LEARNING ENGINEERING IN MILITARY AVIATION ADL ENVIRONMENTS

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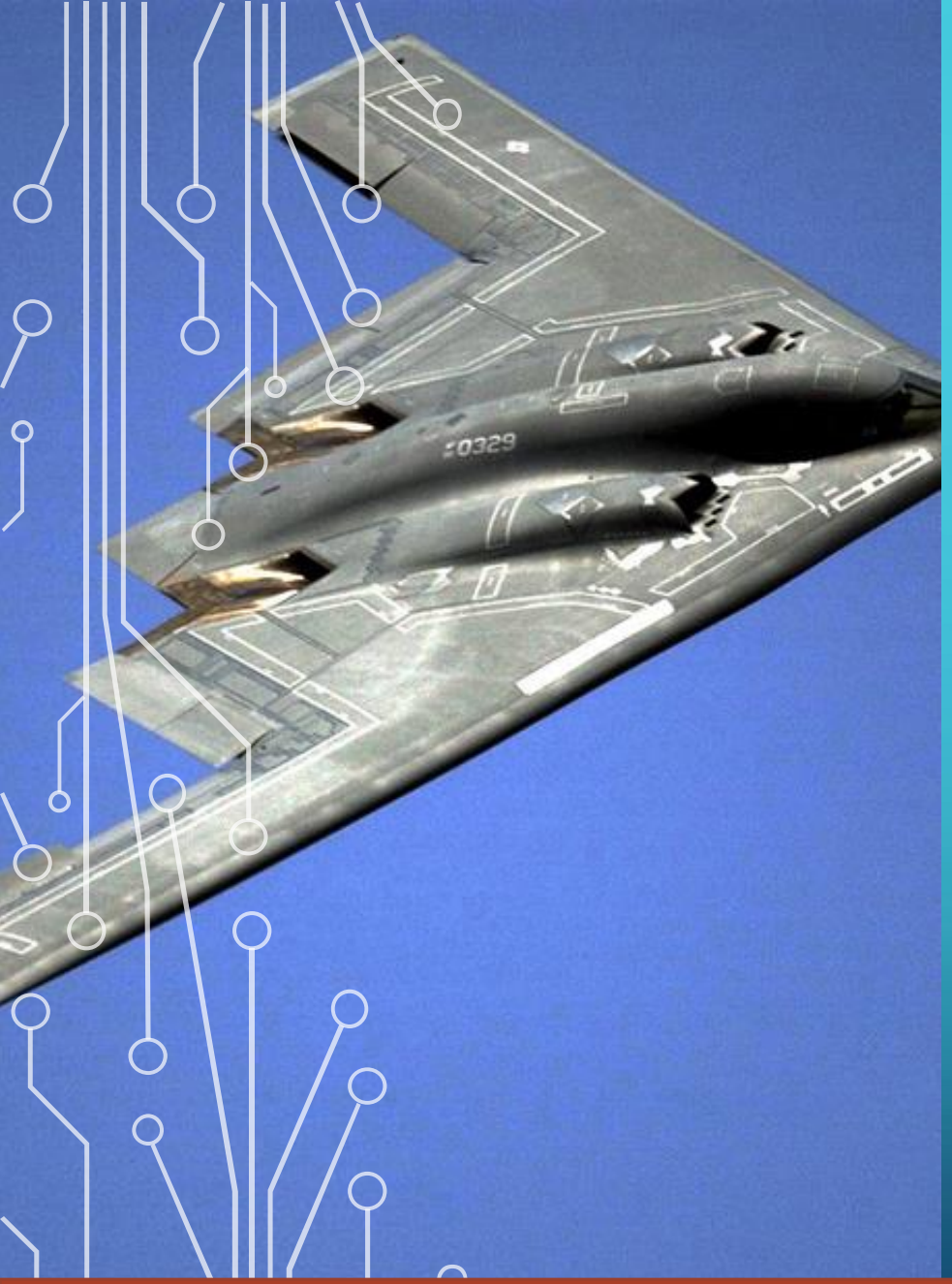


WHAT'S THE PROBLEM?

Significant training challenges unique to military aviation exist including:

1. Operational security (enemy observations during training)
2. Simulation concurrency
3. Distributed network latency
4. Data overload
5. Pilot distribution
6. Electromagnetic operational environment (EMOE) replication
7. Threat prioritization
8. Decision making

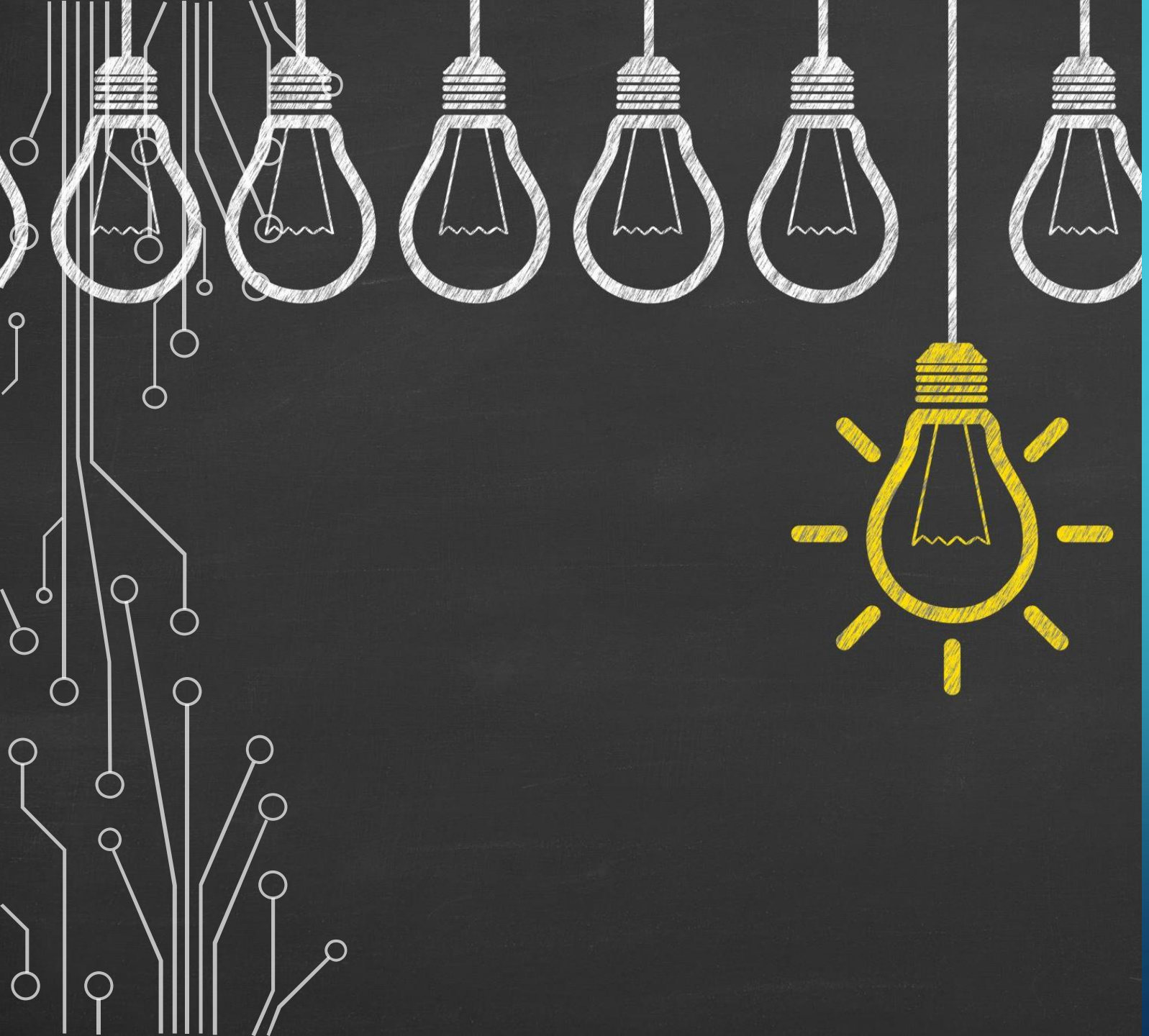
So much complexity all while G-forces impact the body

WHAT'S THE SOLUTION?

The majority of future aviation fight training will be conducted in simulated environments with data crossing **distributed pilot locations**.

LEARNING ENGINEERING

To improve training in this specialized military discipline, a learning engineering approach to **ADL training design** is recommended.



A MULTIDISCIPLINARY APPROACH

The benefits of this multidisciplinary approach are many-fold but predominately center on the contributions of:

- Human factors psychology,
- Neuroscience, and
- Learning science

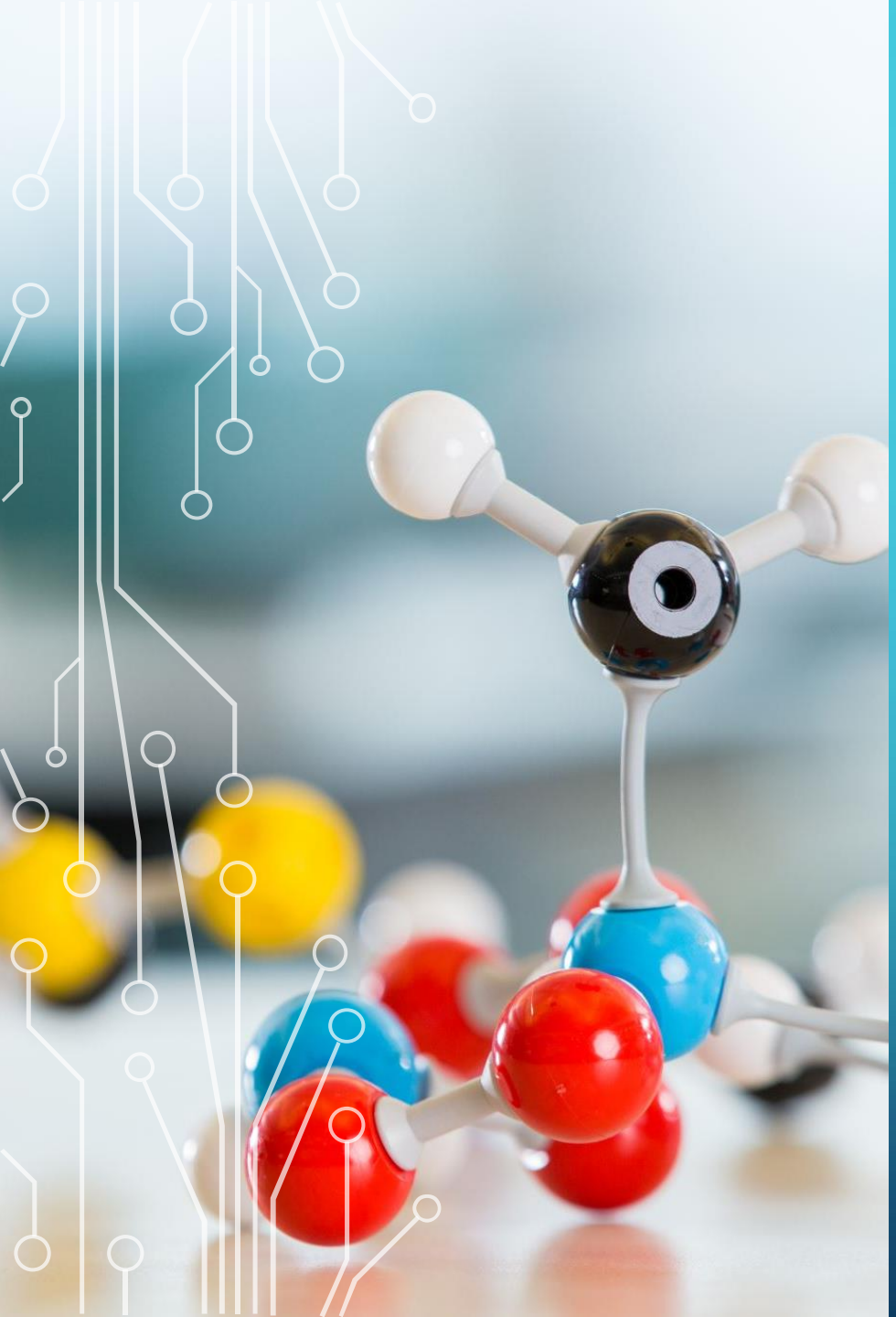
(1) DATA, DATA, DATA

Combining the theories, research findings, and intervention outcomes from these areas of consideration results in several key recommendations

Use real-time data monitoring to drive training and operational support decisions

(2) EXTENDED COGNITION

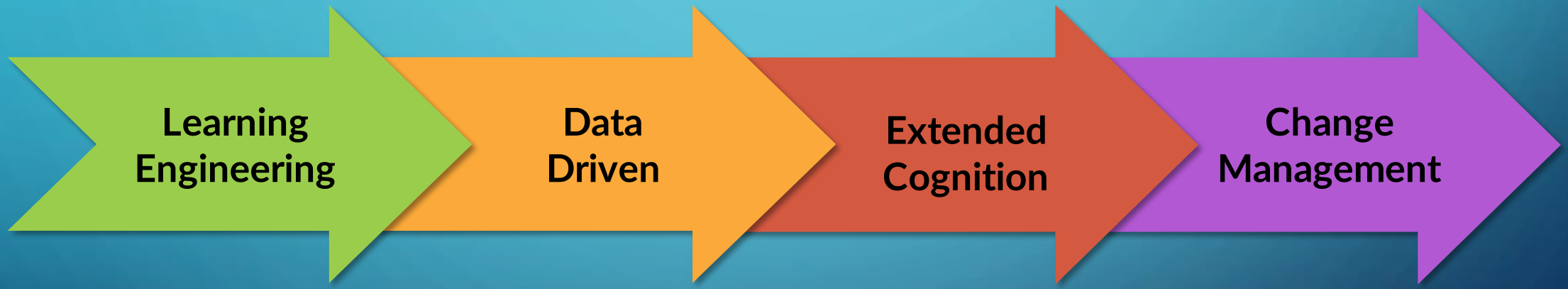
- *Cognitive processes can extend beyond the boundaries of the human brain and body to include tools, technology, and the environment*
- Technology provides aids to aviation which allow for this extension:
  - Briefing models – extending understanding of maneuvering
  - Knee/E-boards – extends cognitive capability by off-loading required information
  - Synthetic Visual Interfaces – Both HUD and HMD which provide line of sight information
- Extended cognition
  - Improves situational awareness
  - Increases decision making speed
  - Reduces cognitive load



(3) USE A BUILDING BLOCK APPROACH

- Change management is as important to modernization efforts as the goals/plans themselves
- Begin with the use of:
  - micro-learning tools,
  - light-weight simulators, and
  - multi-national research sharing for multi-airframe combat training exercises.

PILOT TRAINING ECOSYSTEM MODERNIZATION



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