UAVs in an Australian Maritime Environment

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Lieutenant Commander RAN
14 July 2003

LCDR Marc Ware BSc BAvn MSc

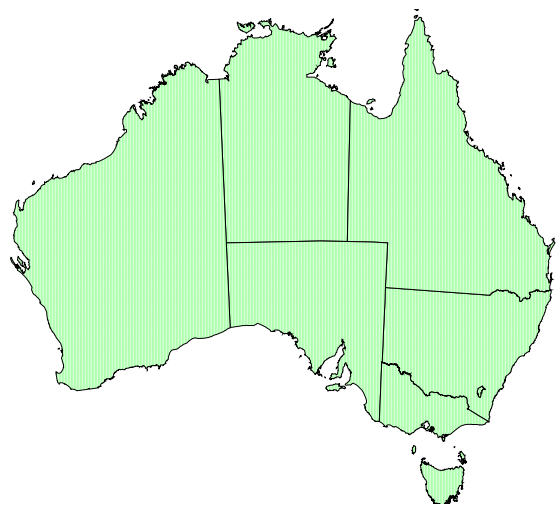
- 23 years service in the RAN
- 2600 hours total flying experience
- 1400 hours Seahawk experience
- Capability Development experience
- Flight Trials Officer at AMAFTU

NAVY

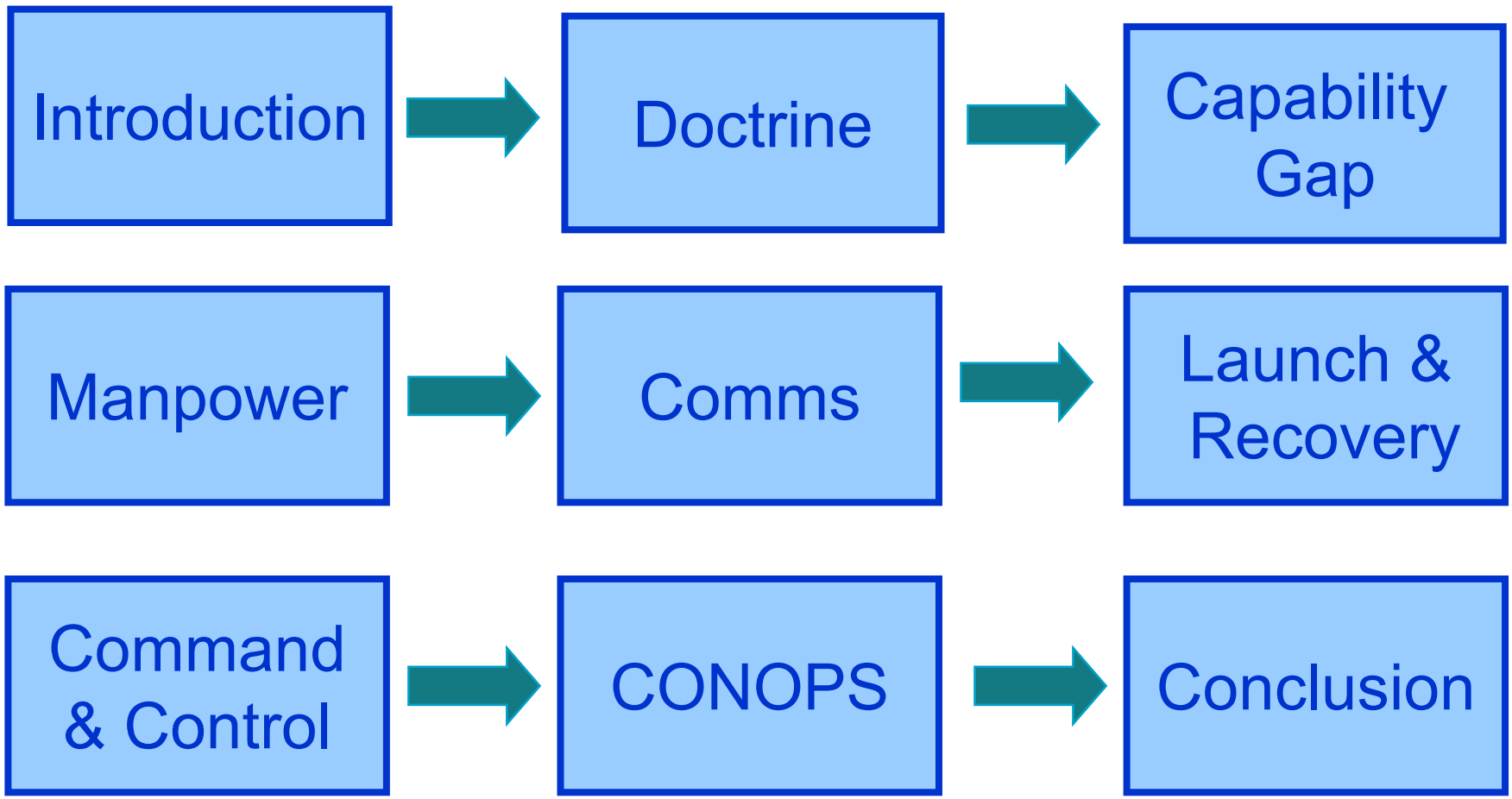
Aim

Remind the audience of my 2002 proposal for a Concept of operations for Maritime UAVs (MUAVs) in the Australian environment

Update audience on achievements in this area since last year



Scope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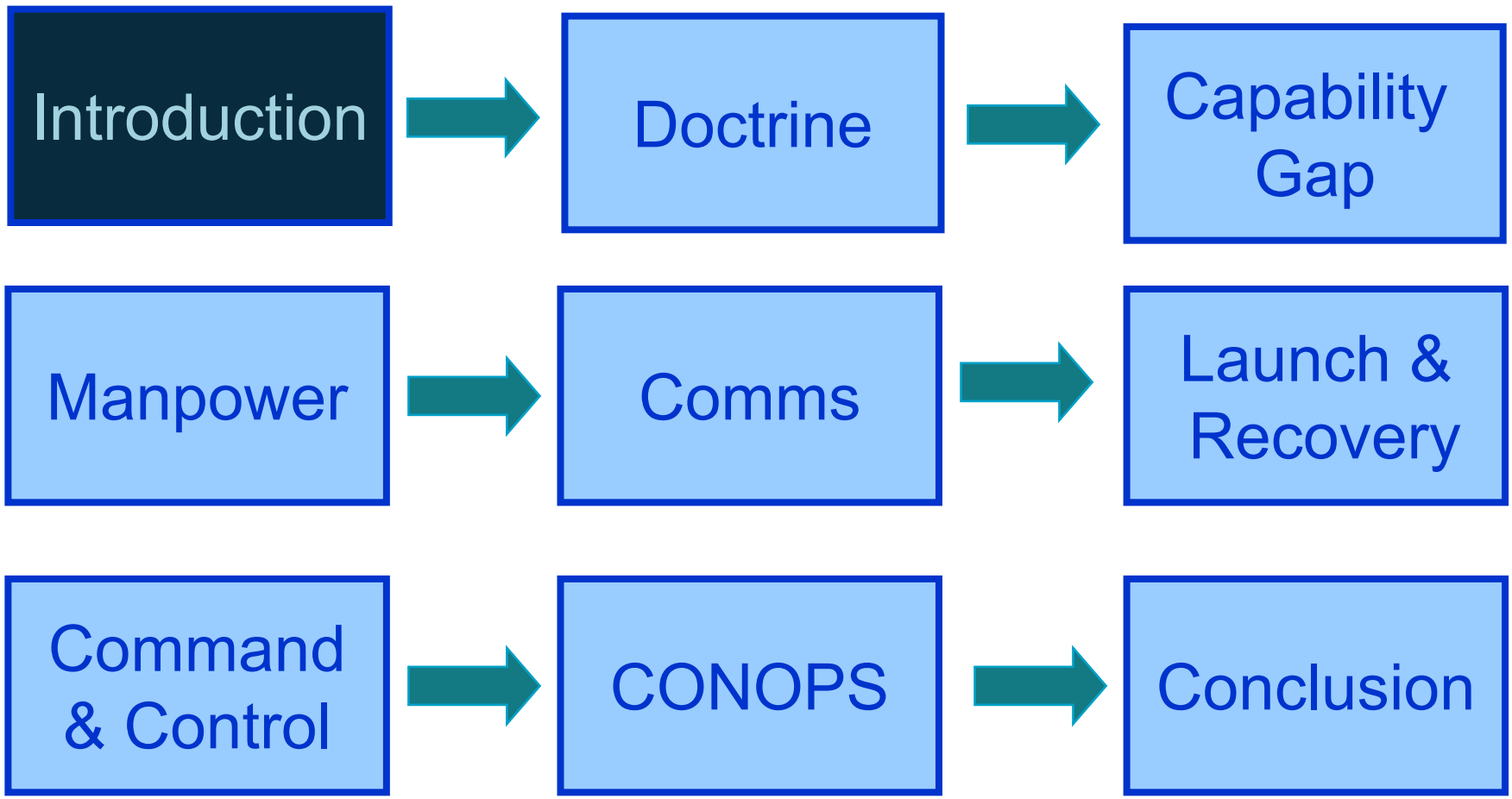
Scope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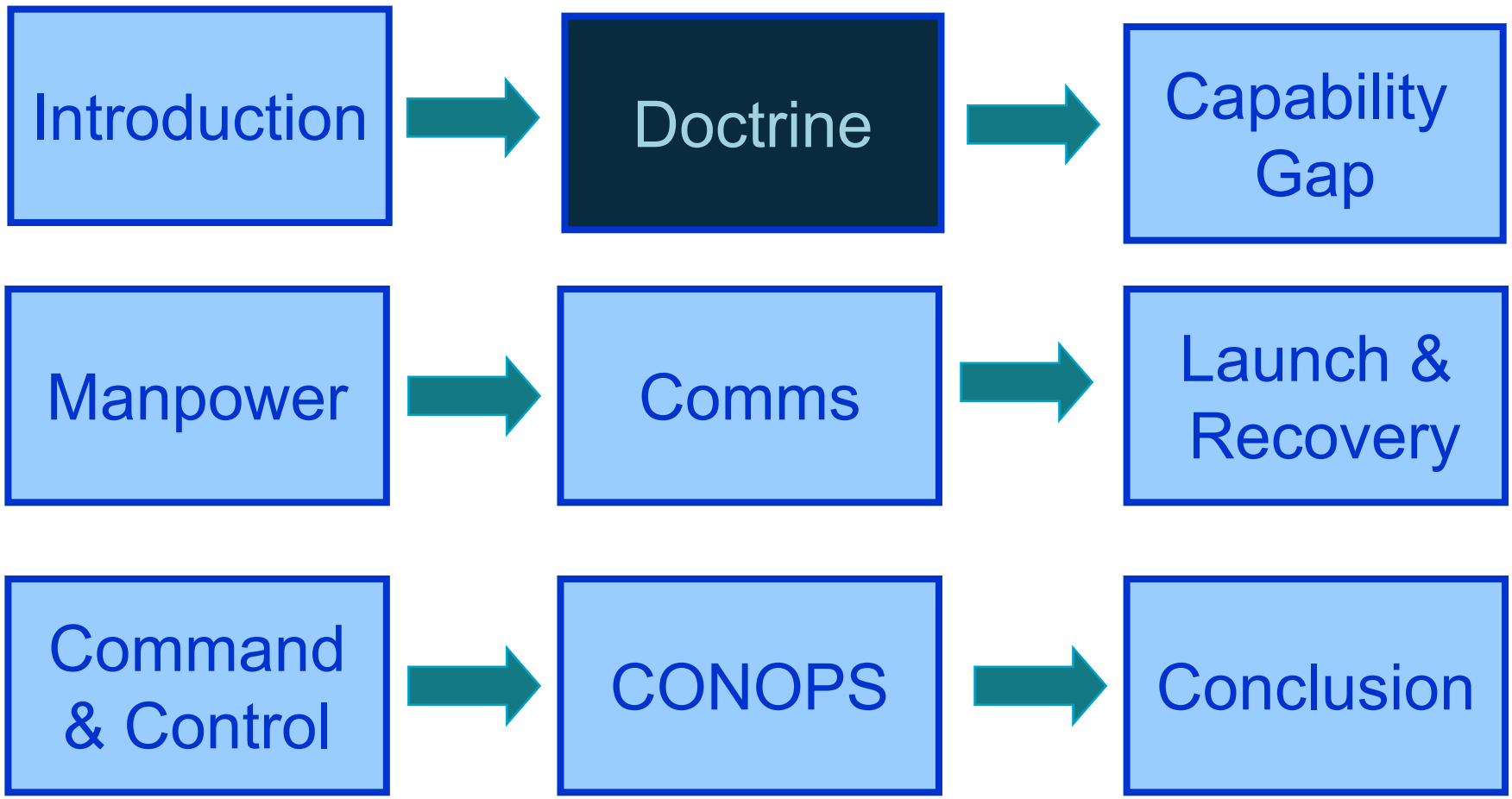
Introduction

- **Concept of Operations that:**
  - ✓ Satisfies a Capability Gap
  - ✓ Cost Effective
  - ✓ Fits into the current and planned RAN Force structure
- **Recognises the constraints of operating from sea:**
  - ✓ Space
  - ✓ Personnel
  - ✓ Cost
  - ✓ Launch and Recovery
- **Augmentation of existing helicopter fleets**

NAVY

Scope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Doctrine

DCP

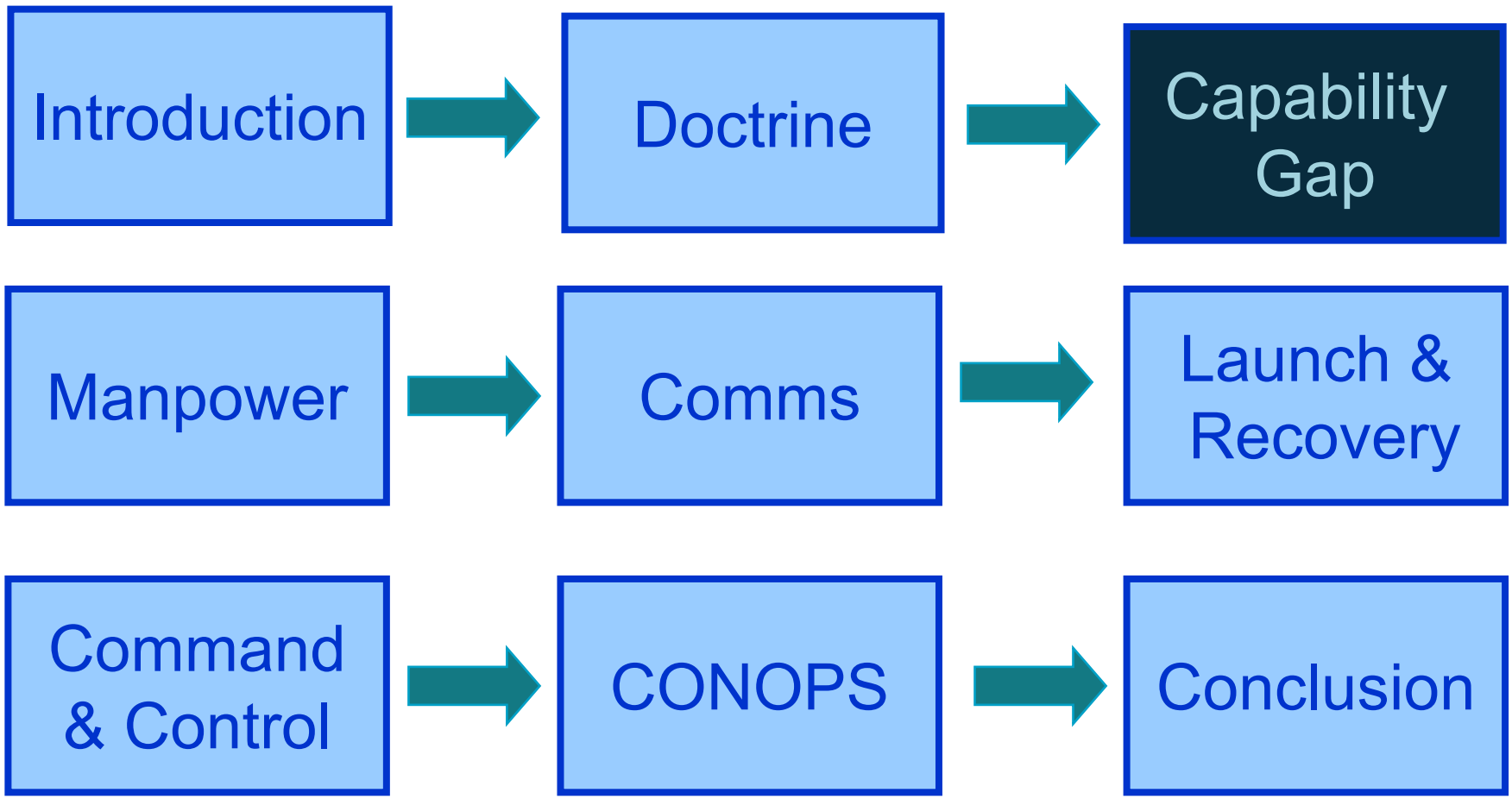
Plan Blue

Maritime Doctrine

White Paper

NAVY

Scope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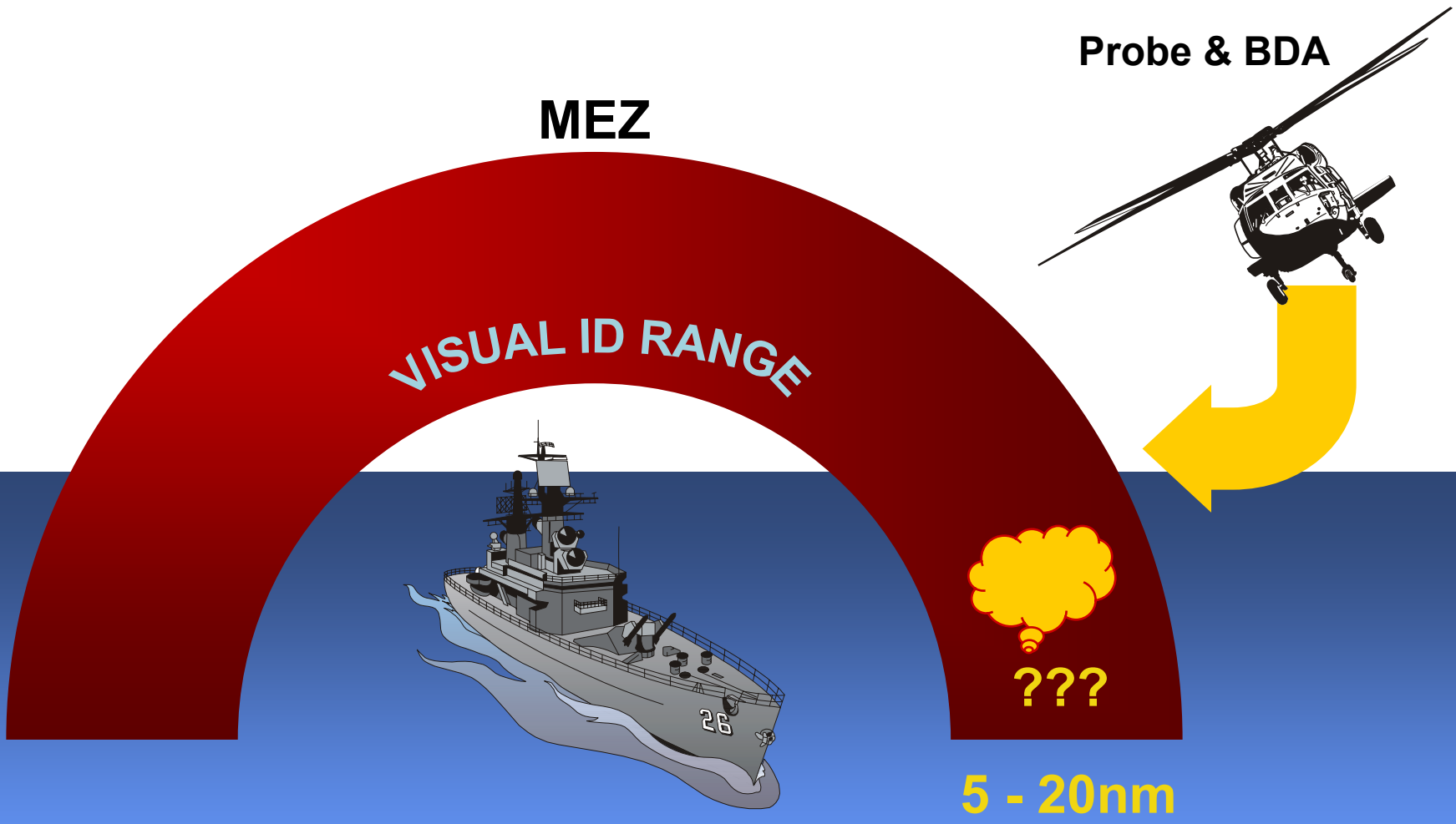
Capability Gap



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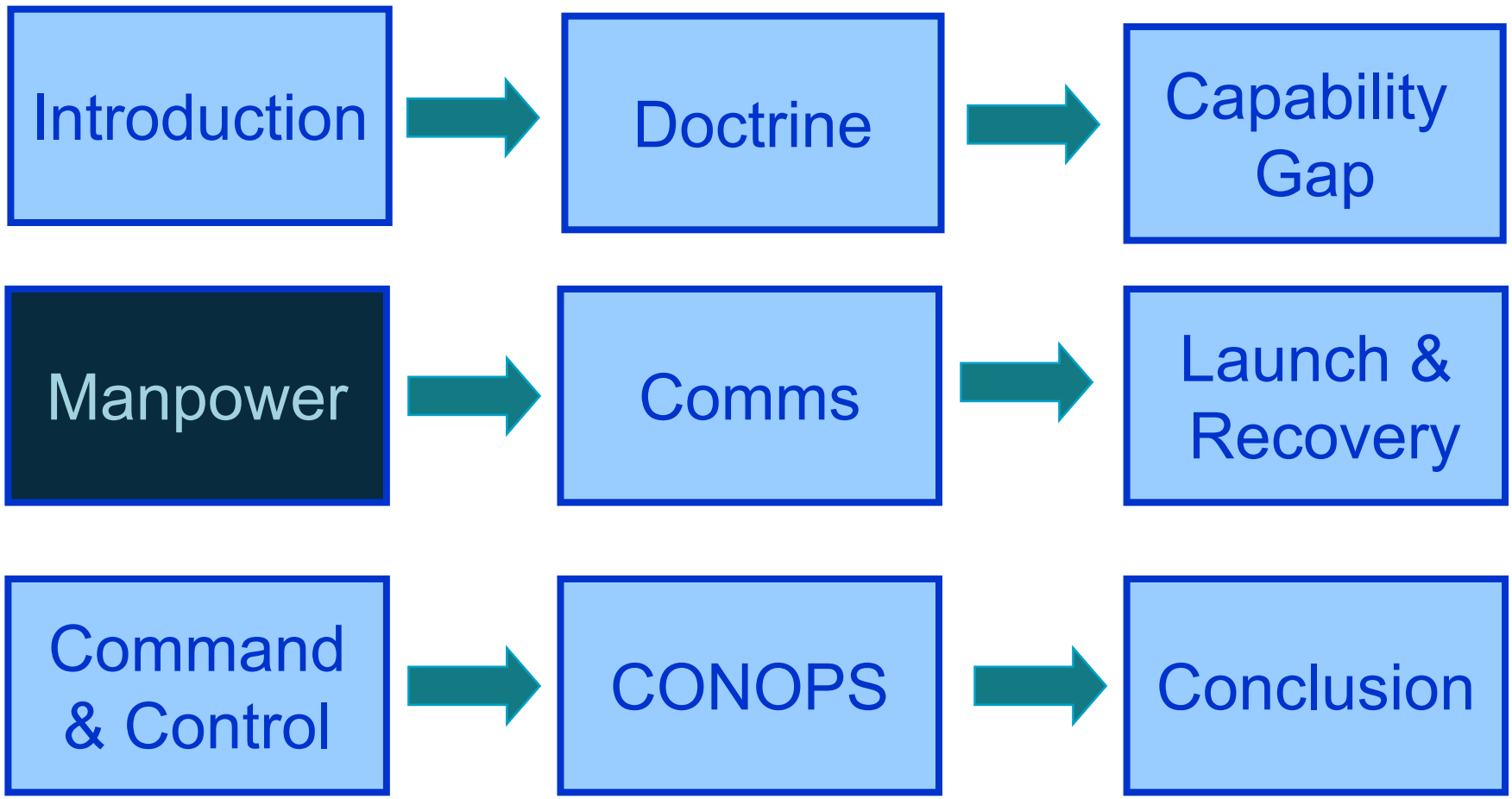
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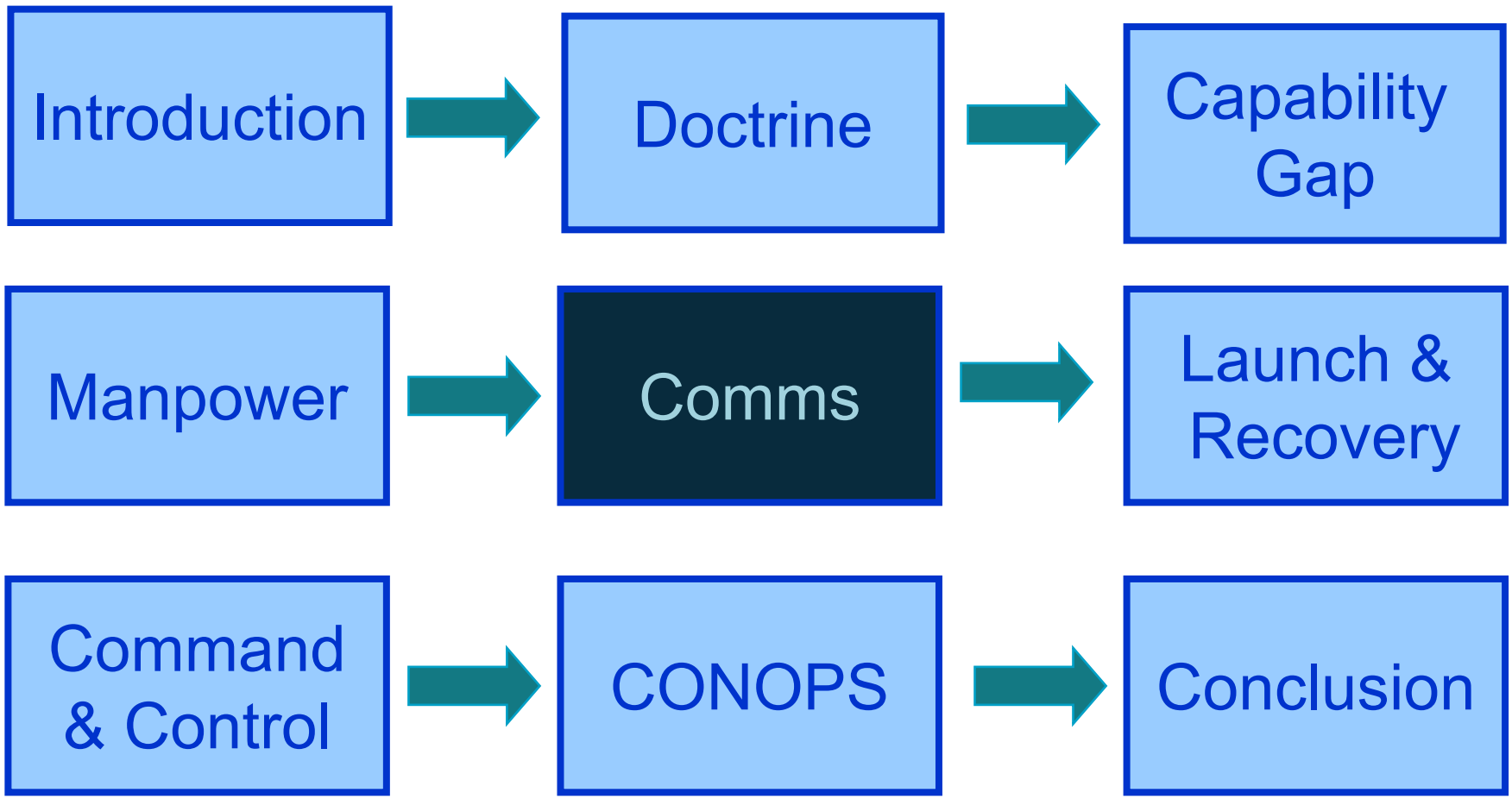
Manpower

- Manpower is a significant cost driver
- RAN will continue to operate current helicopters until 2025
- Most cost effective embarked UAV solution is to utilise existing aircrew

Scope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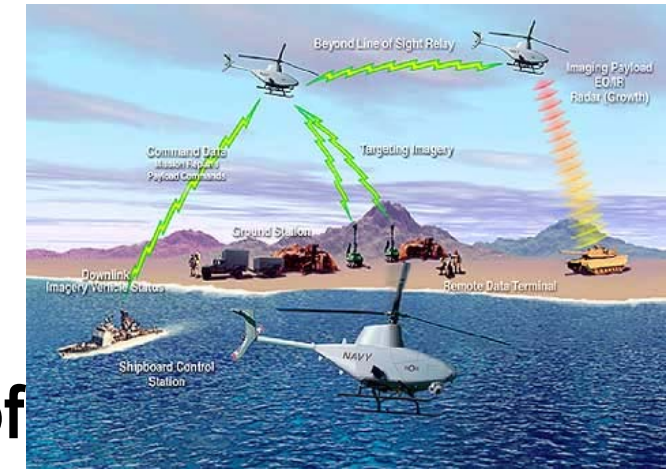
Communications

- Increasing requirement for satellite bandwidth
- Alternative approach might be to only send snapshots of imagery
- Improved Data Modem (IDM) offers a UHF alternative



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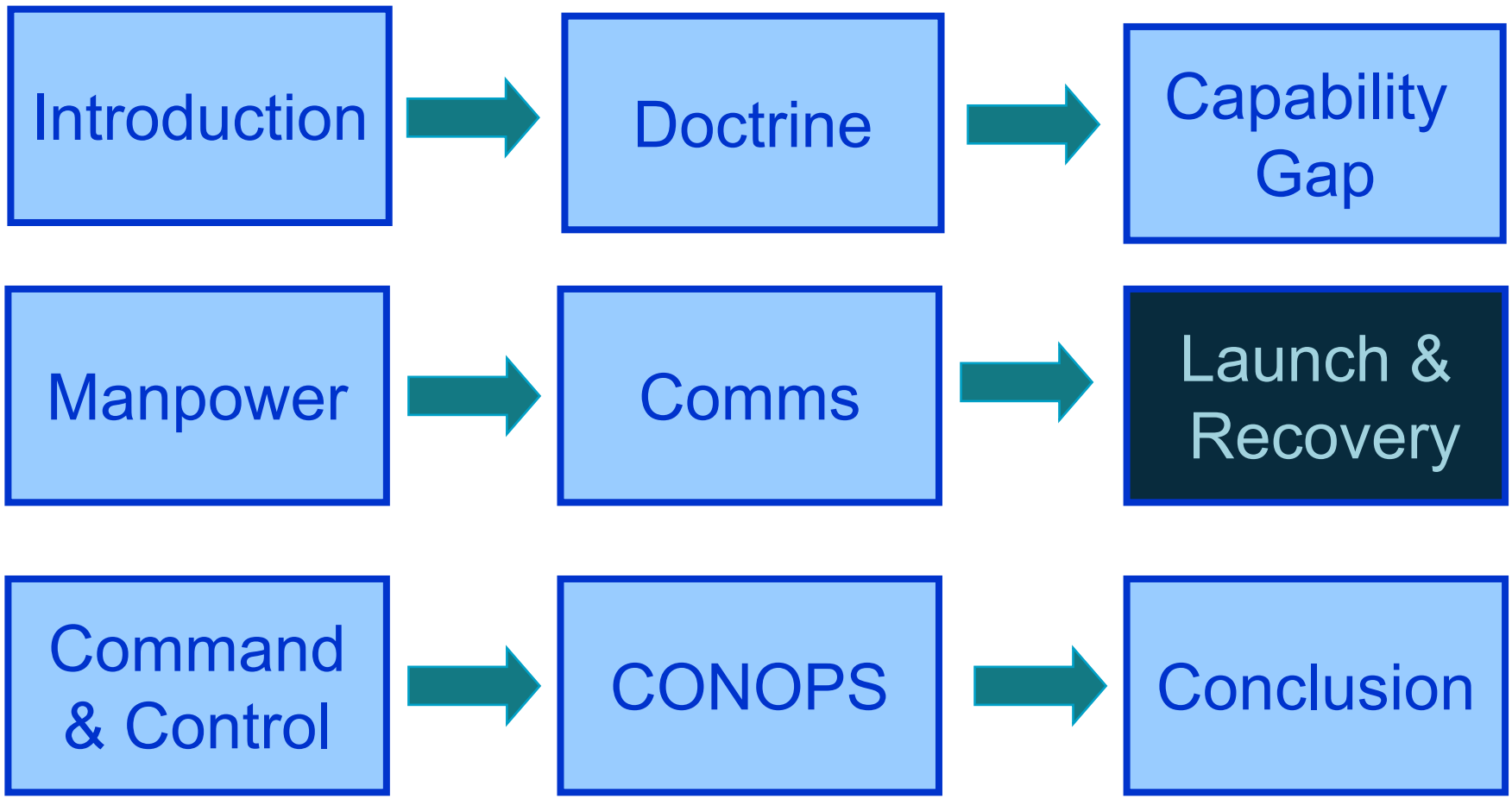
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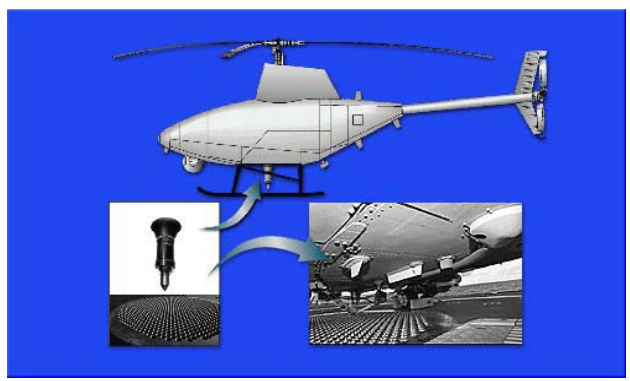
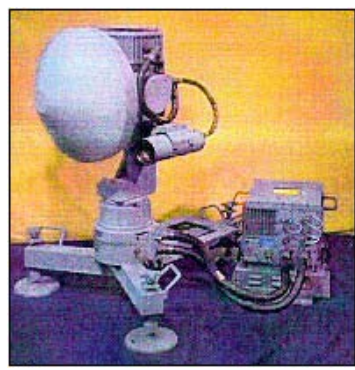
Launch & Recovery

- Expense and complexity of autonomous landing systems

- An alternative approach is to carry the UAV with the helicopter





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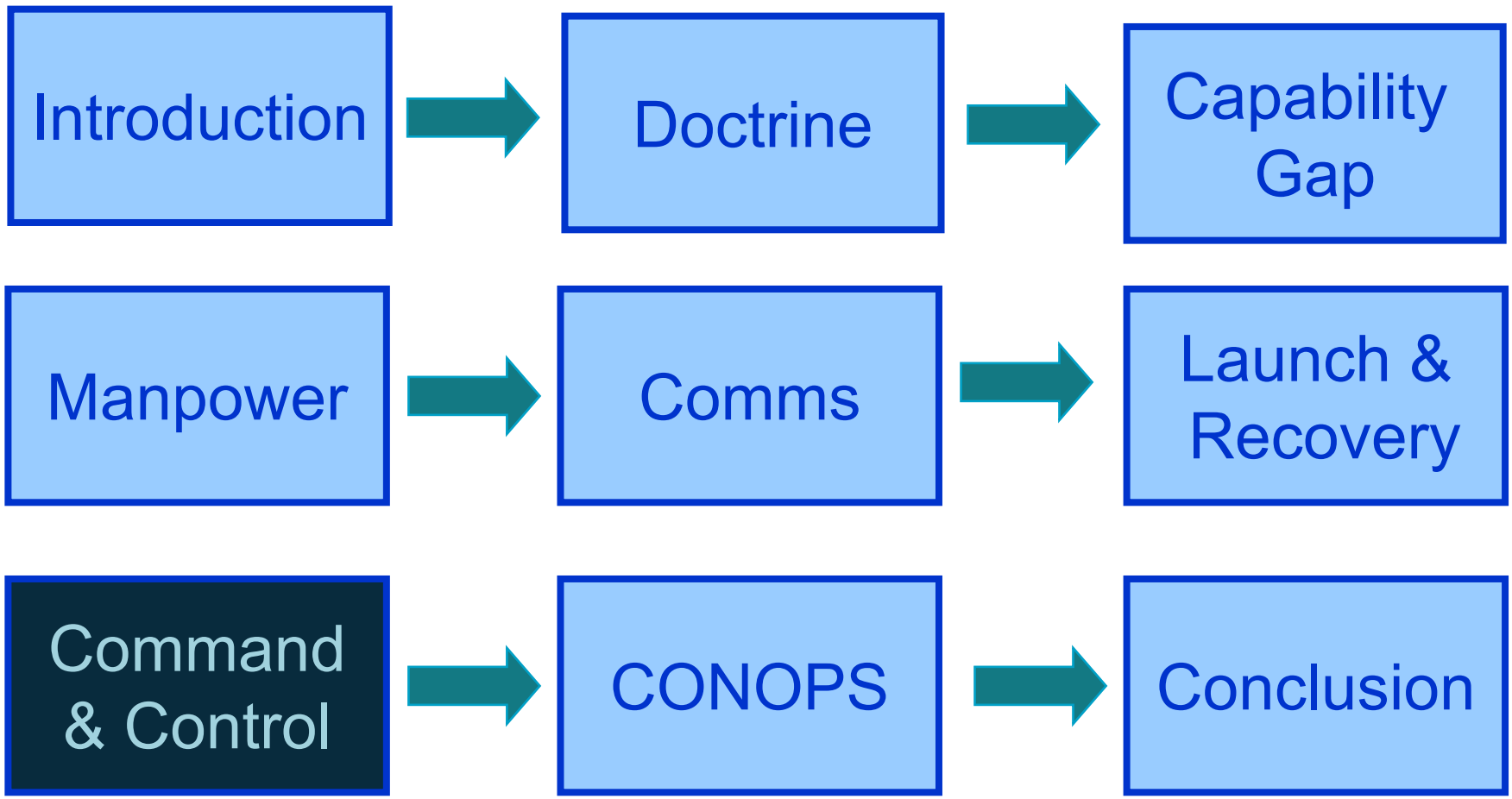
Scope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Command & Control

- Technology already exists to command and control very small UAVs
- Sensors can now provide useful imagery in packages no heavier than a few pounds.
- Extendor program has proved that imagery transfer using standard UHF radios is possible using IDM.
- Hunter Killer Stand-off Team program has proved the concept of teaming a helicopter with a UAV.

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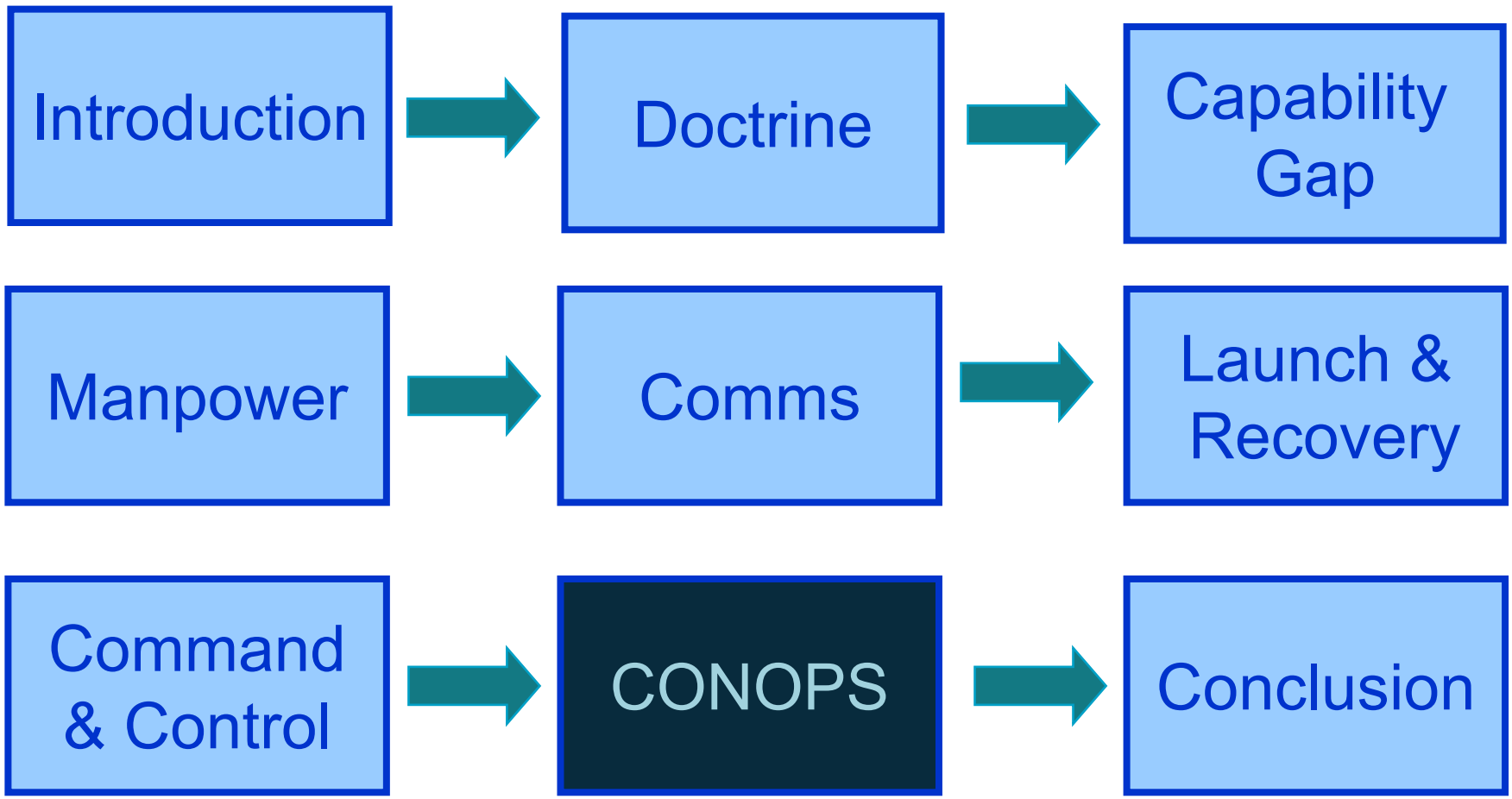
Scope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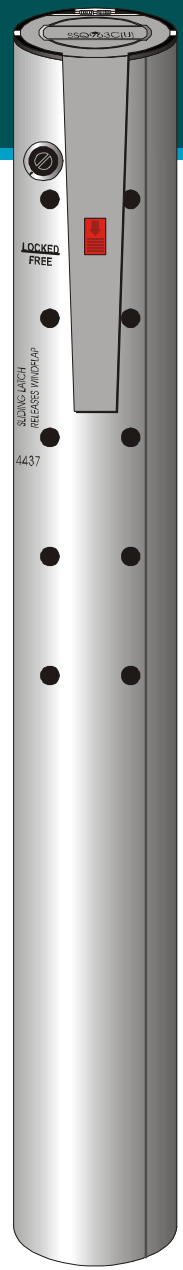
Tiny Tiger

UAV
(Medium Size - External Carriage)

- **UAV of Penguin Missile, Mk46 or MALD Size**
- **Rejected**
  - Cost
  - Provocative
  - Reduction in helicopter external carrying capacity

NAVY



3 ft by 5 inches diameter

Weight 39 lbs

UAV
(Small Size – Internal Carriage)

- **Pointer**

(9ft wingspan, 9 lb mtow, 1hr endurance)

- **Mite**

(1ft wingspan, 4 lb mtow, 0.5hr endurance)

- **Dragon Eye**

(4ft wingspan, 5 lb mtow, 1hr endurance)

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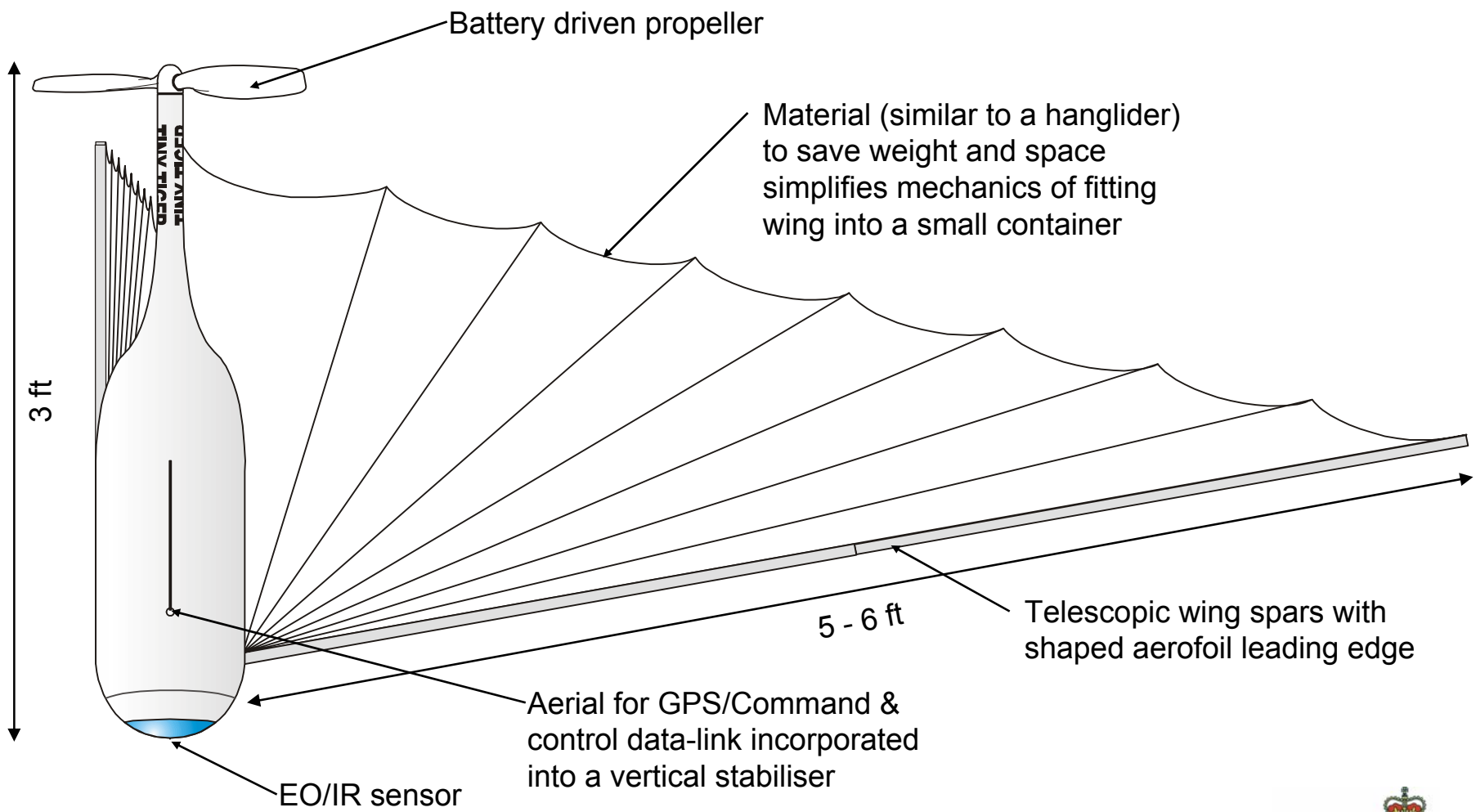
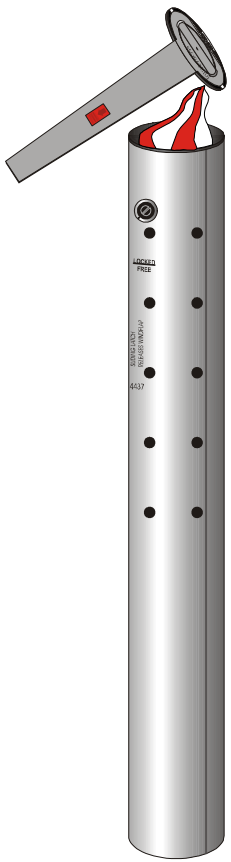
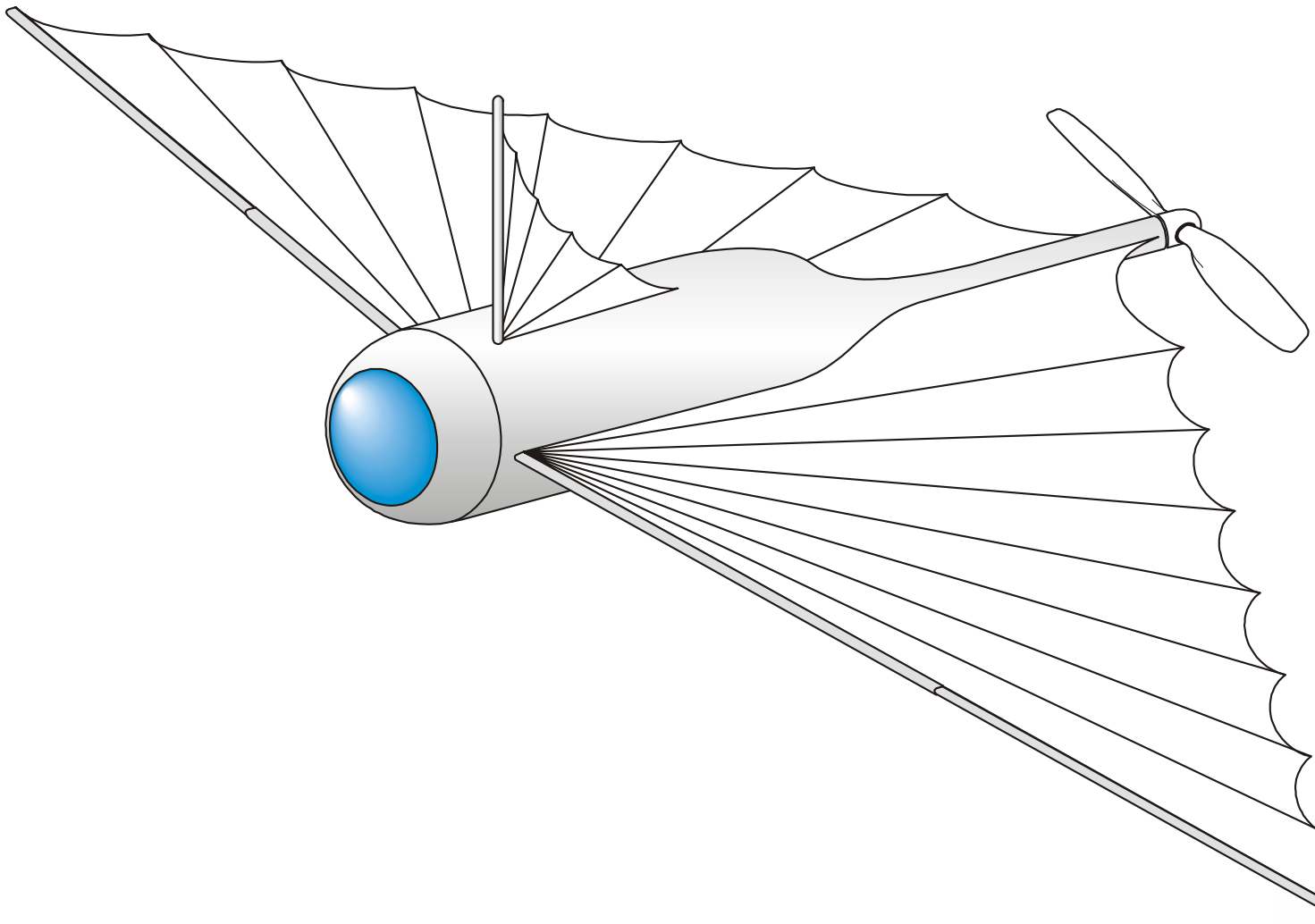
Conceptual Design



Deployment Stages



MUAV in Free Flight

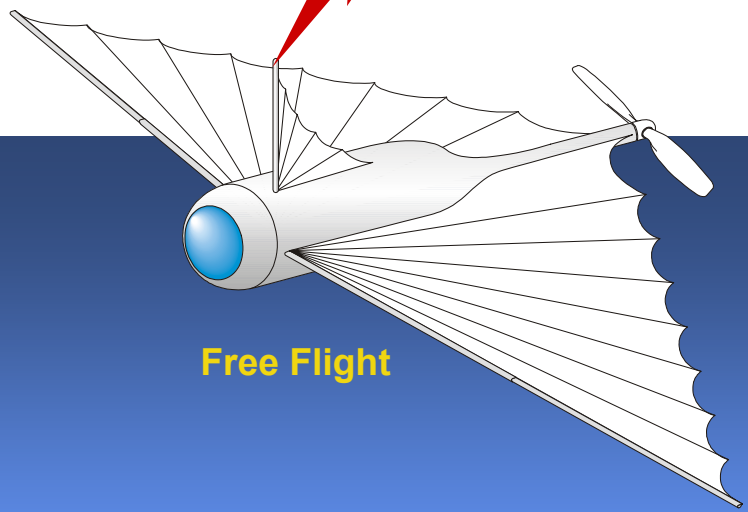


Concept of Operations

Deployment

Line of
Sight Relay

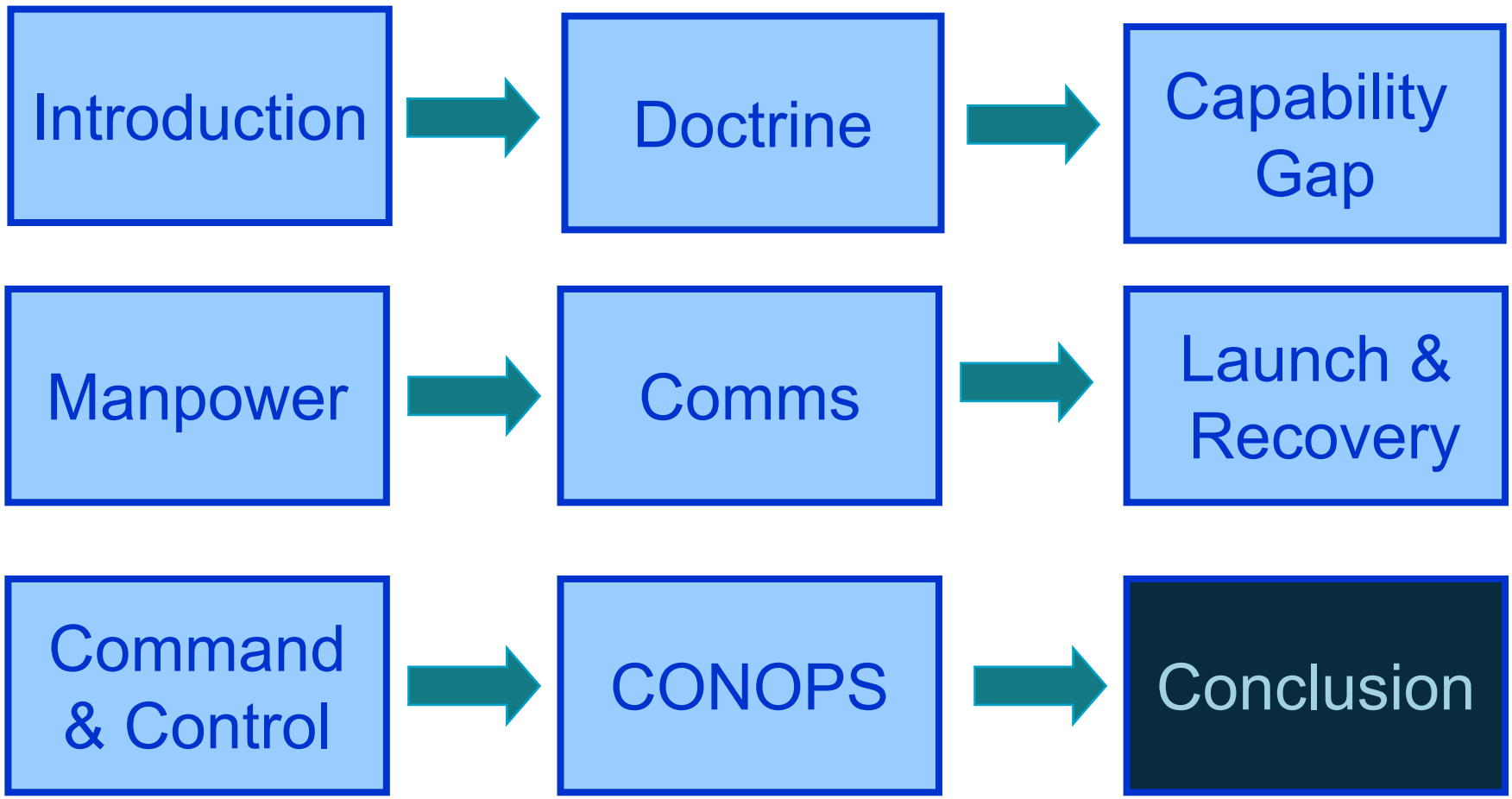
Second Stage



Free Flight

Target

Scope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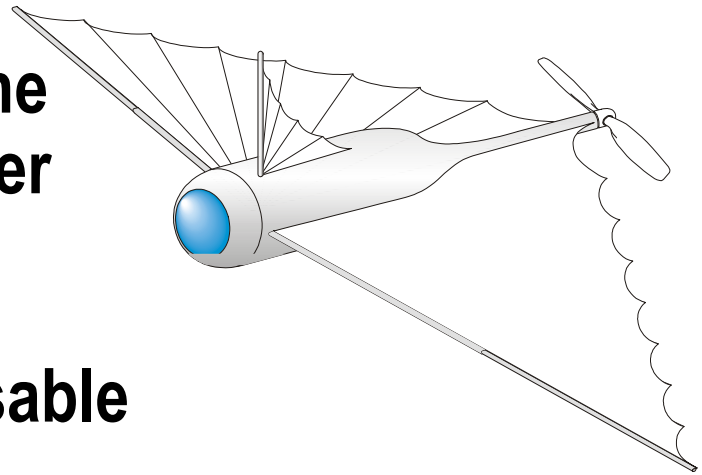
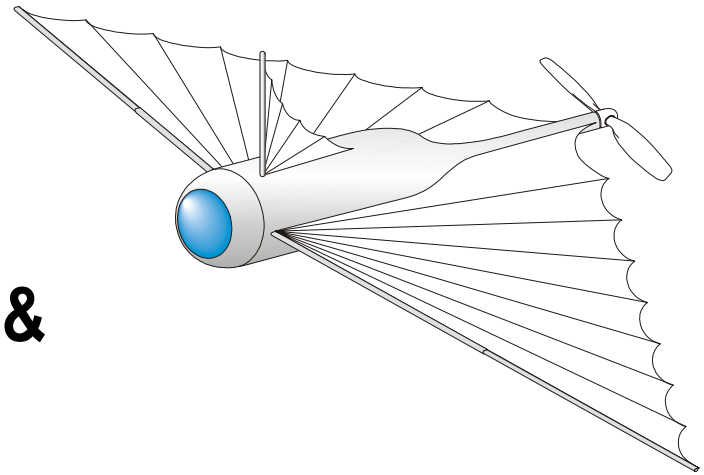
- CONOPS proposes control of the UAV from the Maritime helicopter



- Requires the design of a disposable MUAV packaged in an A size sonobuoy container
- Makes maximum use of current personnel & equipment
- No requirement for satellite links

Conclusion (2)



- Small demand on ship space
- Reduced complexity on launch & recovery
- Reduces the risk to the crew while better complementing the existing helicopter fleet
- Is technically feasible

International progress since 2002

- Number of flights of the Finder from a Predator UAV

- HSKT have launched a vehicle from a 5 inch diameter tube

NAVY

Local progress since 2002

- Codarra Advanced Systems - Avatar UAV

- Aerosonde UAV

Local progress since 2002

- Sydney University

ADF Progress since 2002

- UAV Roadmap
- JP129 OCD release
- SEA4000 interest in UAV capability

Recommendations

- Trial to test both control and imagery transfer between a Seahawk and UAV
- DSTO and Industry develop a Tiny Tiger prototype, perhaps through a Concept Technology Demonstrator (CTD) Project
- Consideration be given to a collaborative project

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