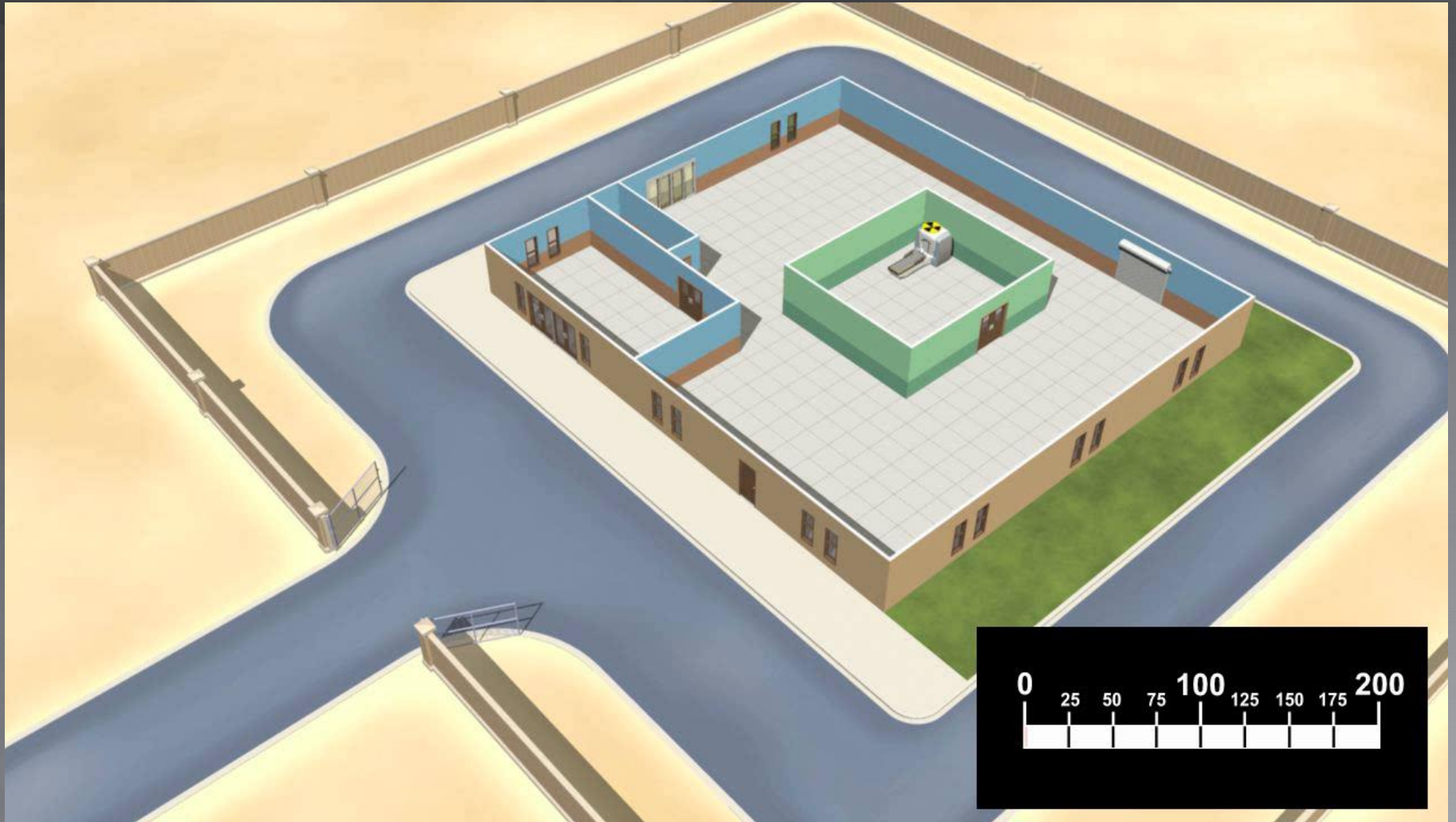


# Adversary Pathway Analysis

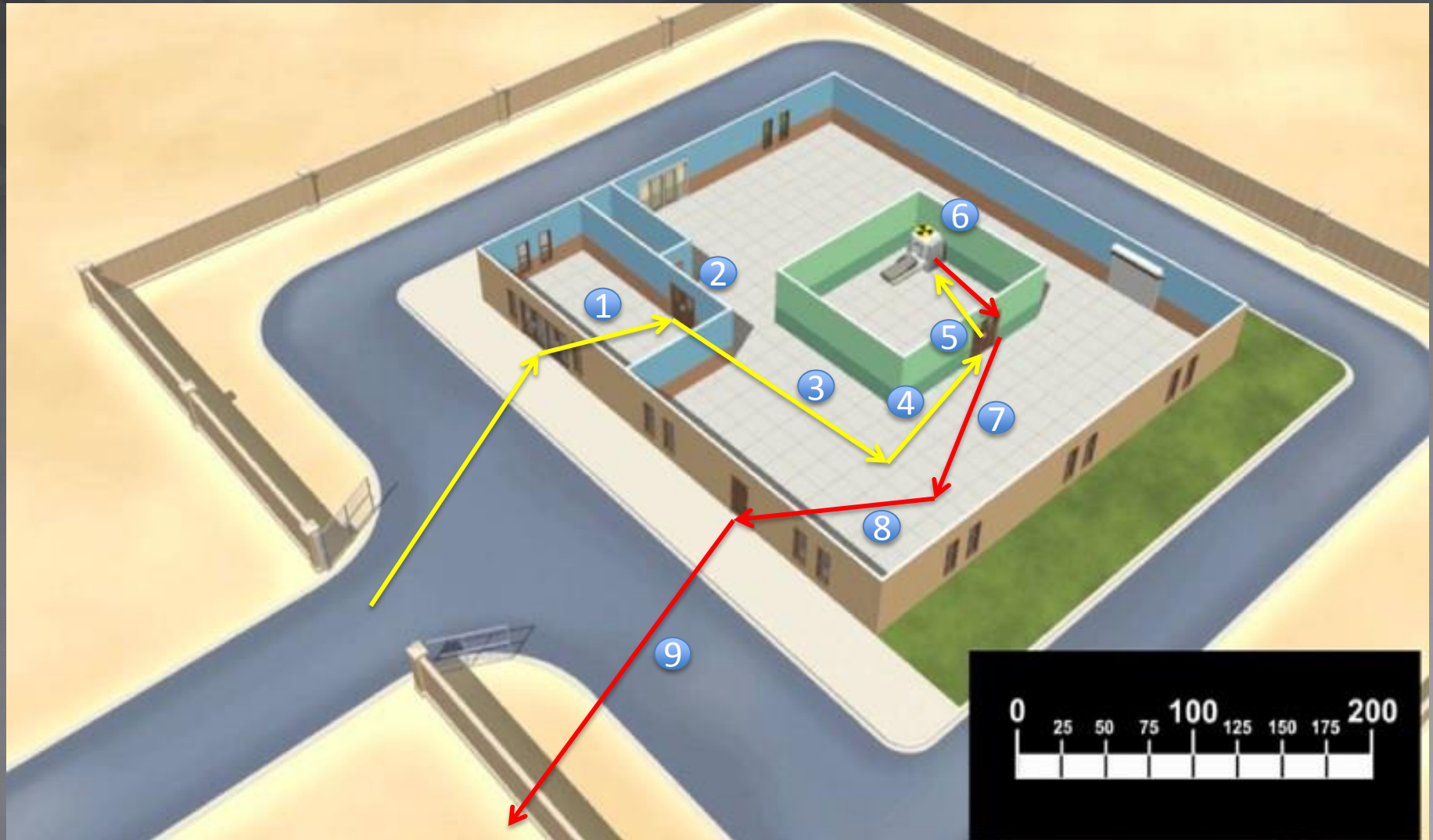


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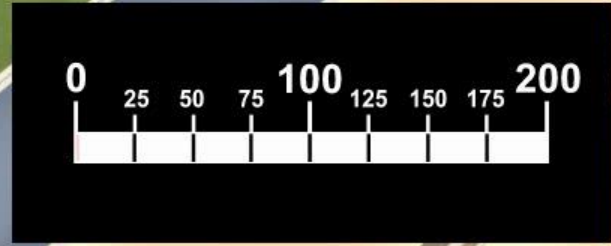
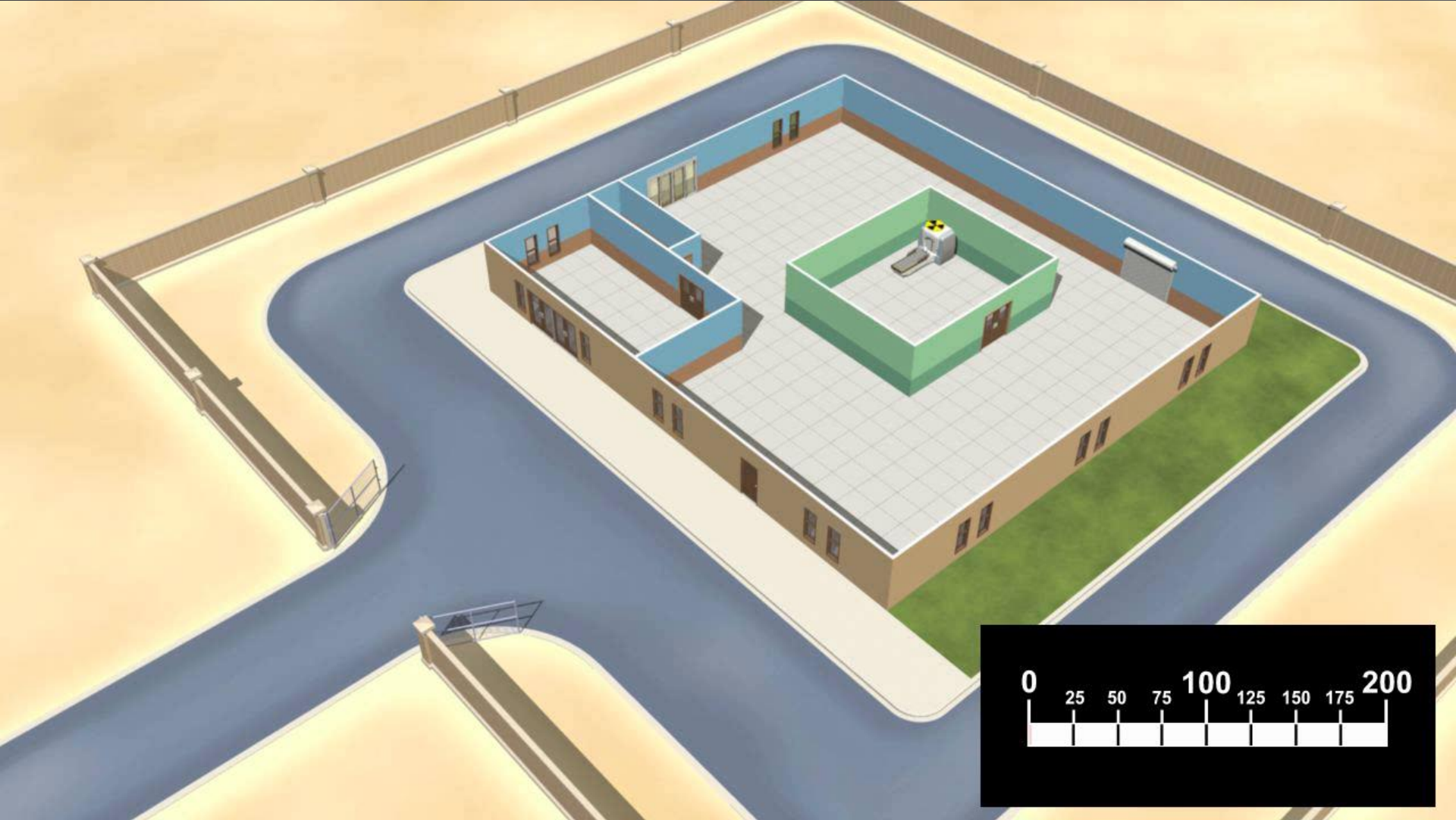


# Adversary Pathway Example





# Adversary Pathway Example



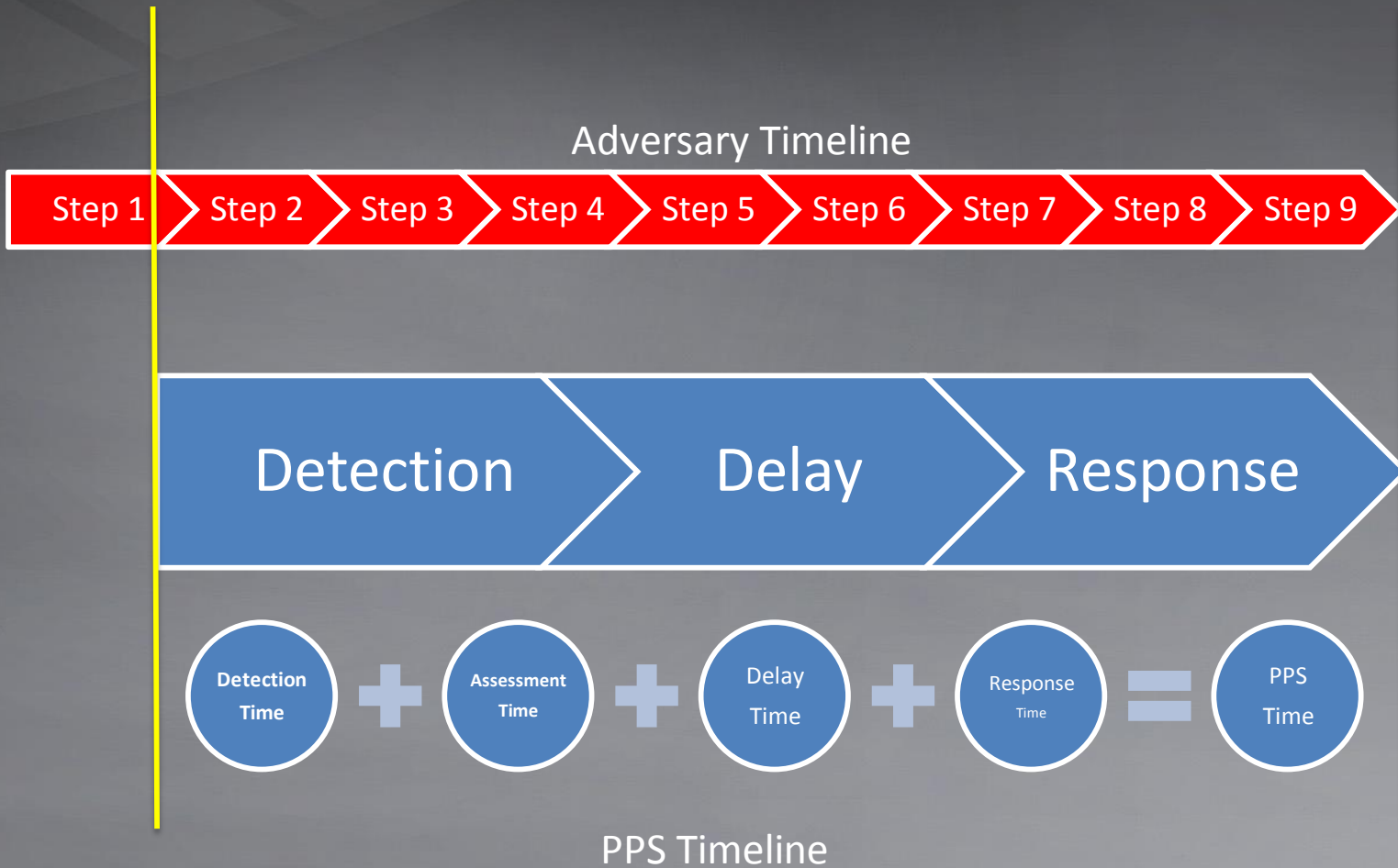
# Pathway Attack Table

Step	Pathway 1	Time	Pathway 2	Time	Pathway 3	Time
1	Breach Perimeter	1				
2	Walk to Building	1				
3	Breach Entry Door	2				
4	Breach Door 2	2				
5	Walk Hallway	1				
6	Breach Door 3	2				
7	Climb Stairs	1				
8	Breach Door 4	2				
9	<b>Breach Safe</b>	<b>5</b>				
10	Walk Hallway	1				
11	Walk Down Stairs	1				
12	Walk Hallway	1				
13	Walk Hallway	1				
14	Walk to Perimeter	1				
<b>Total</b>		<b>22</b>	<b>Total</b>		<b>Total</b>	

# PPS Timeline Projection

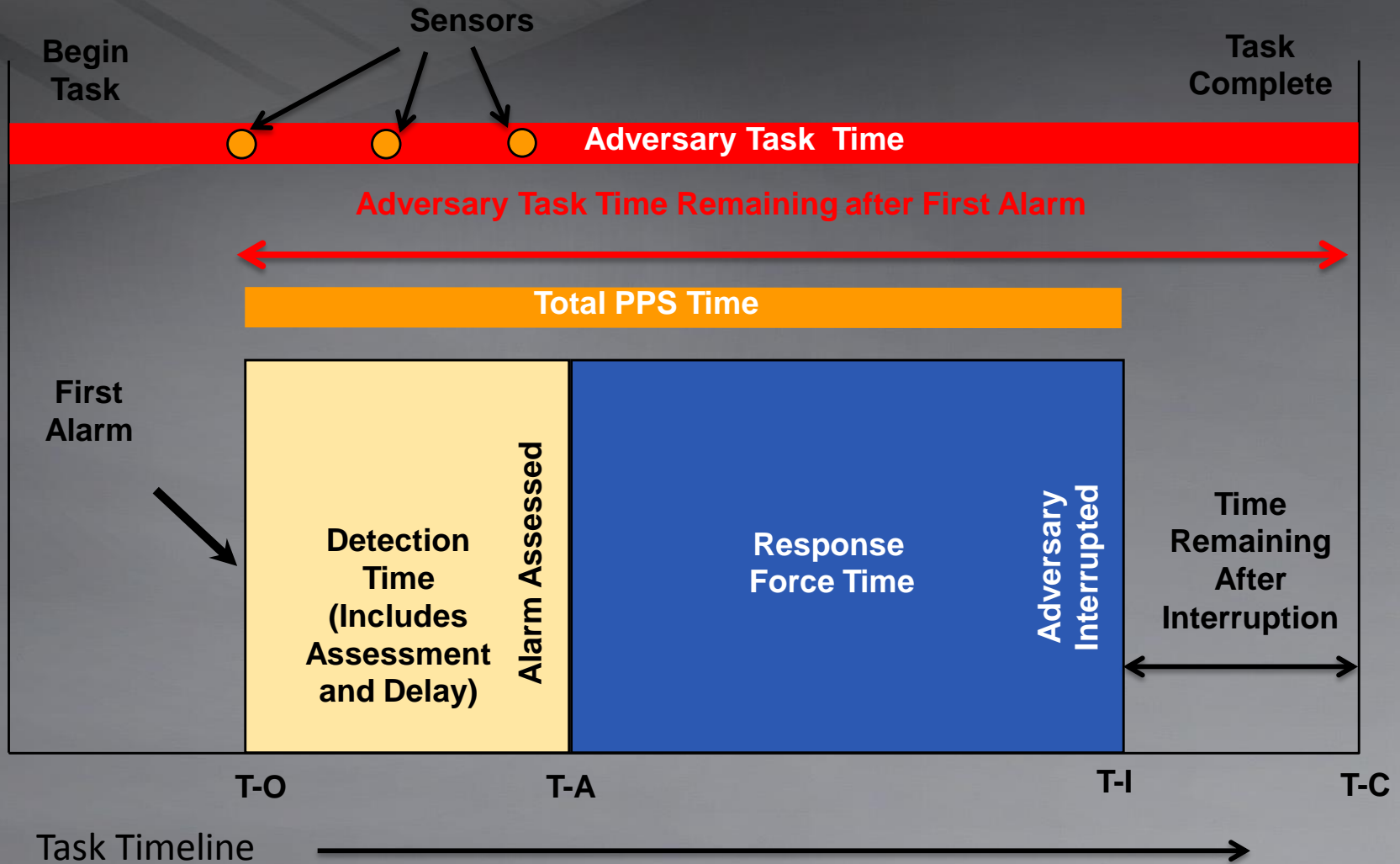
Step	PPS	Time
1	Detection	1
2	Assessment	5
3	Response	20
<b>Total</b>		<b>26</b>

# Adversary Timeline vs. PPS

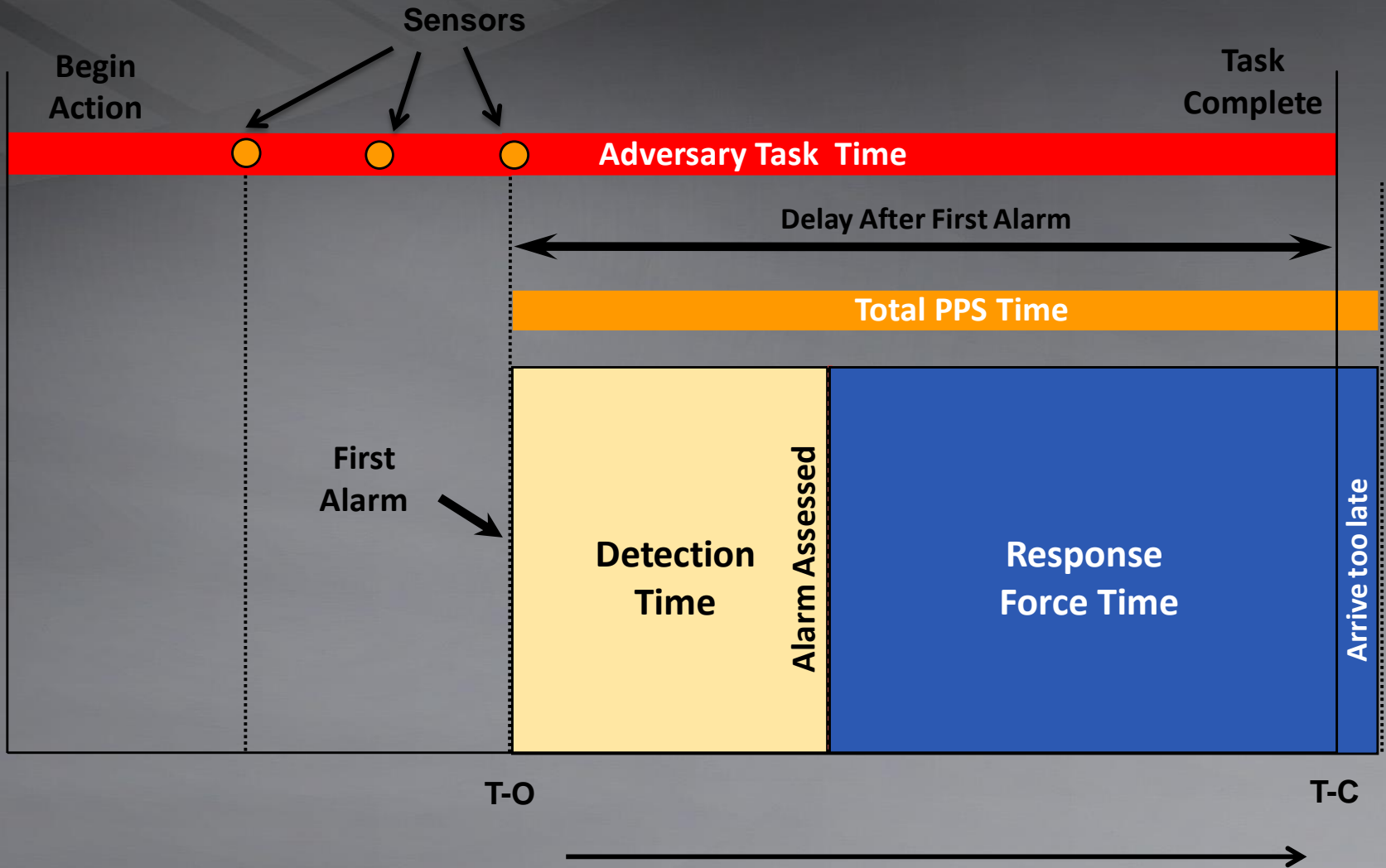




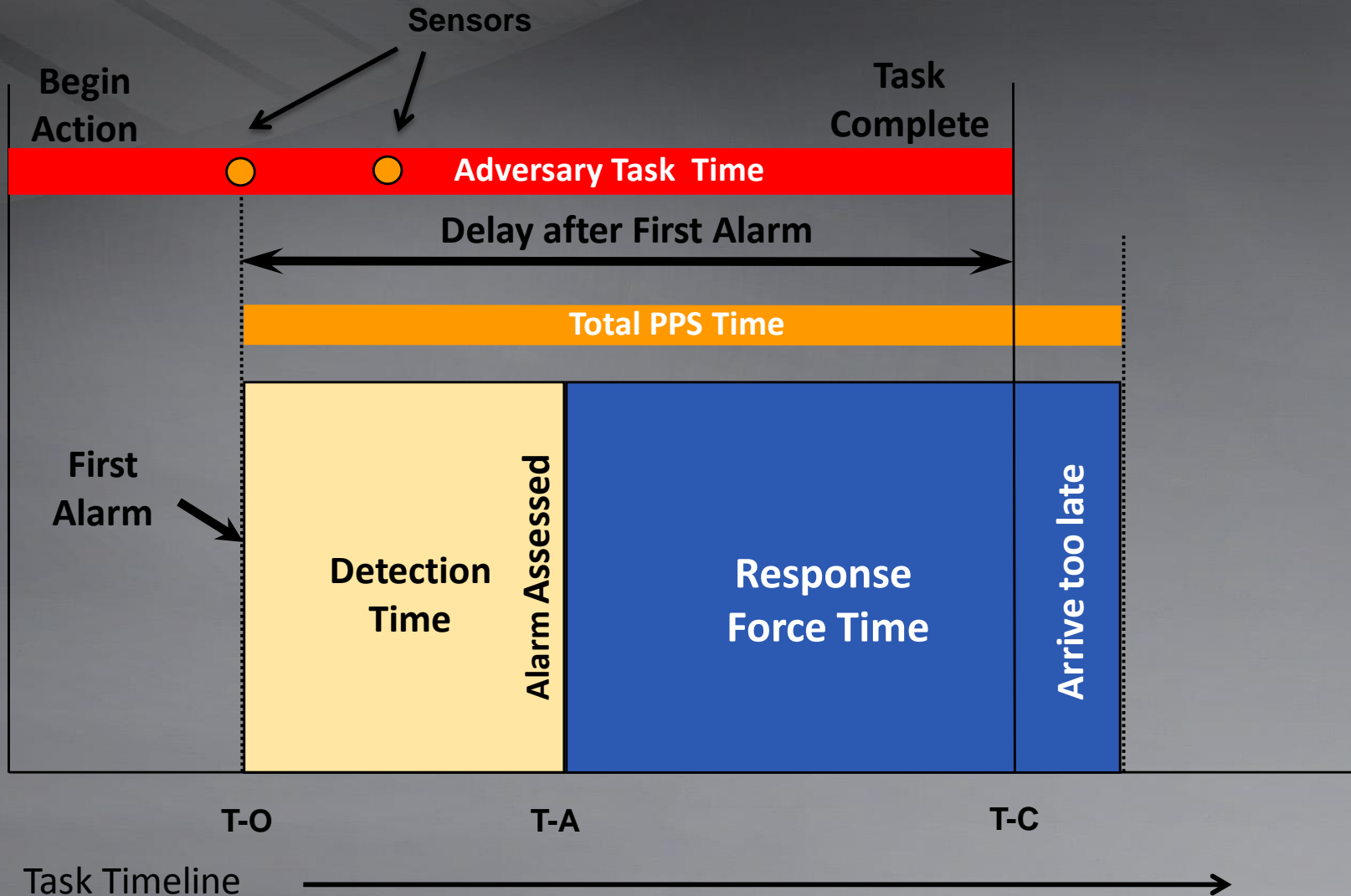
# Attack Pathway Analysis



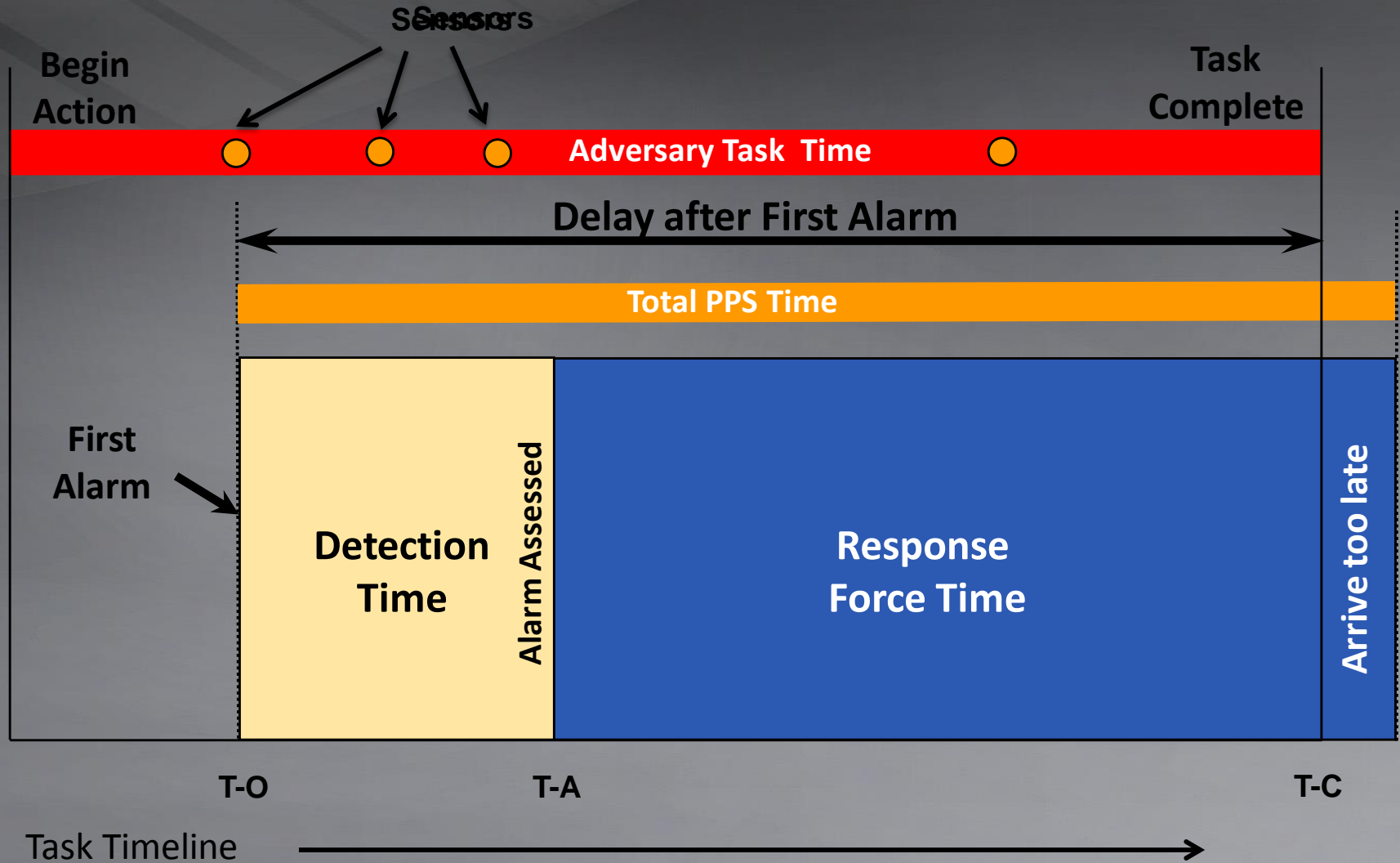
# PPS – Late Detection



# PPS – Insufficient Delay



# PPS – Slow Response



# Resolving PPS Problems

- ▶ Detection (too late)
  - Add earlier detection point
- ▶ Assessment (too long)
  - Simplify assessment process
  - Give authority to initiate response
  - Provide equipment that can speed up assessment
- ▶ Delay (not enough)
  - Add doors, locks, grating, security personnel
  - Move target further
- ▶ Response (too slow and inadequate)
  - Bring responders closer
  - Give responders the capability to respond quicker (vehicle)
  - Provide better training and tools (weapons, communication etc.)
  - Ensure response numbers can neutralize defined threat (DBT)

# Questions



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