

Command & control warfare (C2W)

**Abdullah alhawas
KACST**

C2W

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introduction

- **Modern fluid battlespace dictates doing the right action at the right time in the right manner to achieve desired effects.**
- **Modern warfare is conducted at longer ranges, and with grate precision, at faster time.**
- **effective C2 provides commander with the ability to gain and maintain the initiative in military operations.**
- **mission effectiveness depends upon integration of ISR systems into C4 system (C4ISR).**
- **On the other hand, effective C2W provides the commander an ability to shape the adversary's estimate of the situation in the theater of operations.**
- **C2W is an application of information operation**

C2 definition

C2 is the exercise of authority and direction by a properly designated commanding officer over assigned and attached forces in the accomplishment of the mission.

US DOD

Intelligence, surveillance, and reconnaissance

- **ISR plays critical role, not only in providing real time situational awareness, but in how to conduct operations, and employ forces against adversary.**
- **Real time ISR support C2 superiority.**
- **ISR are integrated with C2, communication, and computer. it becomes C4ISR.**

C2W

The integrated use of operation security (OPSEC), military deception, (EW), cyber attacks, and physical destruction, mutually supported by intelligence, to deny information, degrade, or destroy adversary's command and control capabilities, while protecting friendly command and control capabilities against such actions.

C2 W history

- **C3 countermeasures**
- **C2 warfare**
- **Information operation**



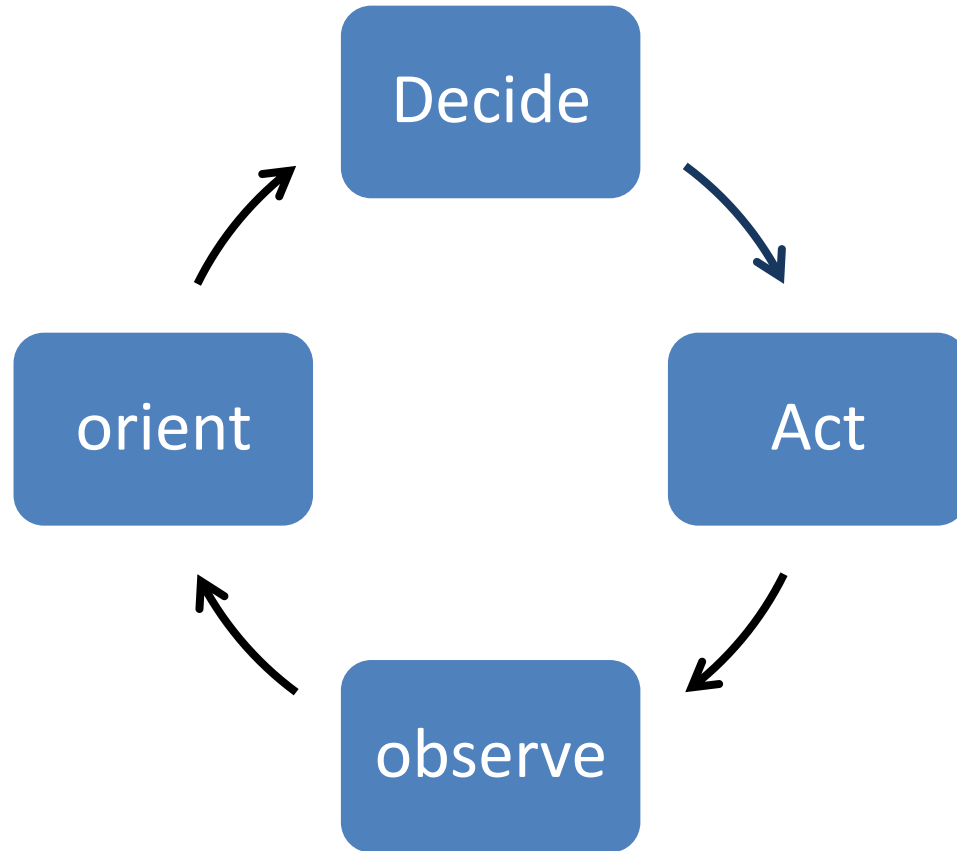
C2 W mission

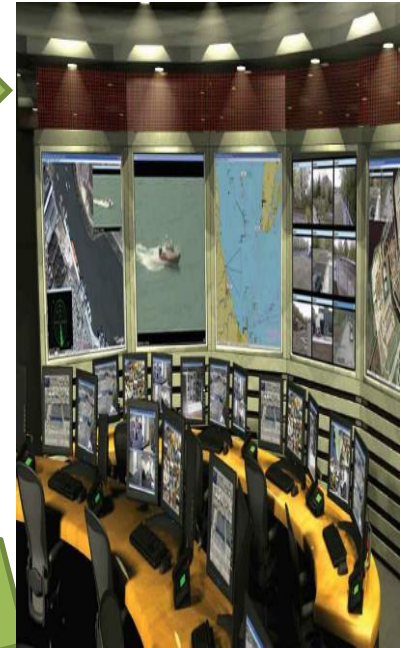
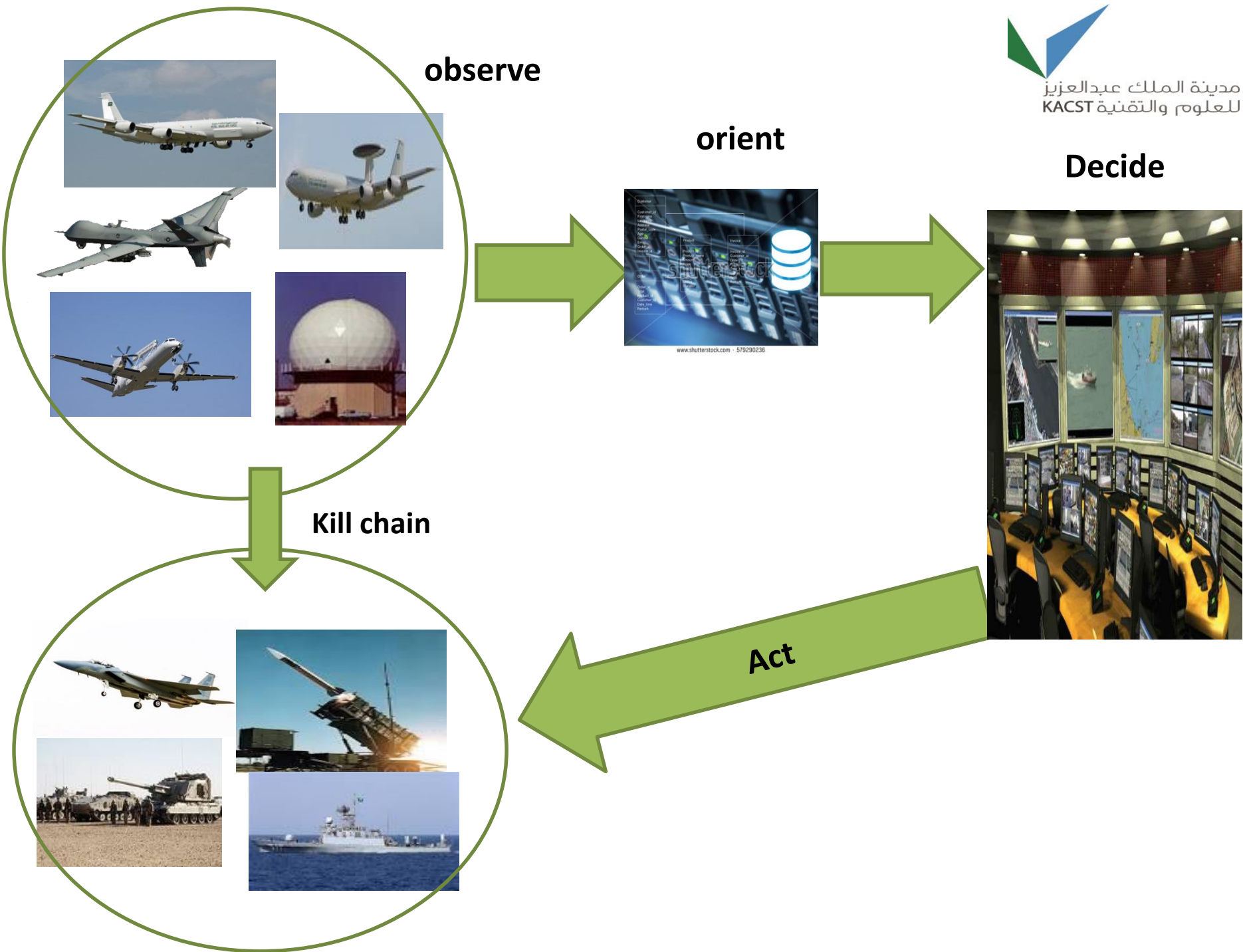
- **Deny information to the enemy; disrupt its command and control capabilities, and its (kill chain) communication.**
- **protect friendly command and control, and (kill chain) capabilities against enemy actions, thus achieving decision superiority.**
- **C2W Complements all military operations.**
- **Enhance SEAD operation, and platforms survivability.**
- **Effective C2W may leave enemy forces blind.**

Decision superiority

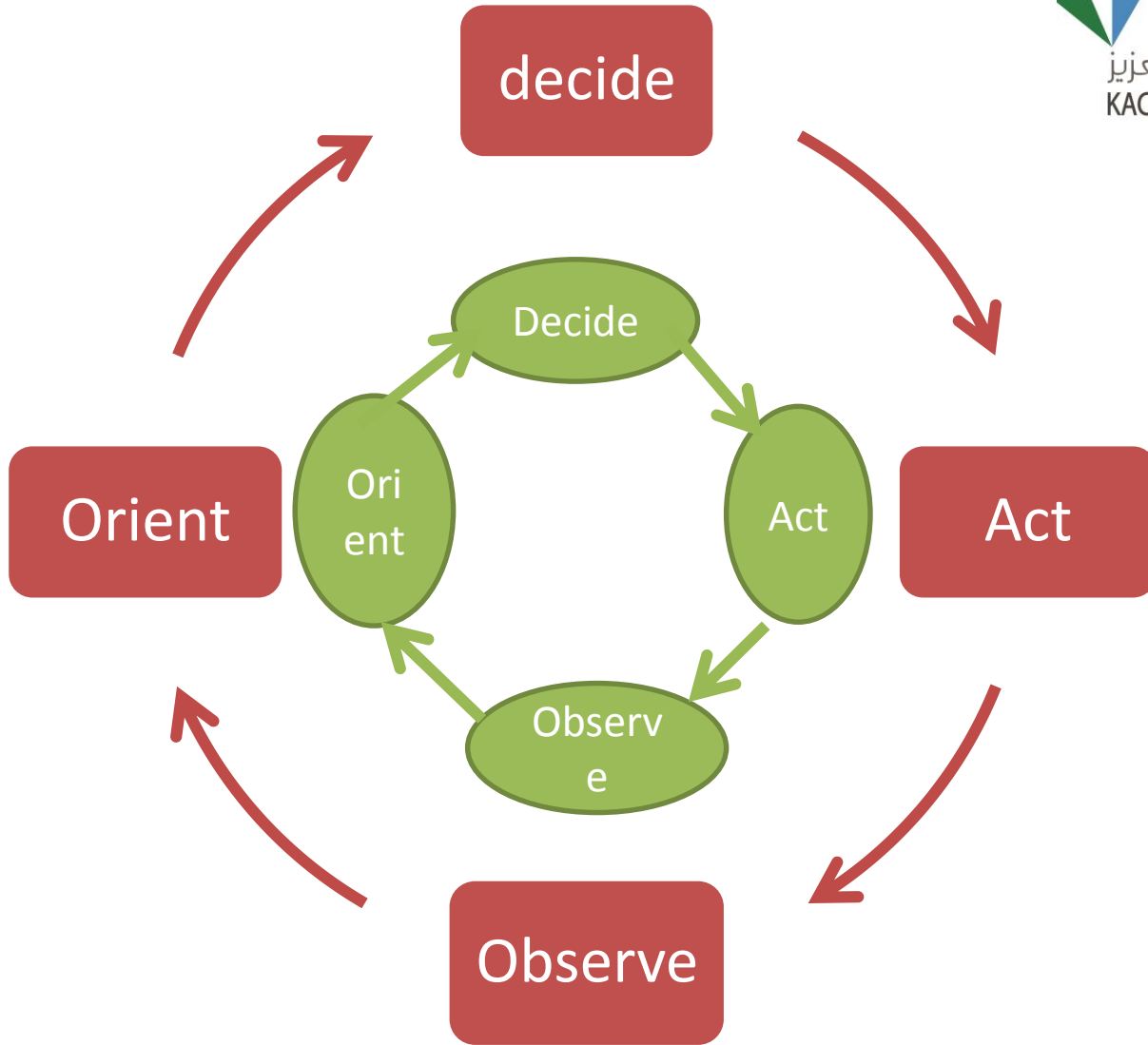
- **Decision superiority is a competitive advantage, enabled by an ongoing situational awareness, that allows commanders and their forces to make better informed decision and implement them faster than their adversaries can react.**
- **Decision superiority is about improving our ability to observe, orient, decide, and act (OODA) loop faster and more effective than the adversary.**

Decision cycle



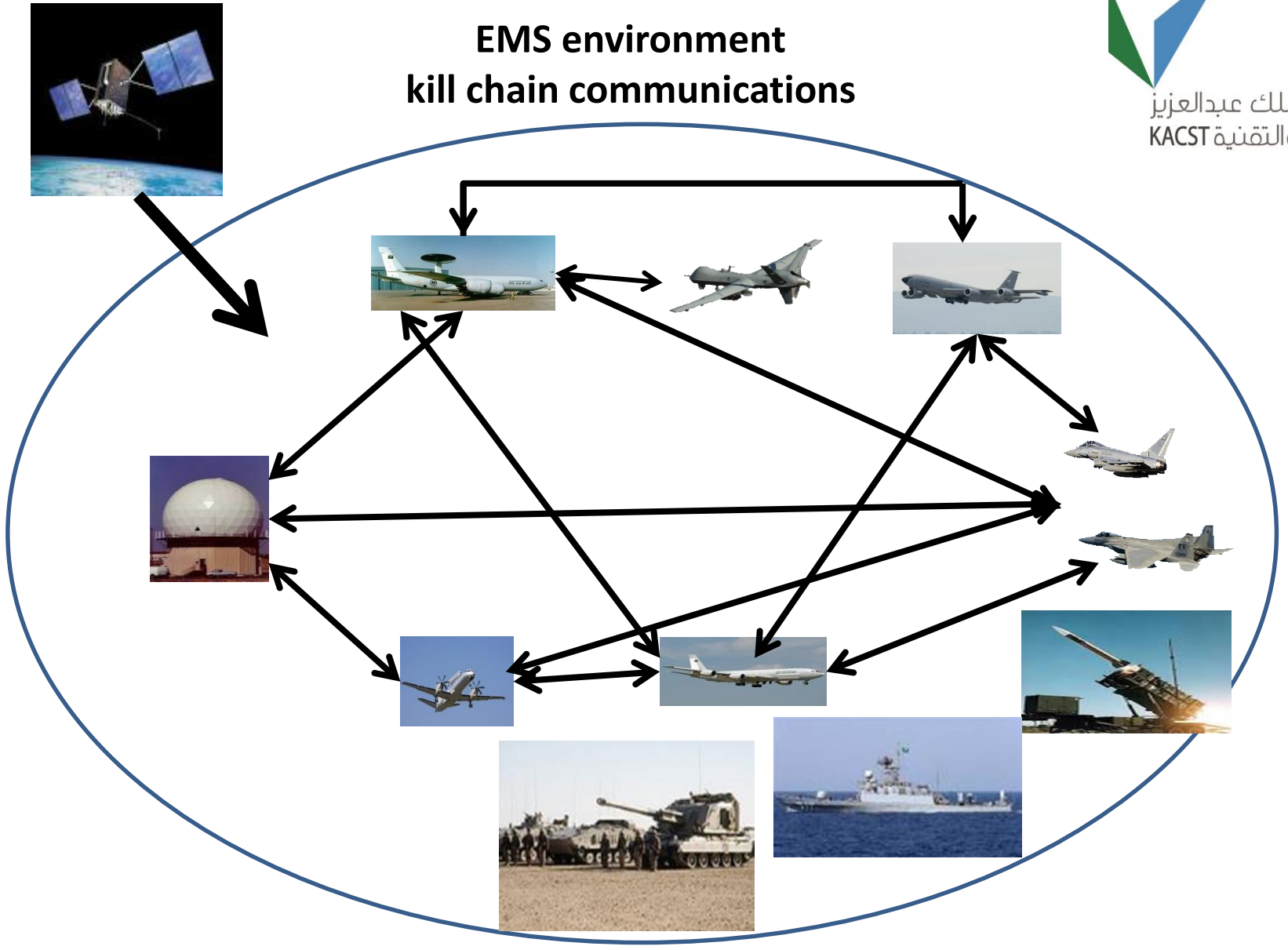


C2 superiority





EMS environment kill chain communications

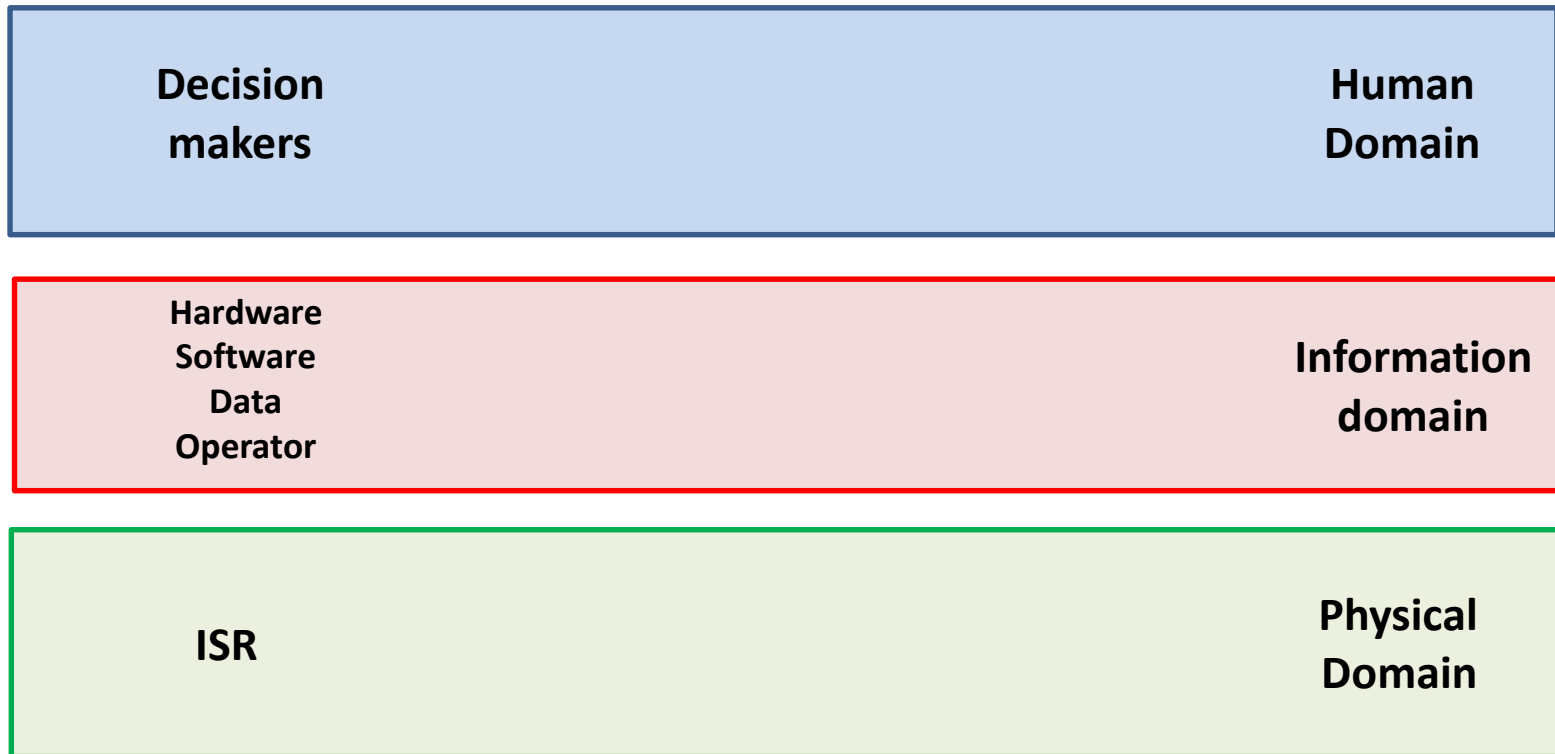




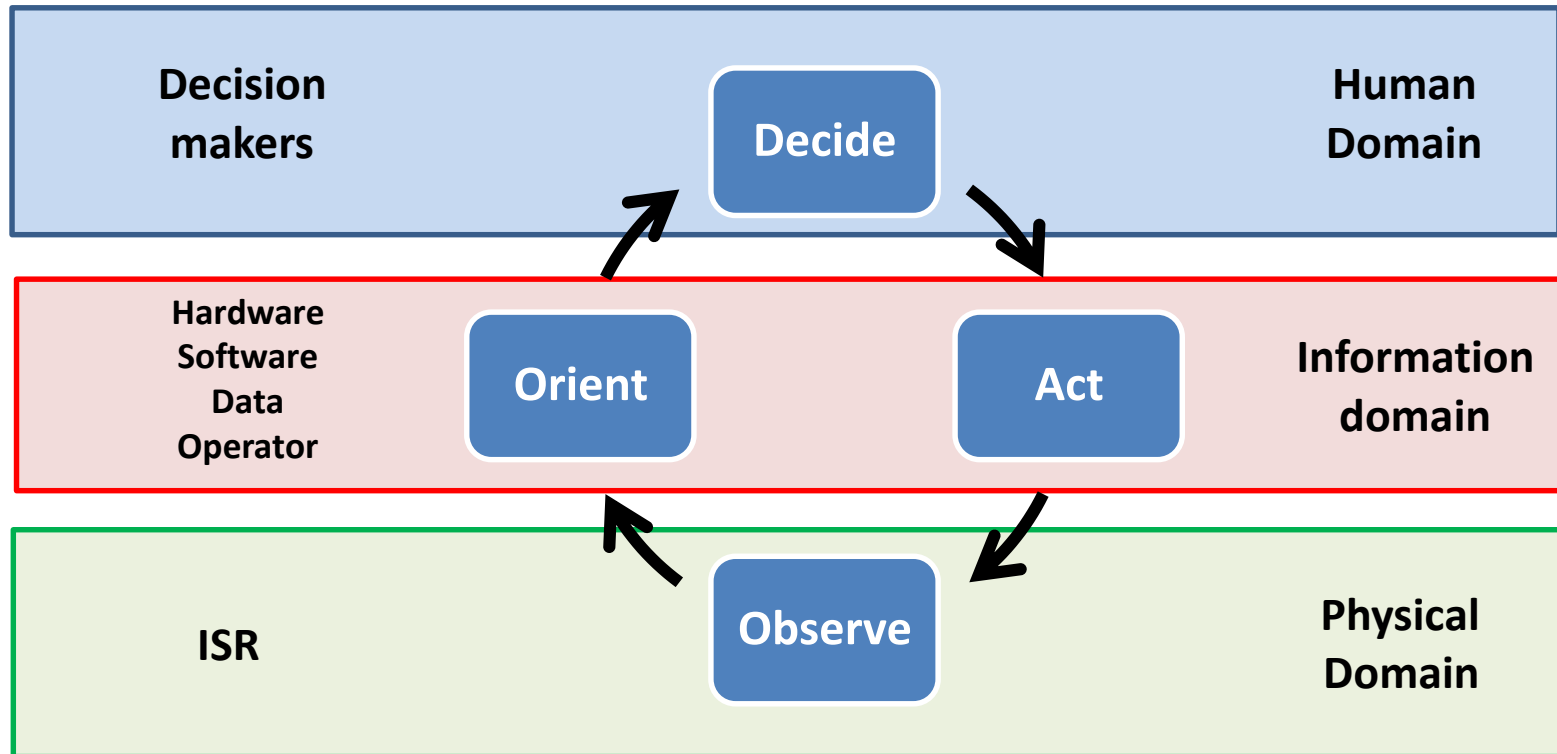
Information environment

- It is the aggregate of individuals, organizations, and systems that collect, process, disseminate, or act on information.
- The IE is a heterogeneous global environment where humans and automated systems observe, orient, decide, and act on data.
- information, and knowledge. With its function as a conduit for influence on decision-making and command and control.
- the EMS is a key component of the operational environment.

Information environment



Information environment



Information operation

- **Information operations is described as the integrated employment, during military operations, of information related capabilities in concert with other lines of operation to influence, disrupt, corrupt, or usurp the decision making of adversaries.**
- **Forces with superior ability to gather, understand, control, and use information has substantial advantage on the battlefield (information dominance).**

information related capabilities

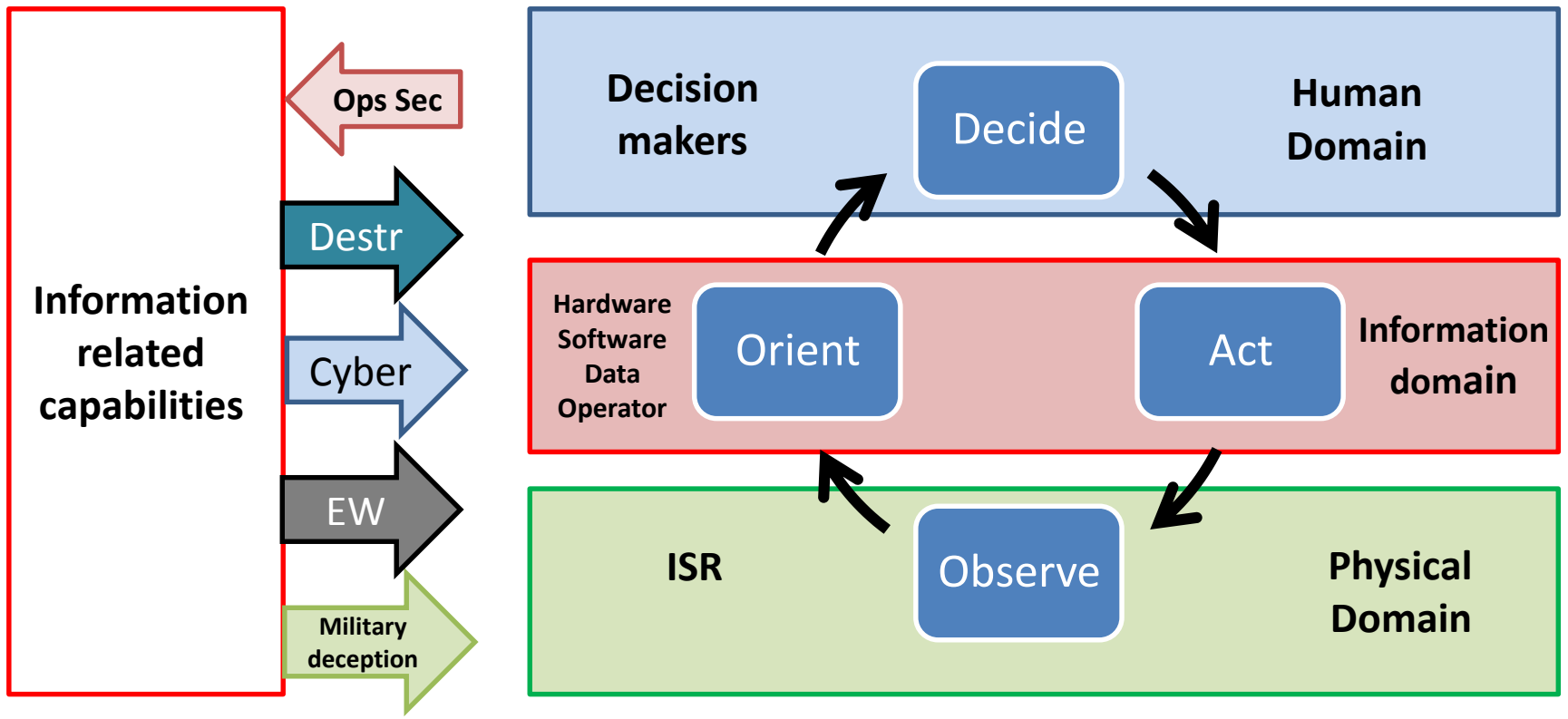
- **Information operation is not a capability in itself, but it plans and integrates the use of information related capabilities (IRC).**
- **IRC are the tools, techniques, and activities employed to create desired effects on the decision maker.**
- **information-related capabilities (IRCs) are employed to gain advantages in the information environment,**
- **IRC can be planned and employed individually or integrated in the physical and informational dimensions of the information environment.**
- **Integrated and synchronized IRC create cumulative effects.**

Information related capabilities

- **Information security.**
- **Military deception.**
- **Cyberspace operation.**
- **EW.**
- **Destruction.**



Information environment



The objective is to deny, disrupt, or delay enemy decision making to gain C2 superiority

EW

- **Electronic support can provide the real-time information required to locate and identify C2 nodes.**
- **Communications jamming is the main EW assets employed to deny, or disrupt enemy C2 system, and (kill chain) communications.**
- **Hostile ISR shall be jammed, deceived, or destroyed to deny him information.**
- **Early warning, GCI, acquisition radars, passive detection and tracking systems shall be jammed.**

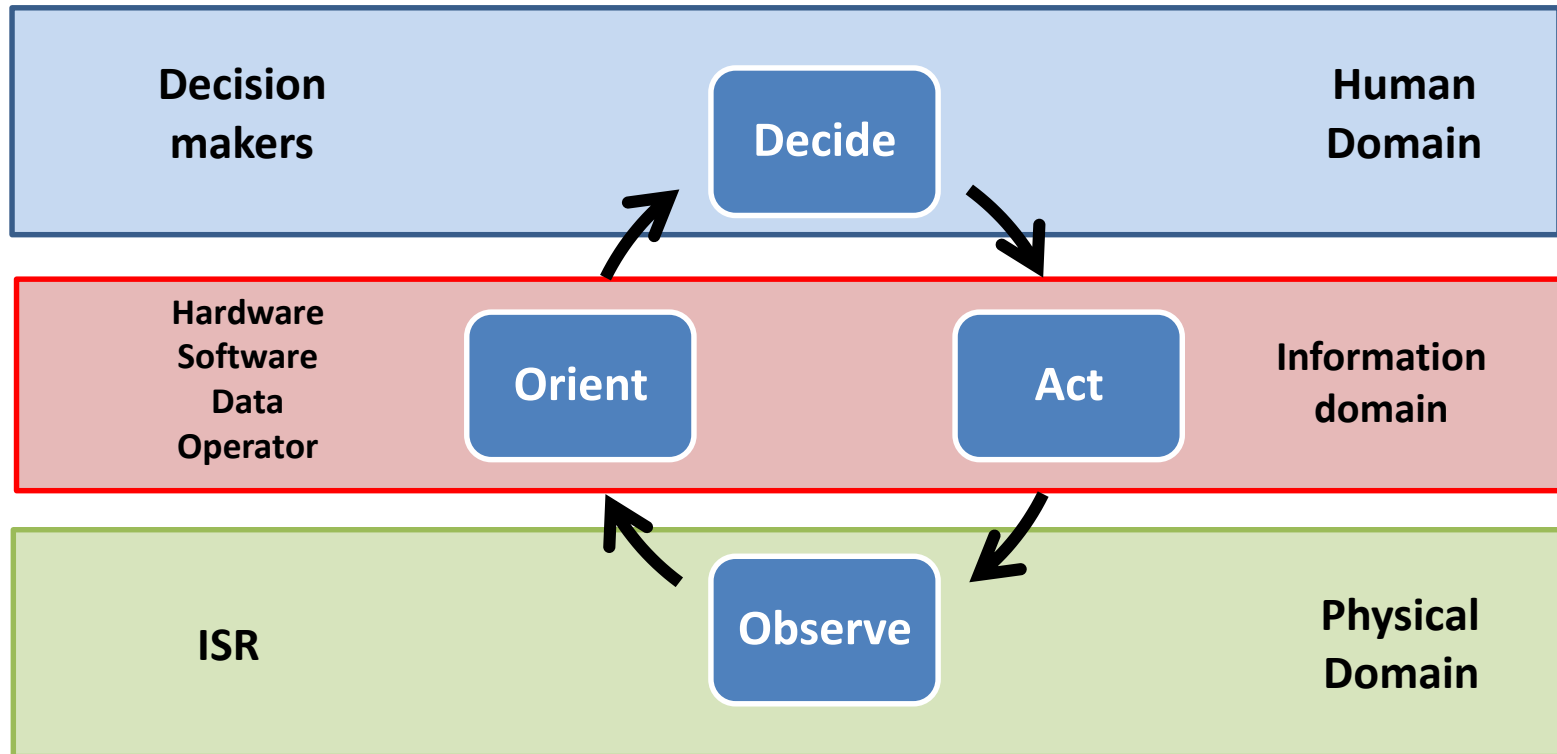
Some EW aircrafts



Cyberspace

- **Cyberspace is a global domain within the information environment consisting of the interdependent network of information technology, infrastructures, and resident data, including the Internet, telecommunications networks, computer systems, and embedded processors and controllers.**
- **Cyberspace operations target the physical and informational dimensions of the IE, also have an impact in the human/ cognitive dimension.**

Information environment



Cyberspace operation

- **mitigate cyber risk, build capabilities for effective cyber security, and cyber operation to defend friendly networks systems, and information, and recover quickly if security measures fail.**
- **prepare and be ready to operate in an environment where access to cyberspace is contested, and maintain mission effectiveness in the presence of cyber-attacks (mission assurance).**
- **employ offensive cyber-attacks to gain advantage in cyber domain, C2, and in the information environment.**
- **provide synchronized and integrated cyber capabilities with EW capabilities and weapon systems to support military operations.**

Intelligence support

- **C2W offensive employment requires full knowledge of adversary's capabilities, for planning and execution.**
- **Technical and tactical information about adversary's command and control and communications systems is essential for effective C2 warfare.**
- **Threat data need to be analyzed to determine the enemy forces disposition, composition, and movement, and the Command post locations for the major enemy units.**

Situation awareness

- **Situation awareness is essential for commanders and warfighters.**
- **Situation awareness is provided by inboard and off board assets.**
- **ISR assets shall be able to gather and fuse the full range of information in real time and convert this information to knowledge and understanding to assure decision dominance**
- **Persistent ISR is easily accomplished with air superiority, and impossible in contested A2AD environment.**
- **ISR processing, exploitation and dissemination may be interrupted by adversary's EW, and cyberspace attacks.**

C2 W

End of presentation

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