The Orientation step of the OODA loop and Information Warfare

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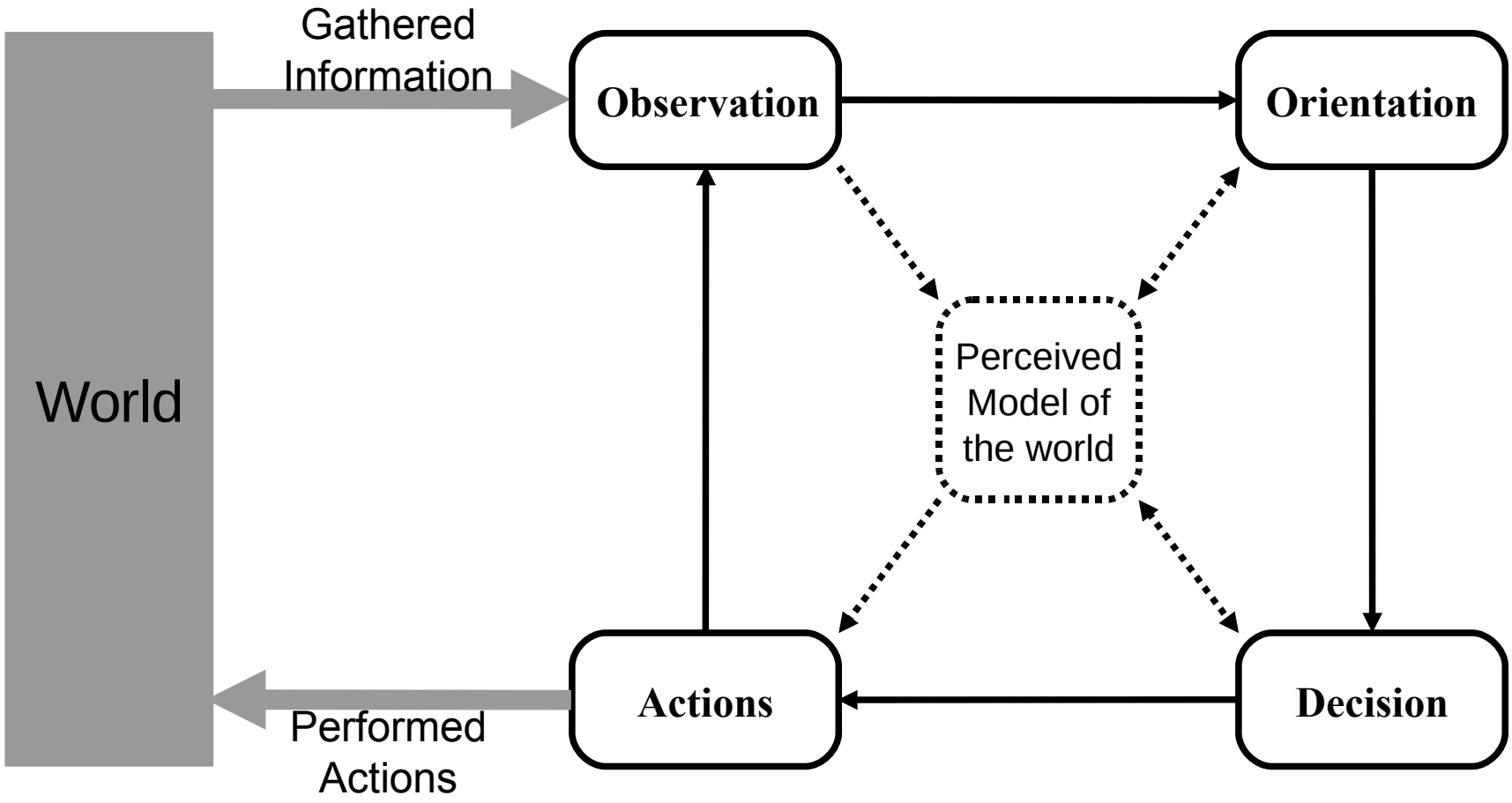
Overview

- Boyd's OODA loop model
- Expanded model of the Orientation step
- Information Warfare and Orientation
- Case studies of Deception and Self-deception

Boyd's OODA loop model

- Name originates from the loop's steps
  - Observation
  - Orientation
  - Decision
  - Action
- Describes the decision-making process of an individual or organisation
- Models a feedback loop between the decision-maker and their environment

Boyd's OODA loop model



Orientation step

Contains a method that combines

- New information
- Previous experience
- Cultural traditions
- Genetic heritage
- Analysis and synthesis methods

to produce an updated model of the world.

Orientation step

- However there is no description of how this process operates
- We now describe a model of the internal processes of the Orientation step

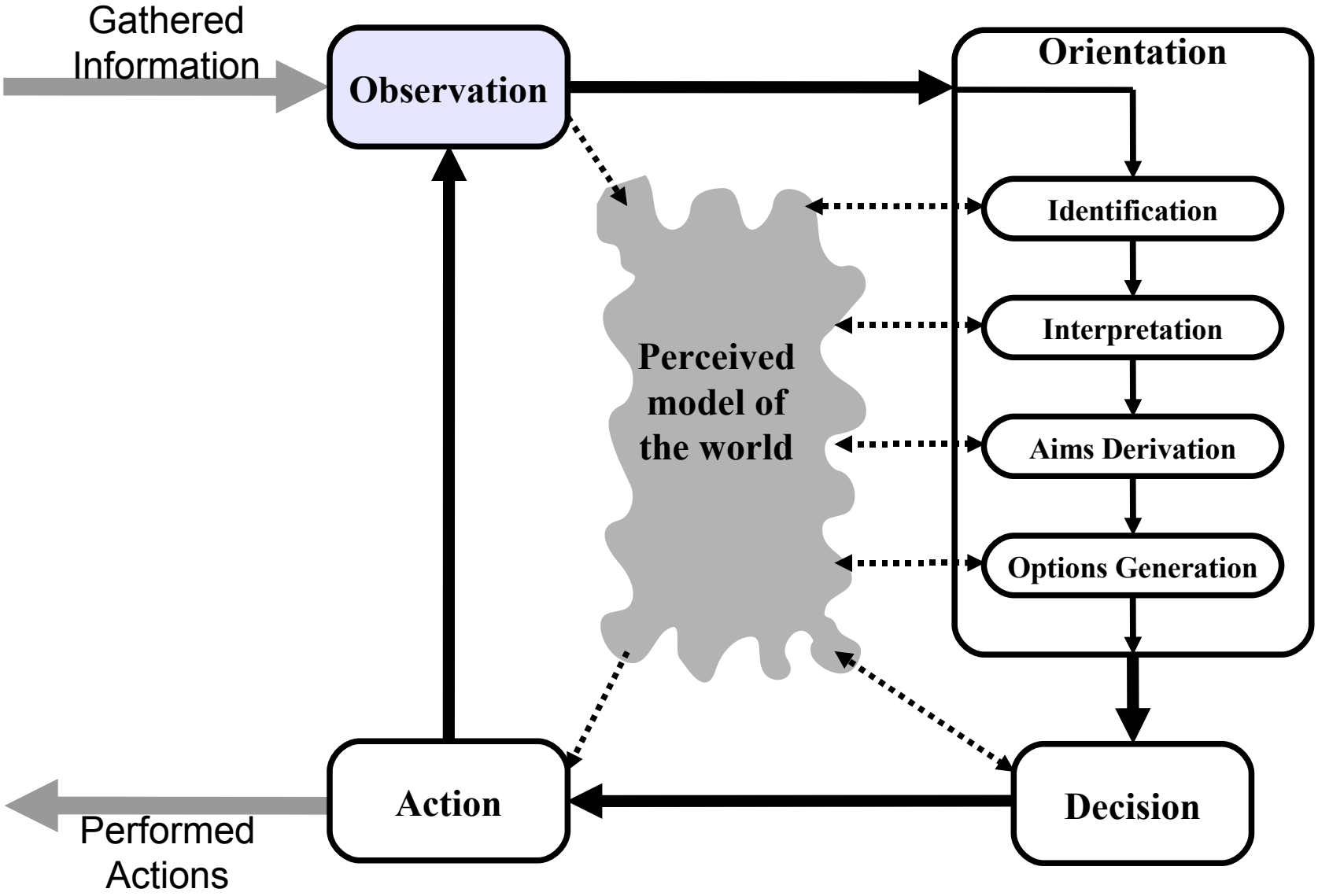
Proposed Orientation Step Actions

- Recognise known objects, events and relationships
- Analyse new information with known processing methods
- Evaluate the completion of aims and develop new aims
- Determine what actions may be performed how they will affect the world

OODA loop with expanded Orientation step

- Observation
- Orientation
  - Identification
  - Interpretation
  - Aims Derivation
  - Options Generation
- Decision
- Action

Expanded Orientation step



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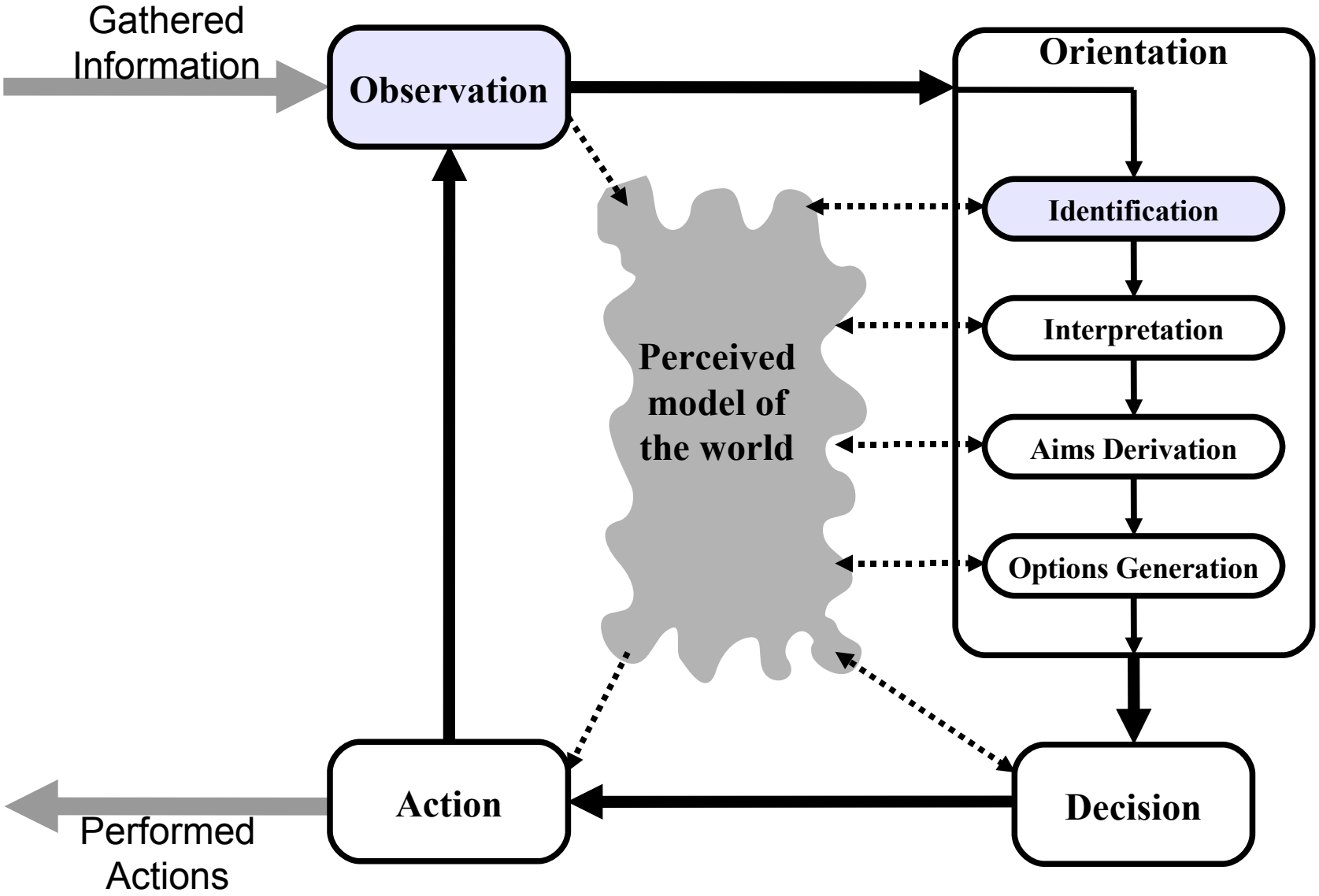

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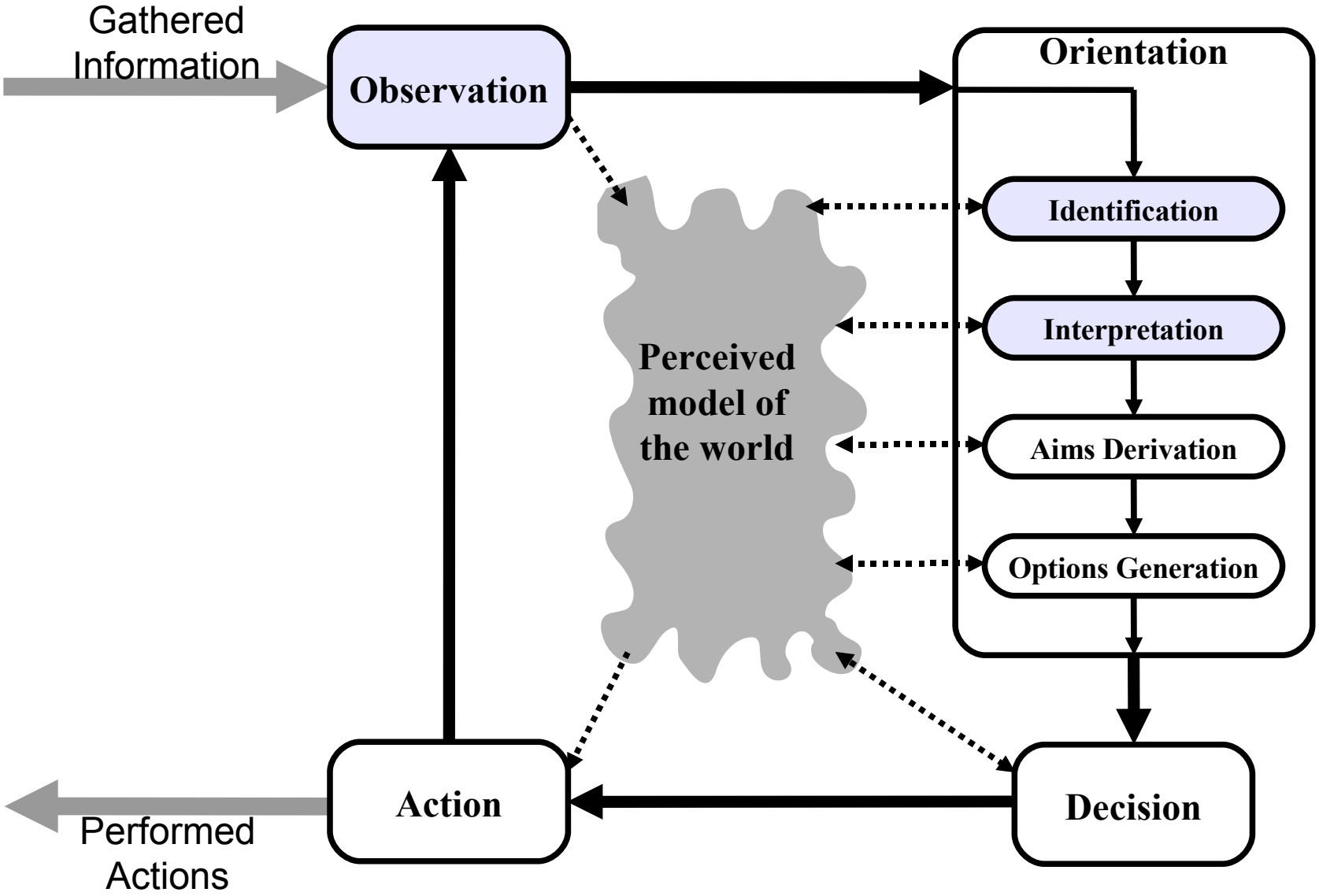

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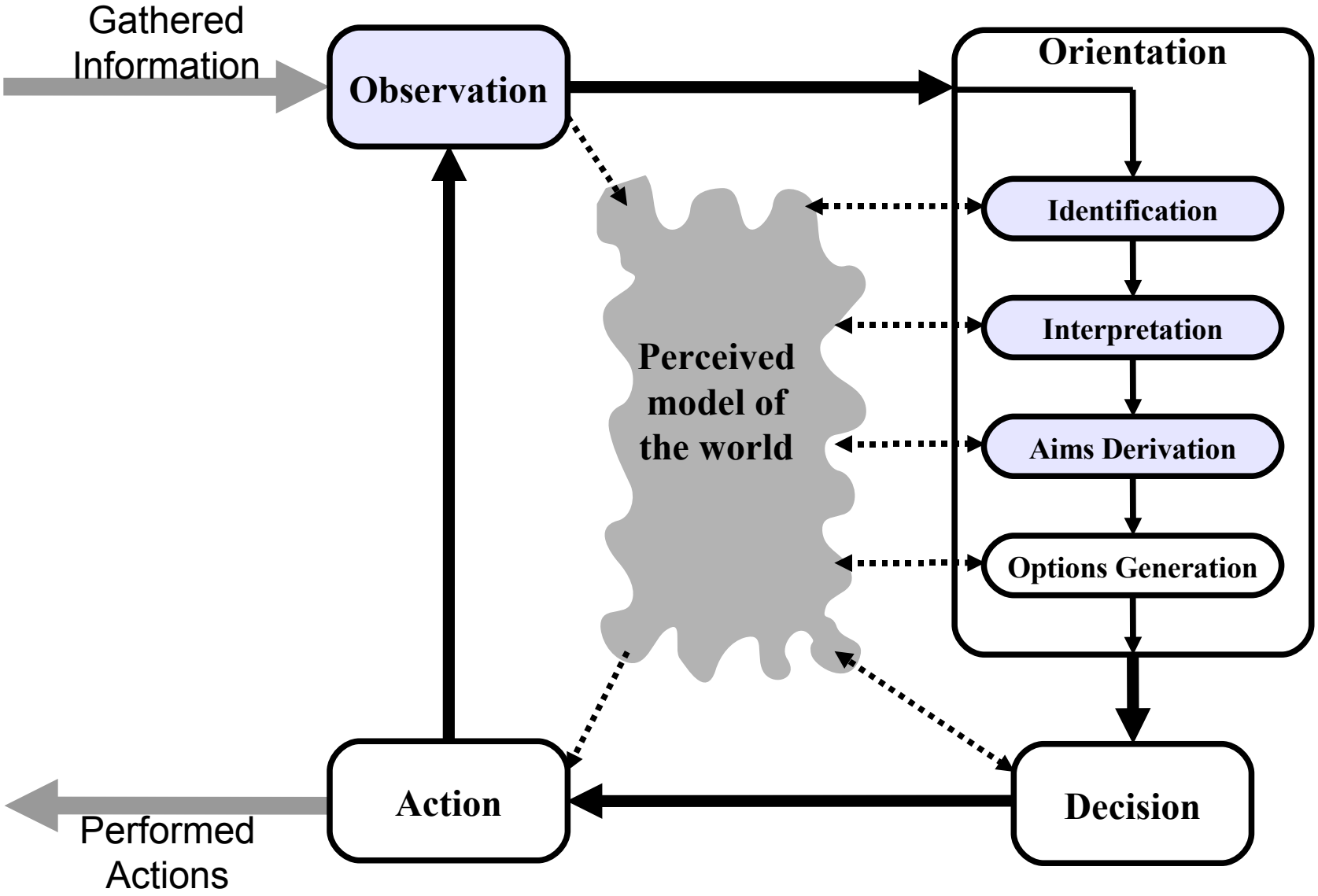

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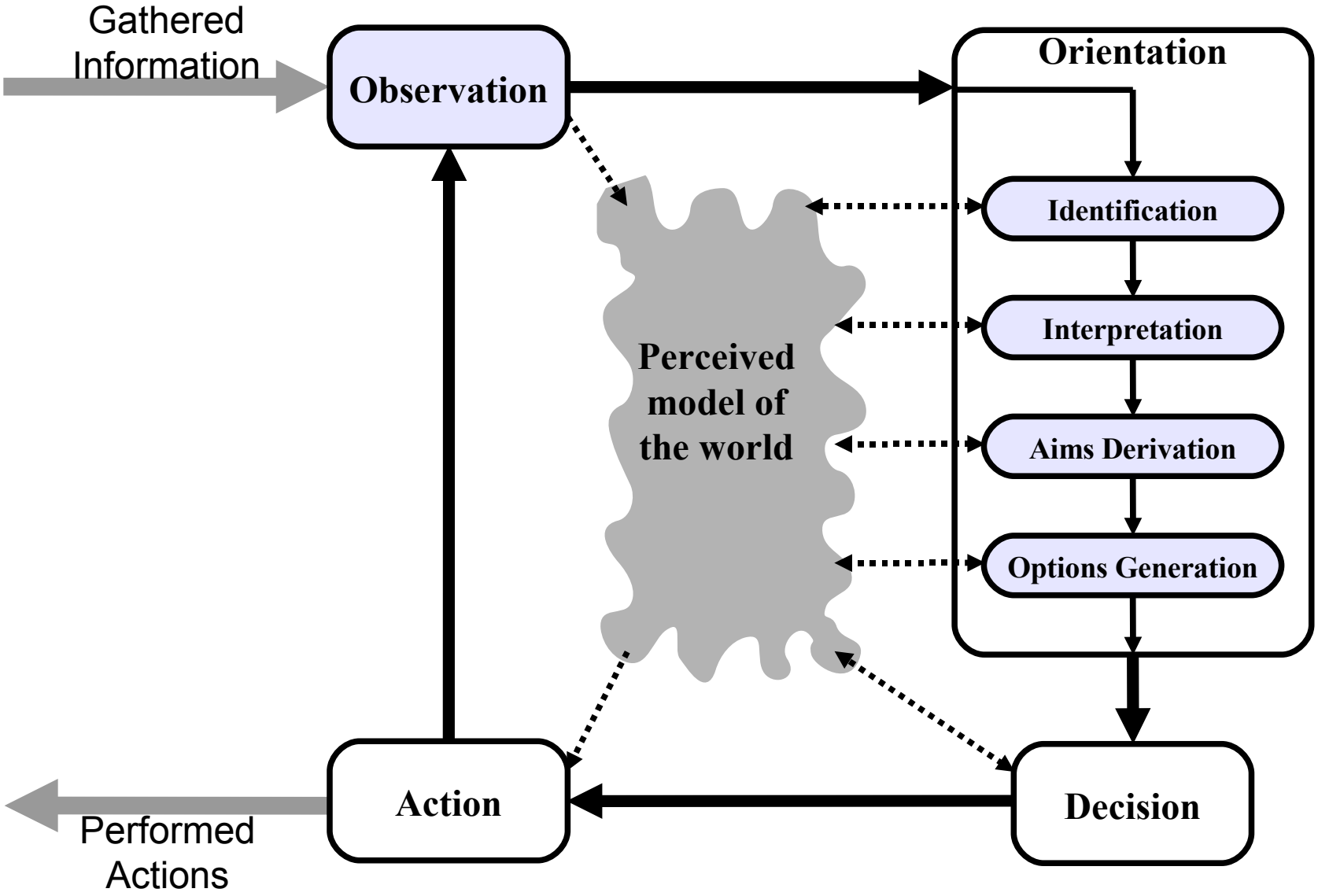

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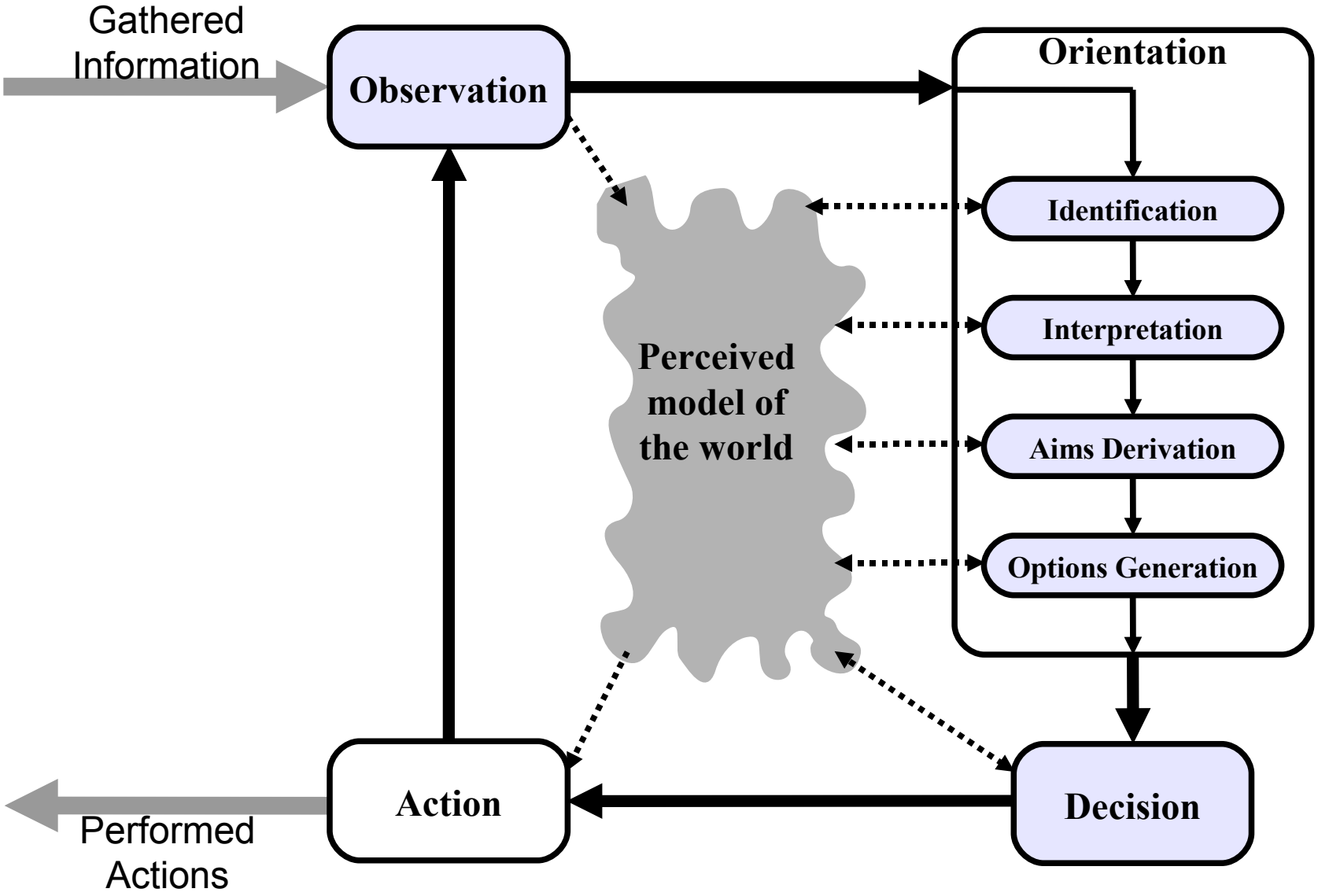

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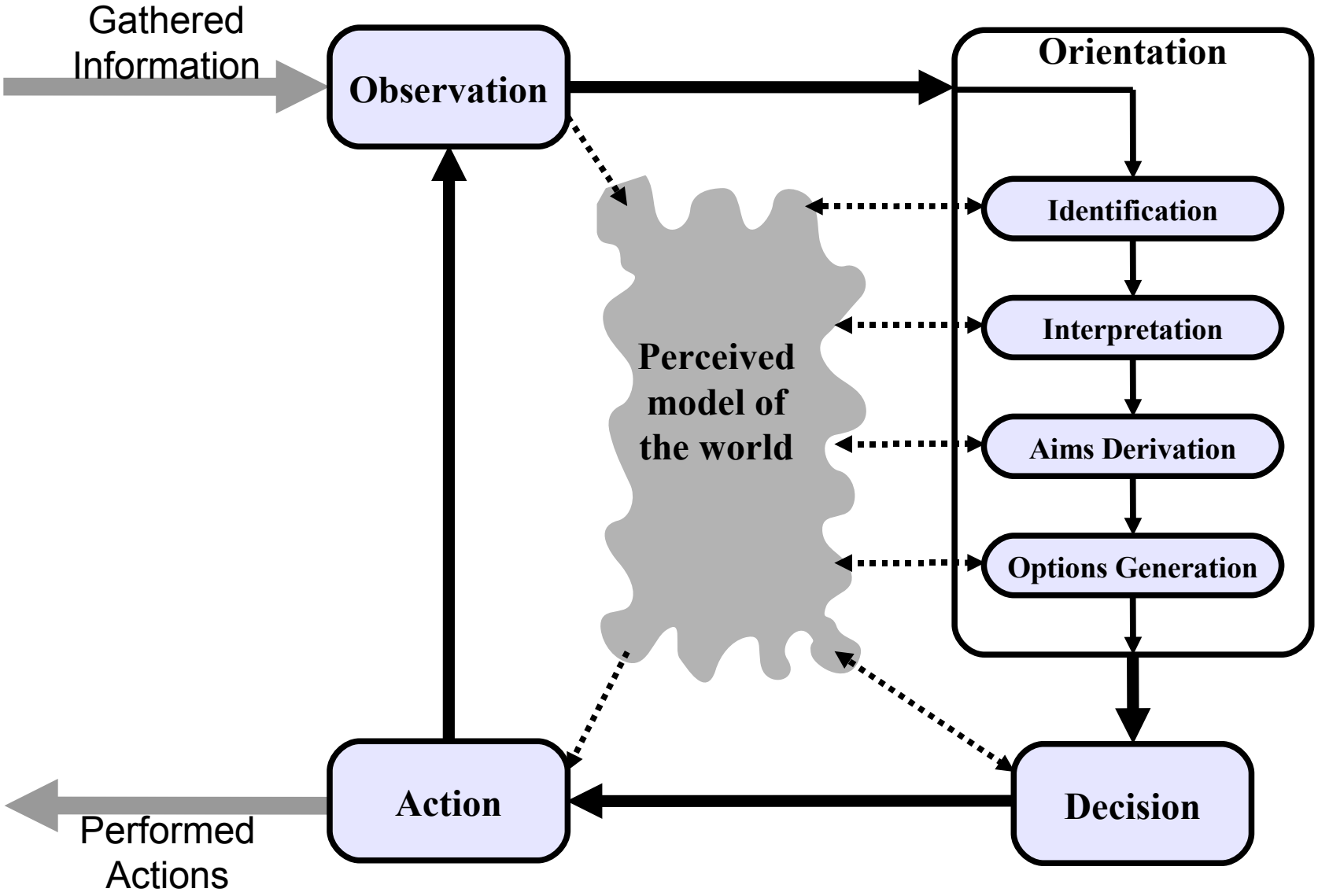


IW attacks that affect Orientation

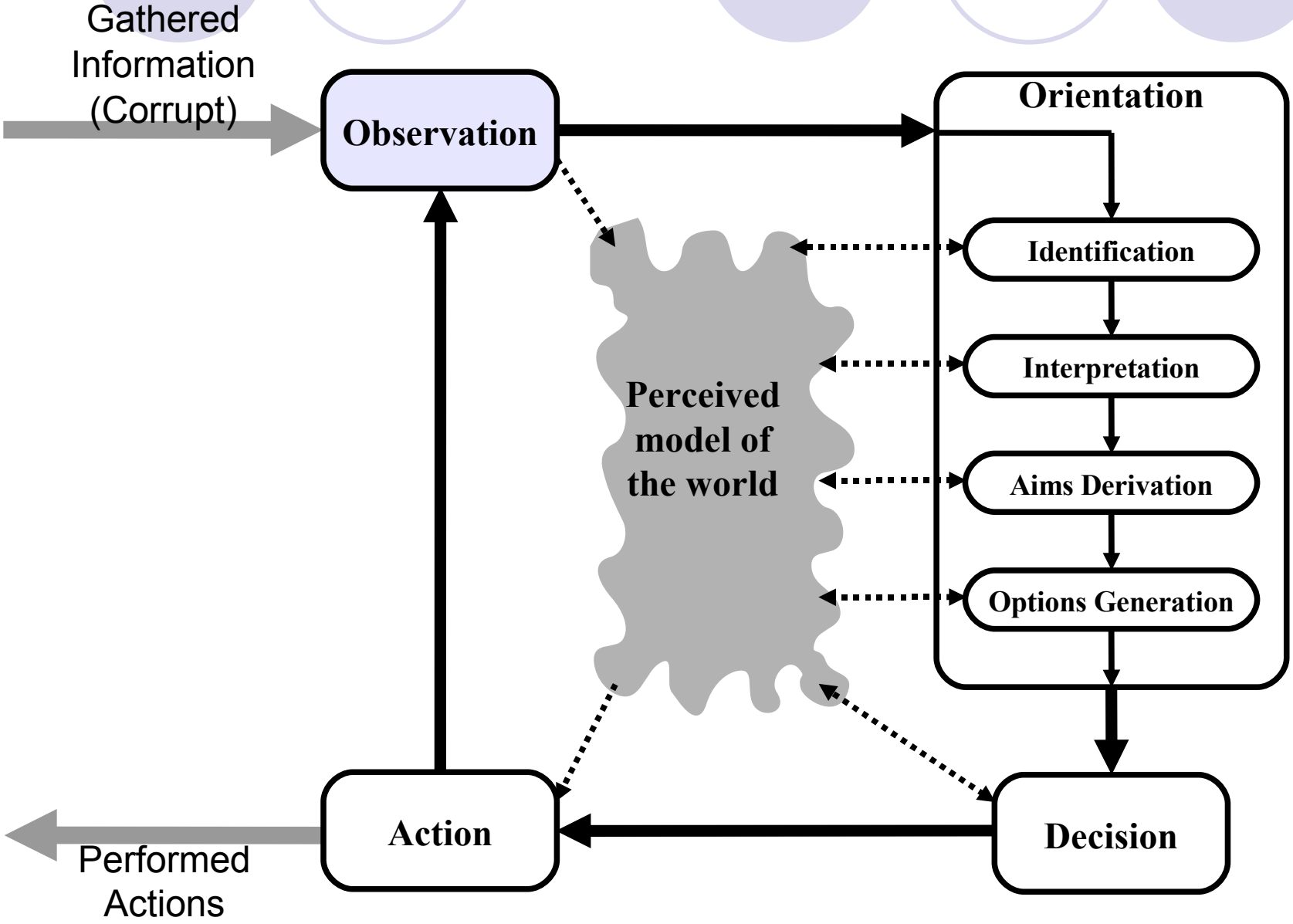
Deception

- Deception attacks provide false information that is accepted as true, before being used as input to decision-making

Self-deception

- Self-deception occurs when an individual believes something to be true, despite evidence that disproves it

Deception Attack



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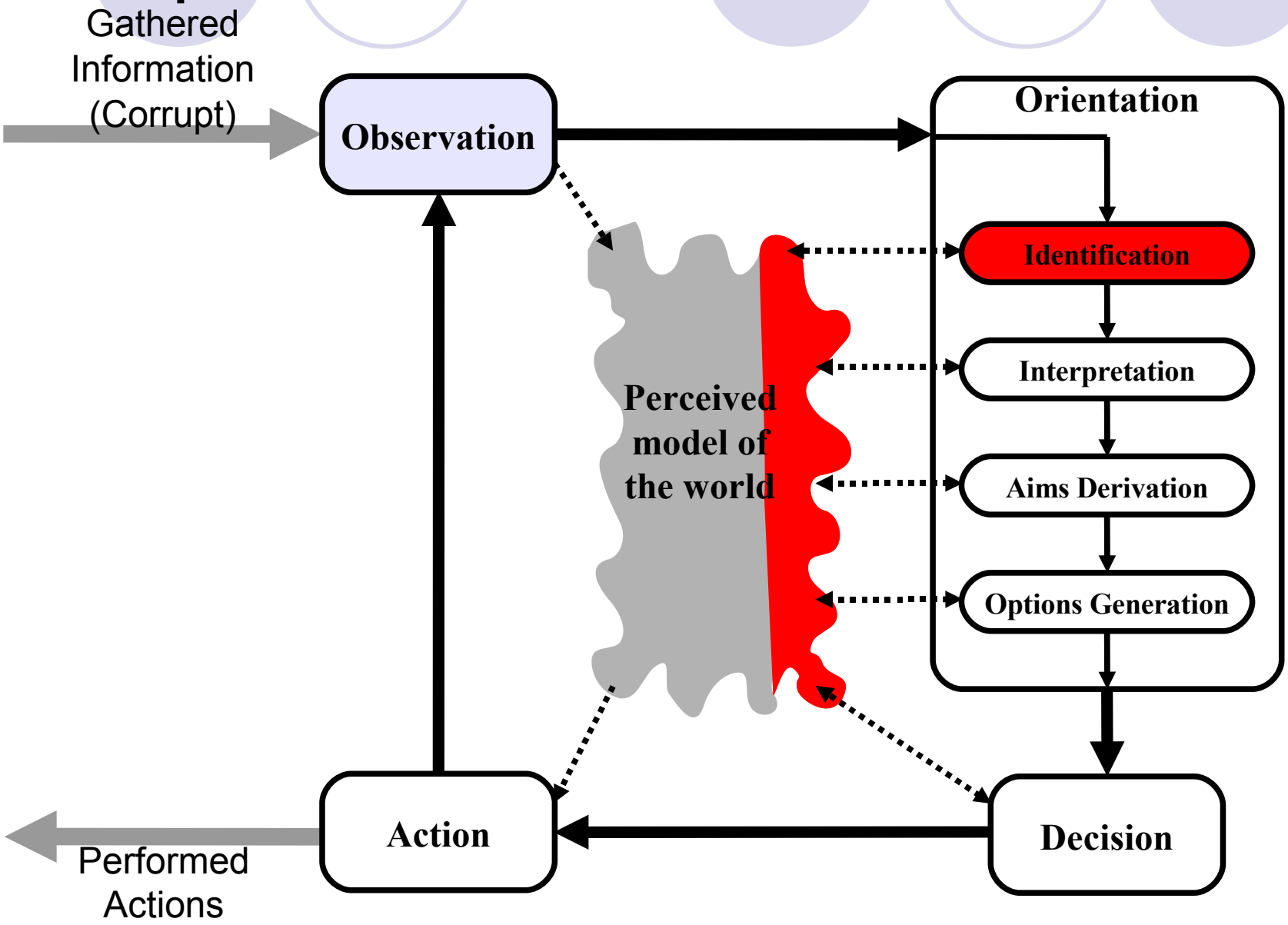

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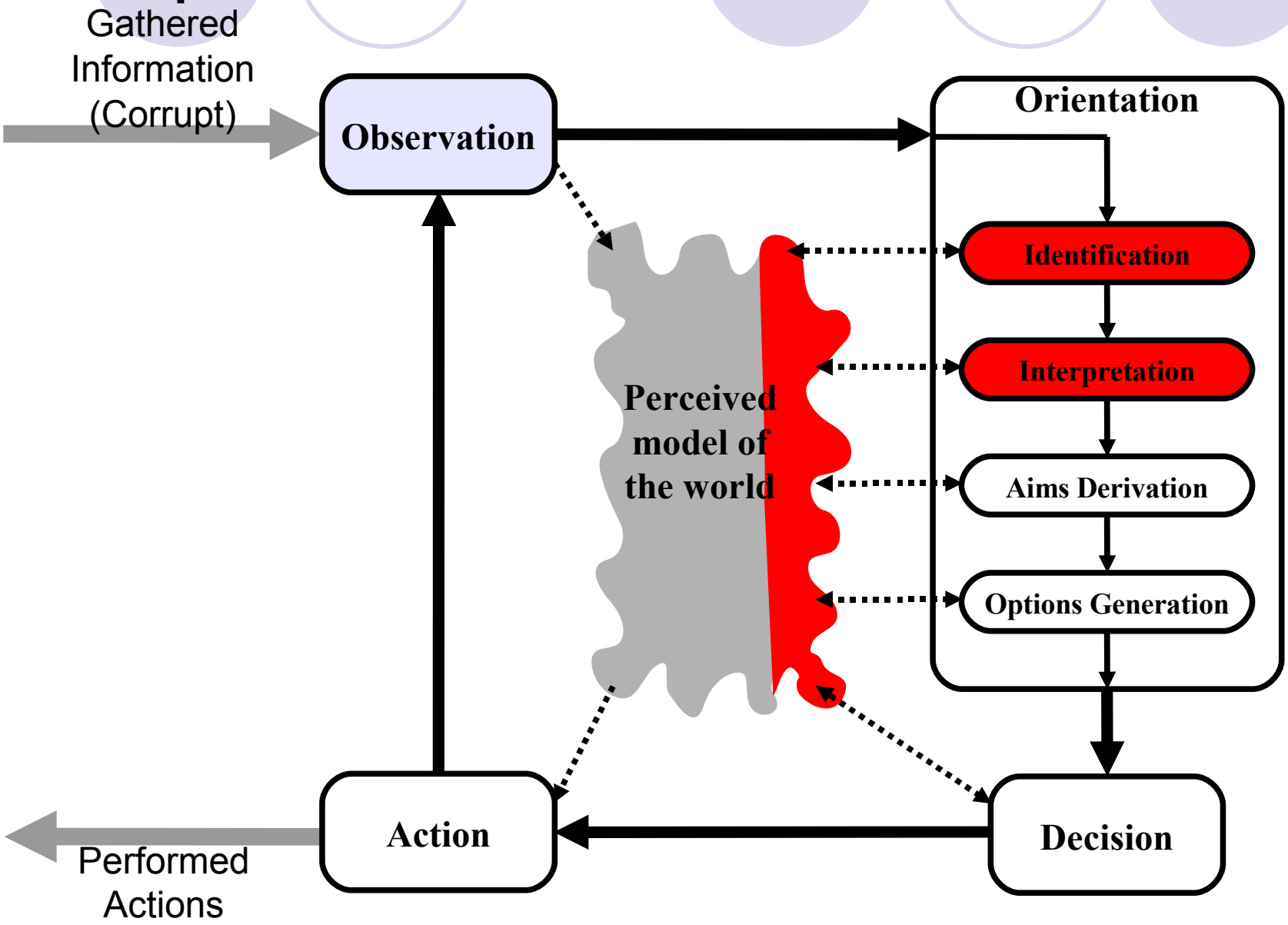

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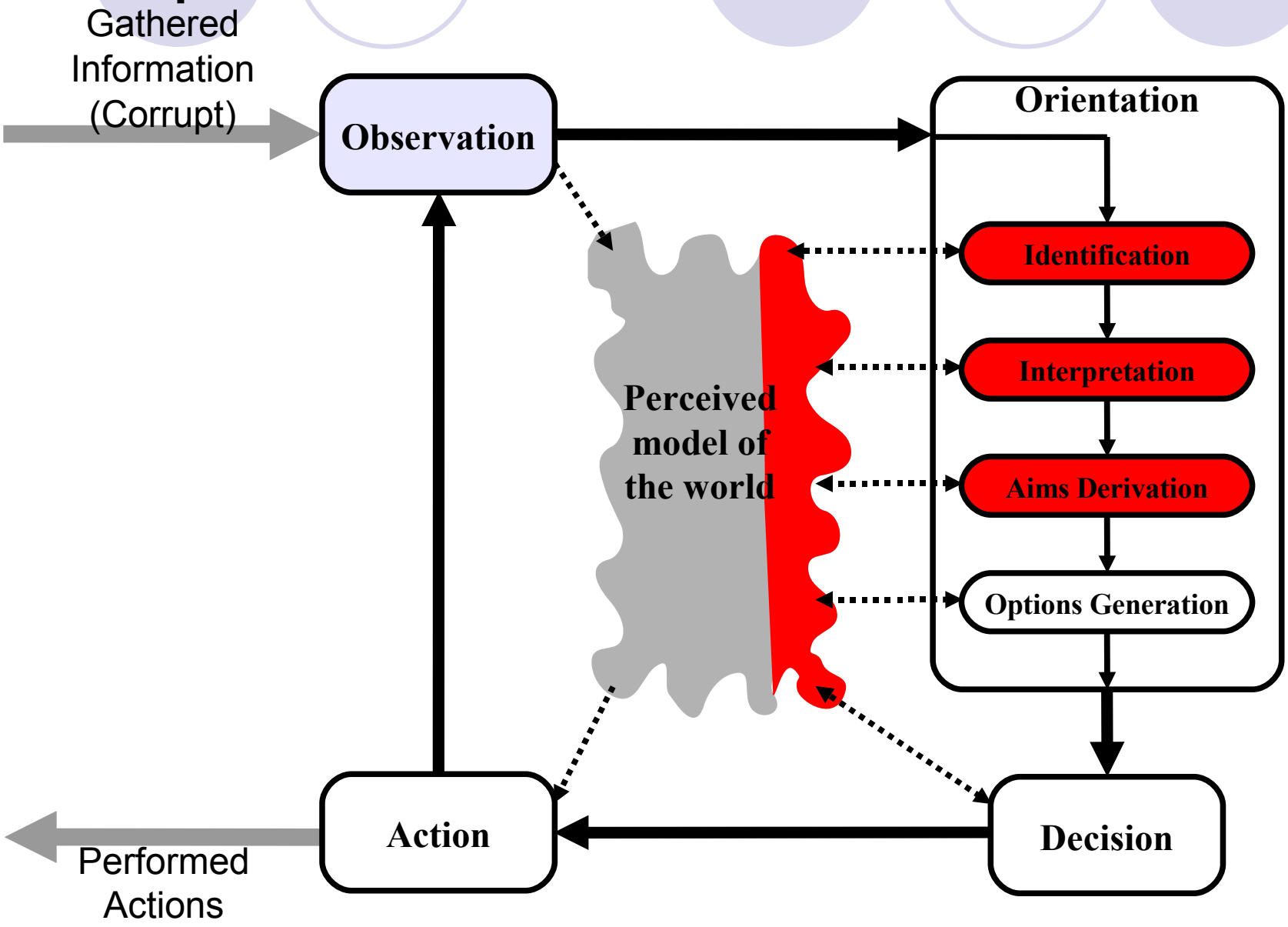

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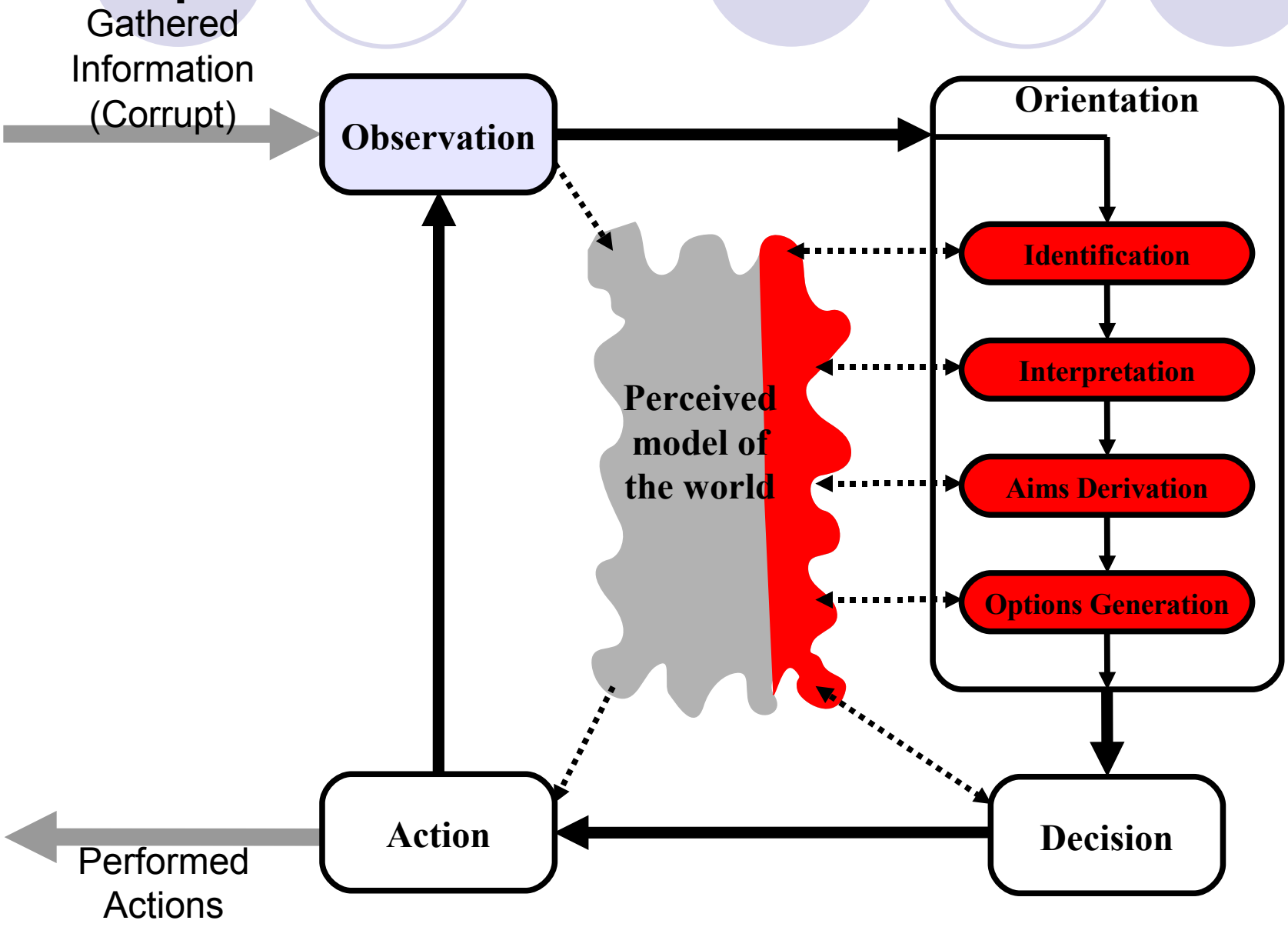

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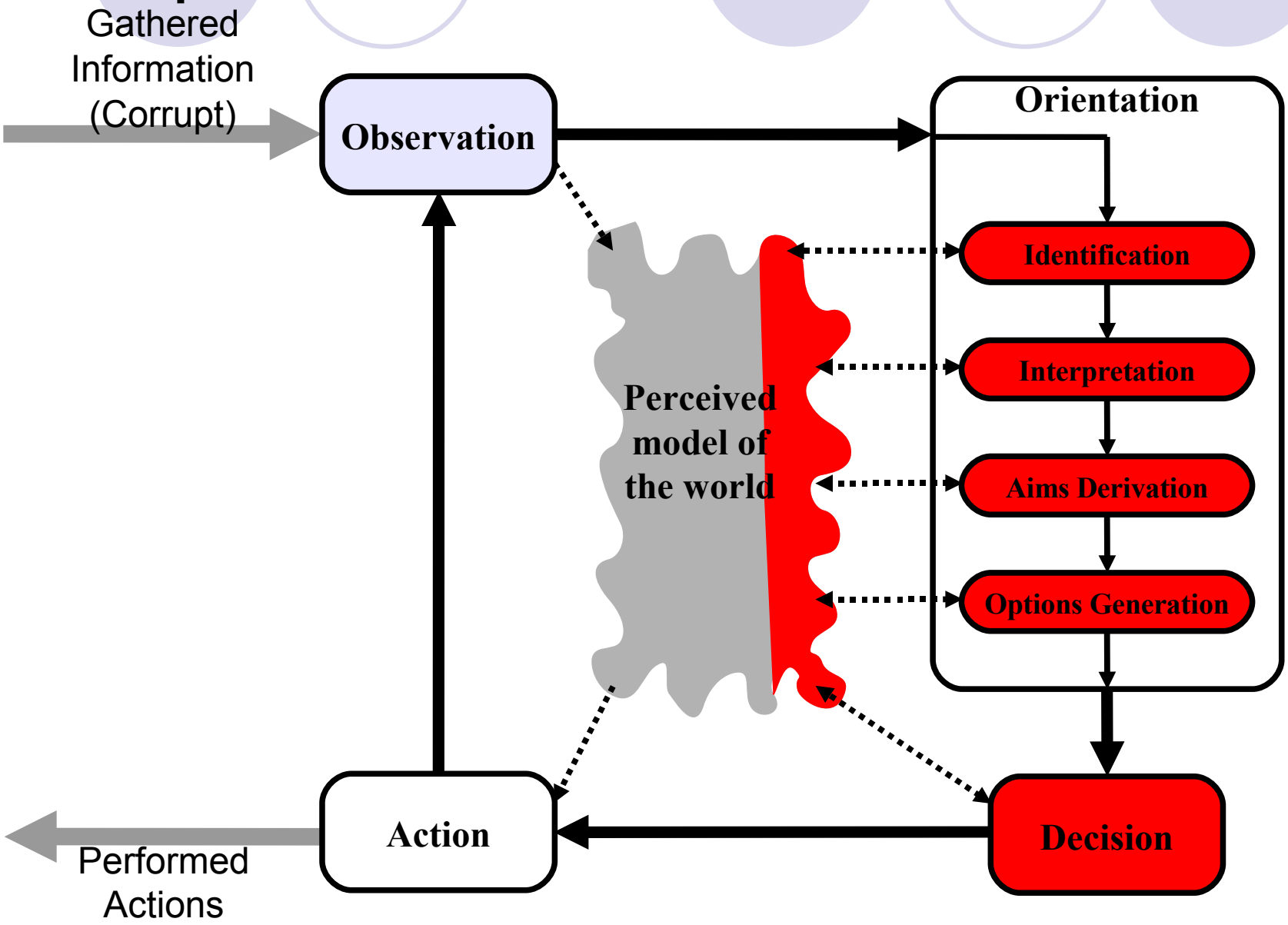

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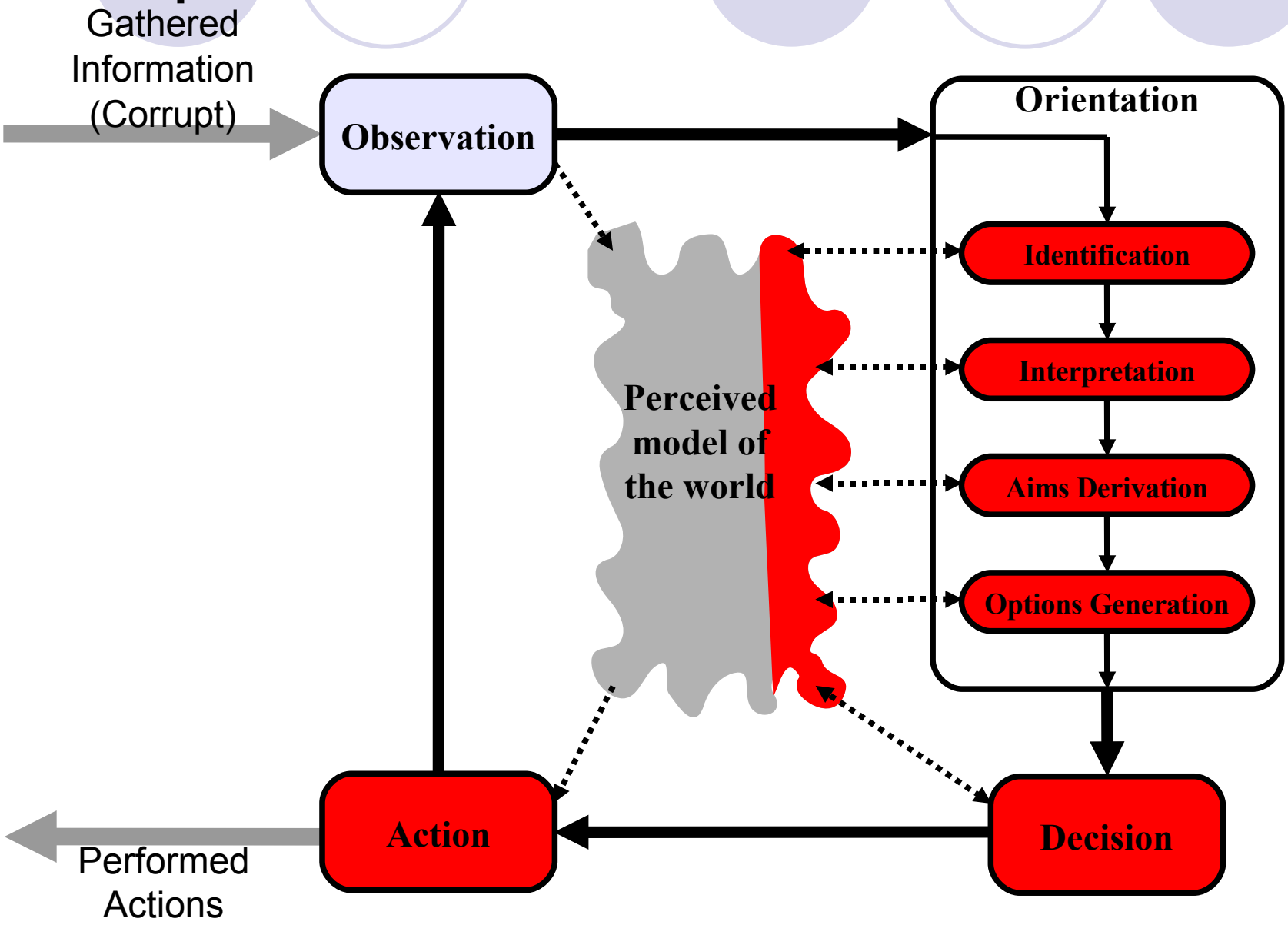
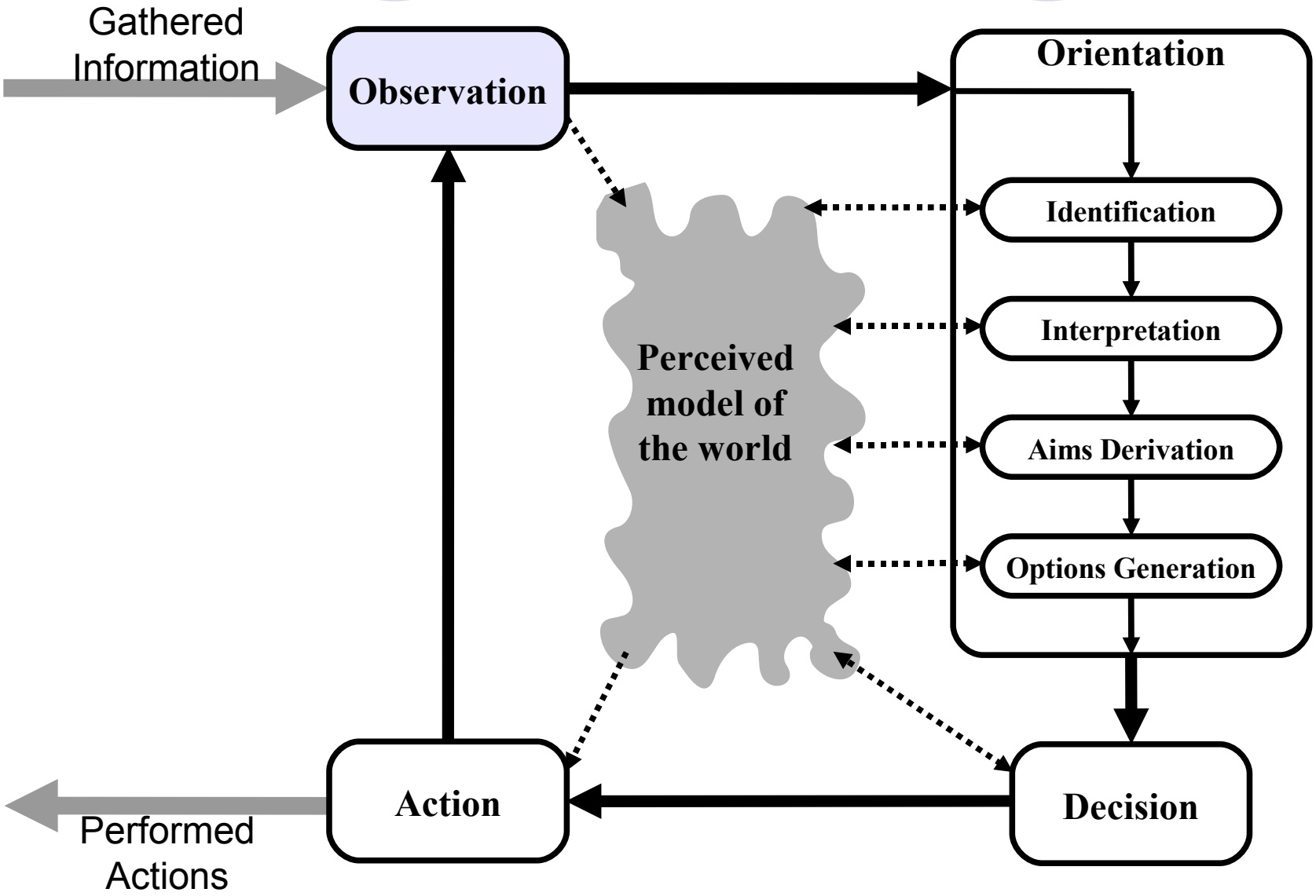


Self-deception

- The word Self-deception suggests that it is a reflexive deception
- Self-deception is defined as an intentional misinterpretation in order to support a desired but unsupportable belief (Szabados 1974)

Self-deception



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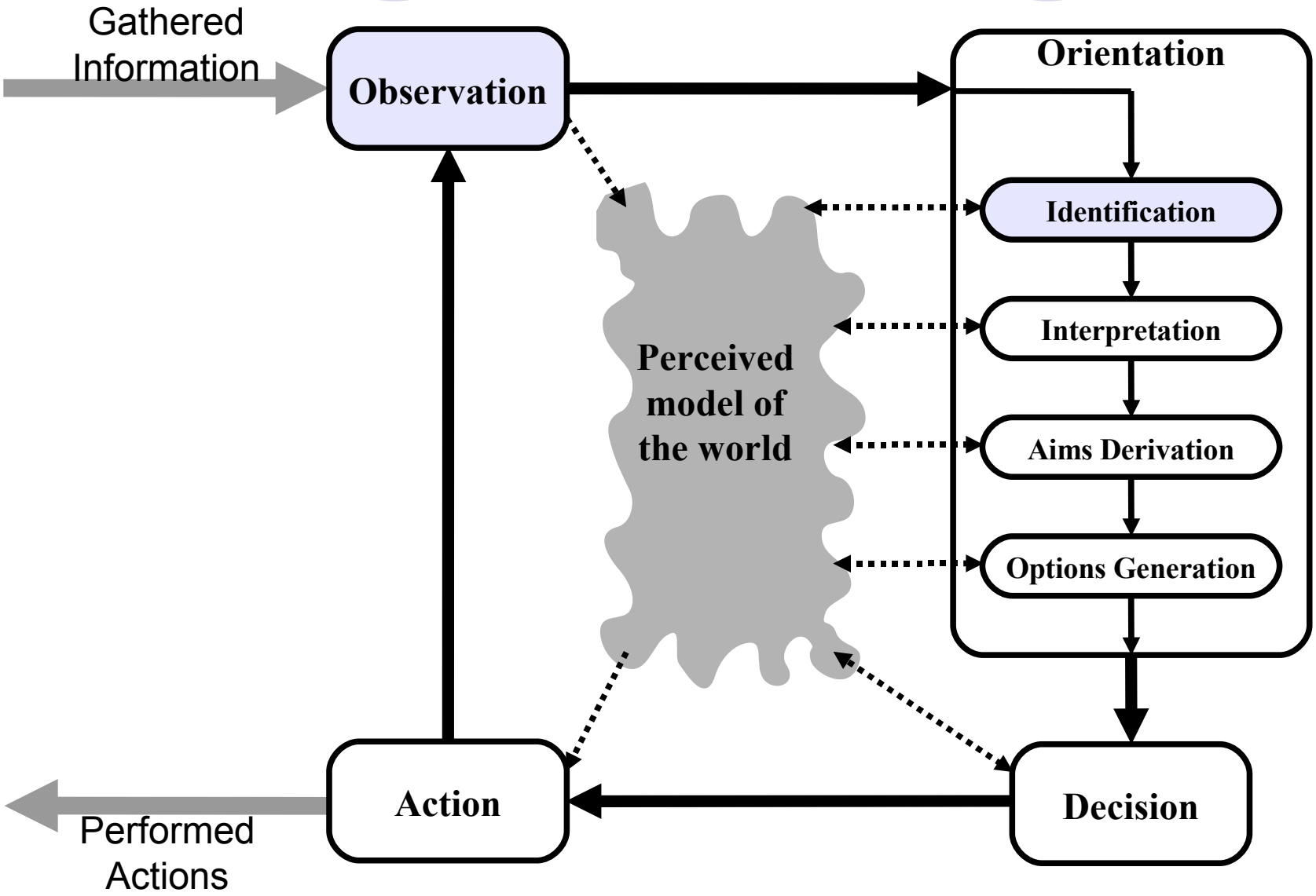

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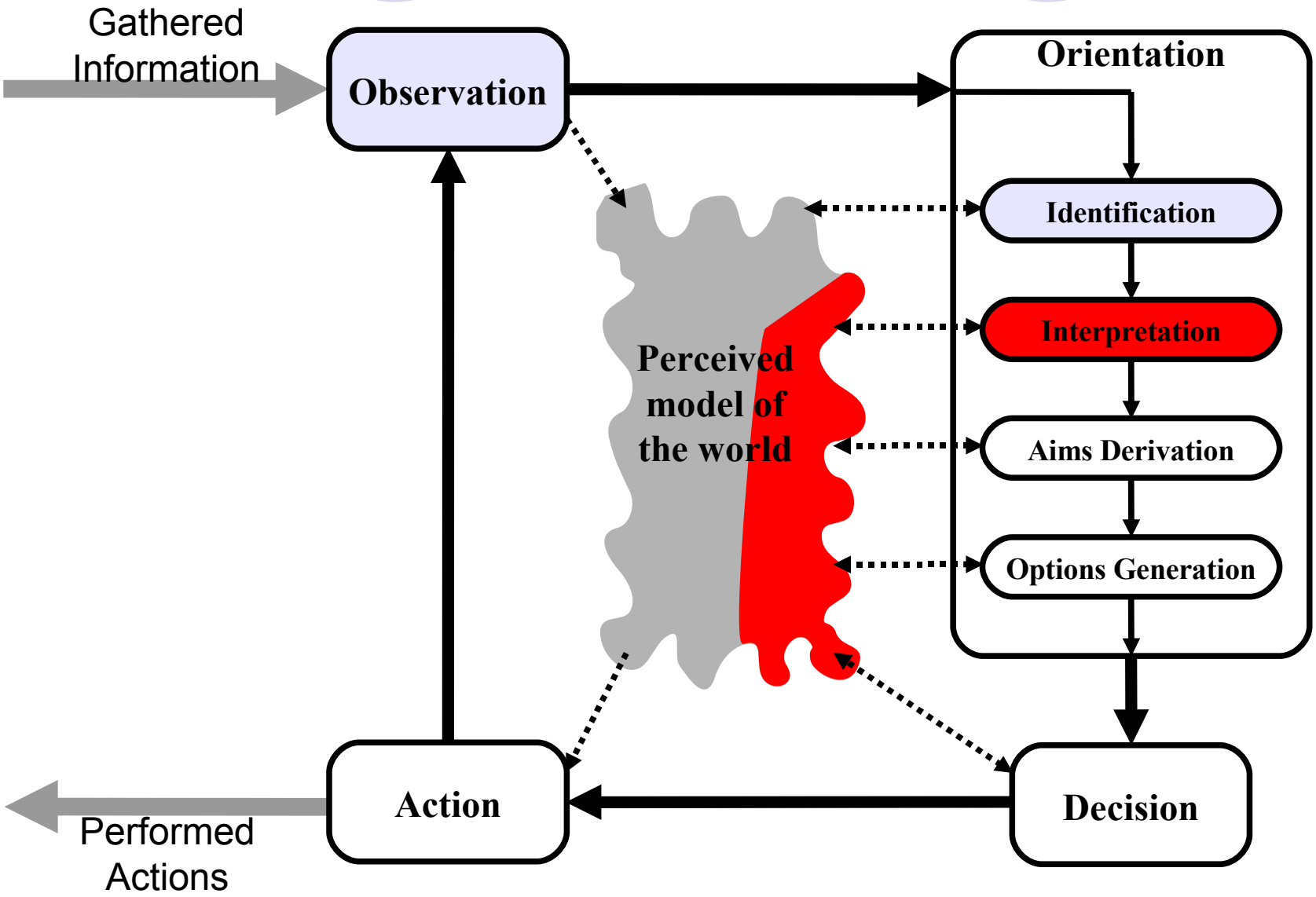

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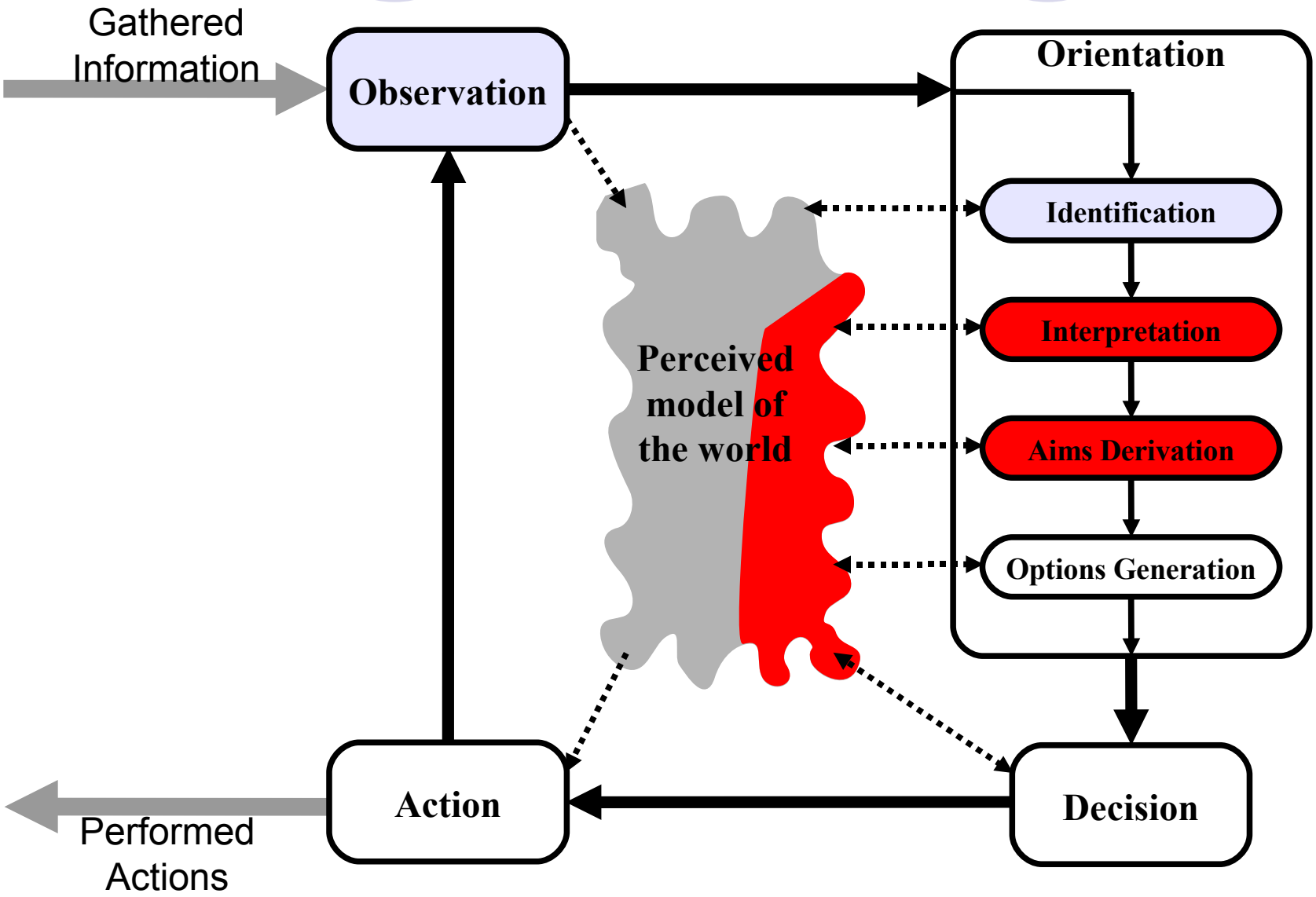

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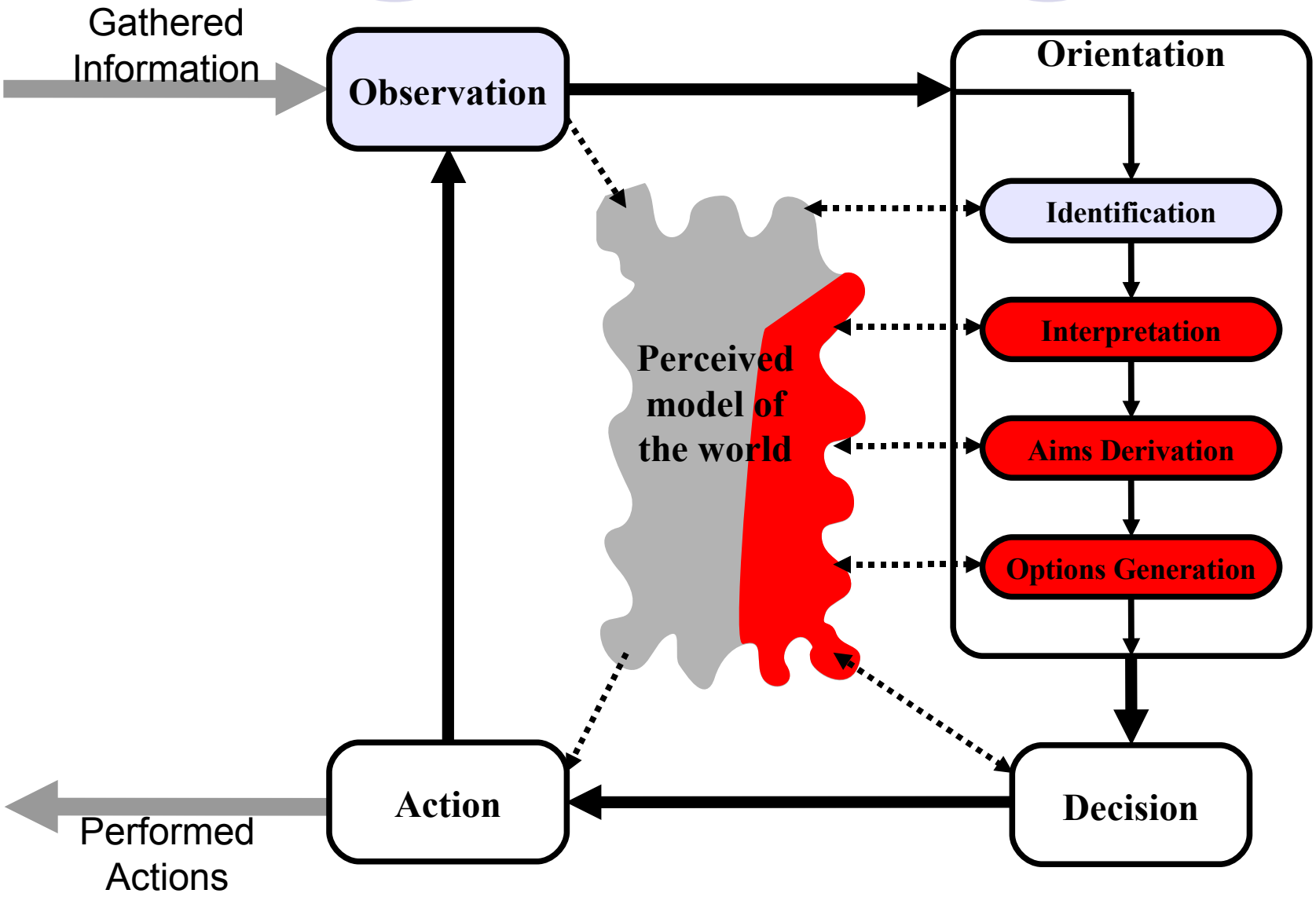

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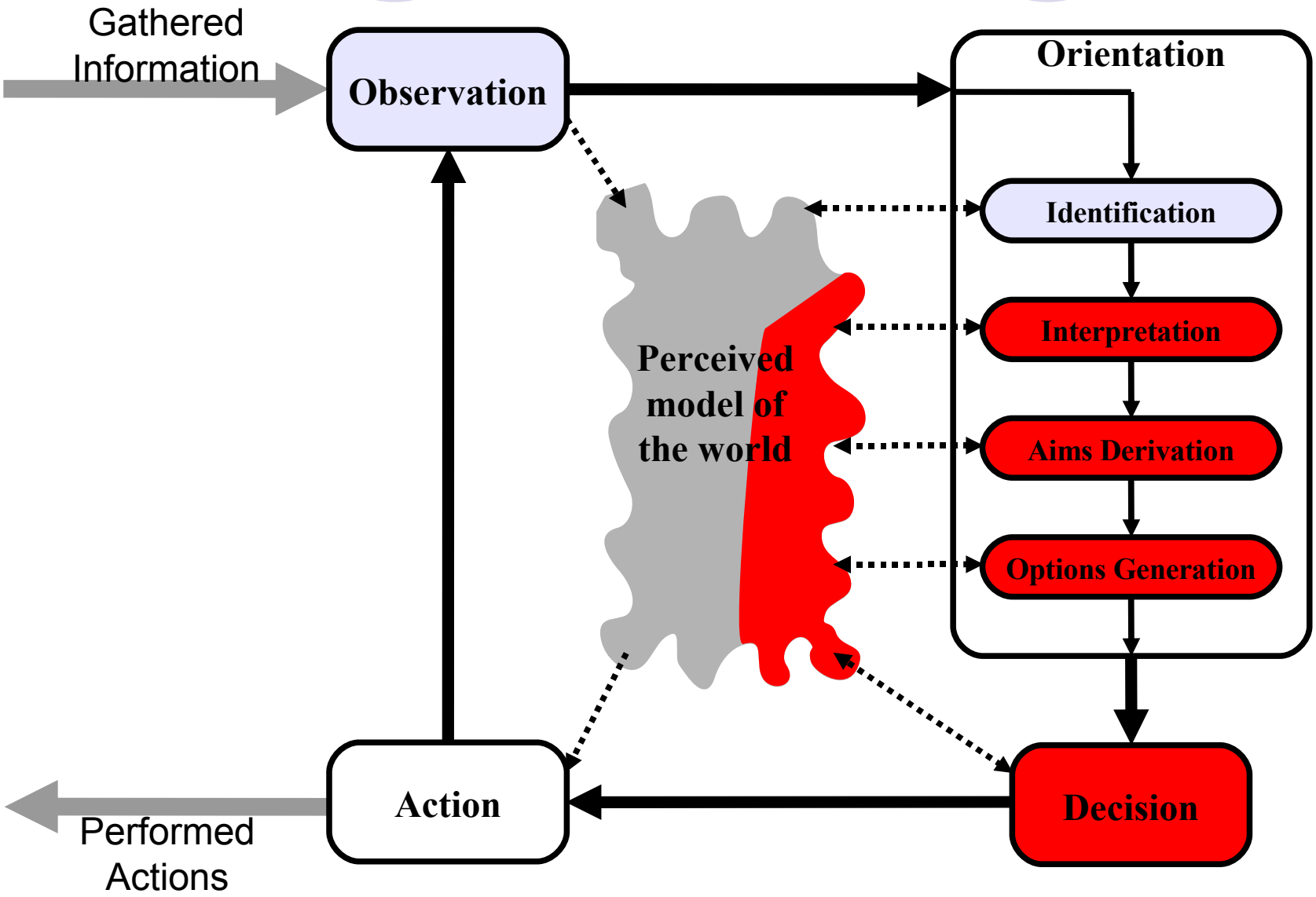

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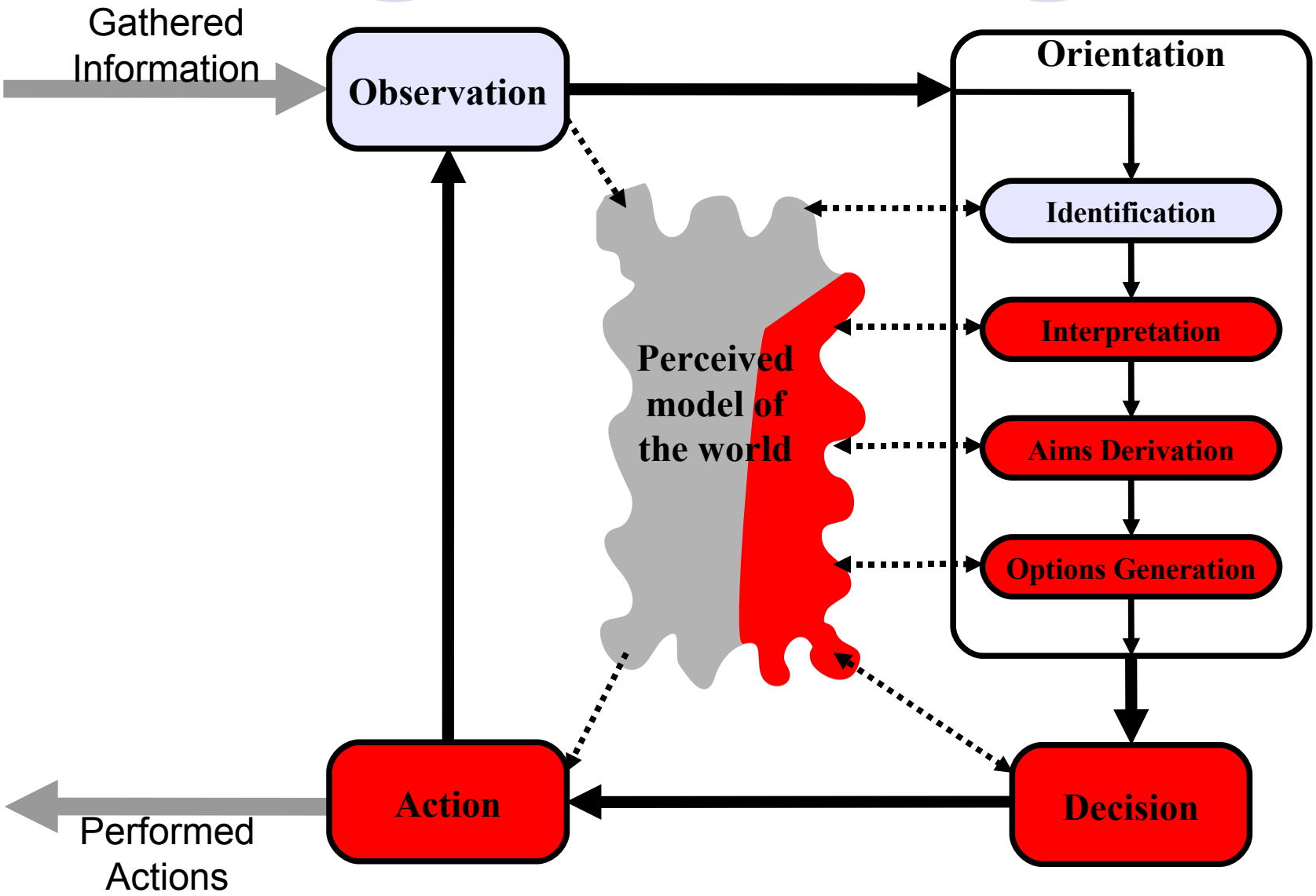


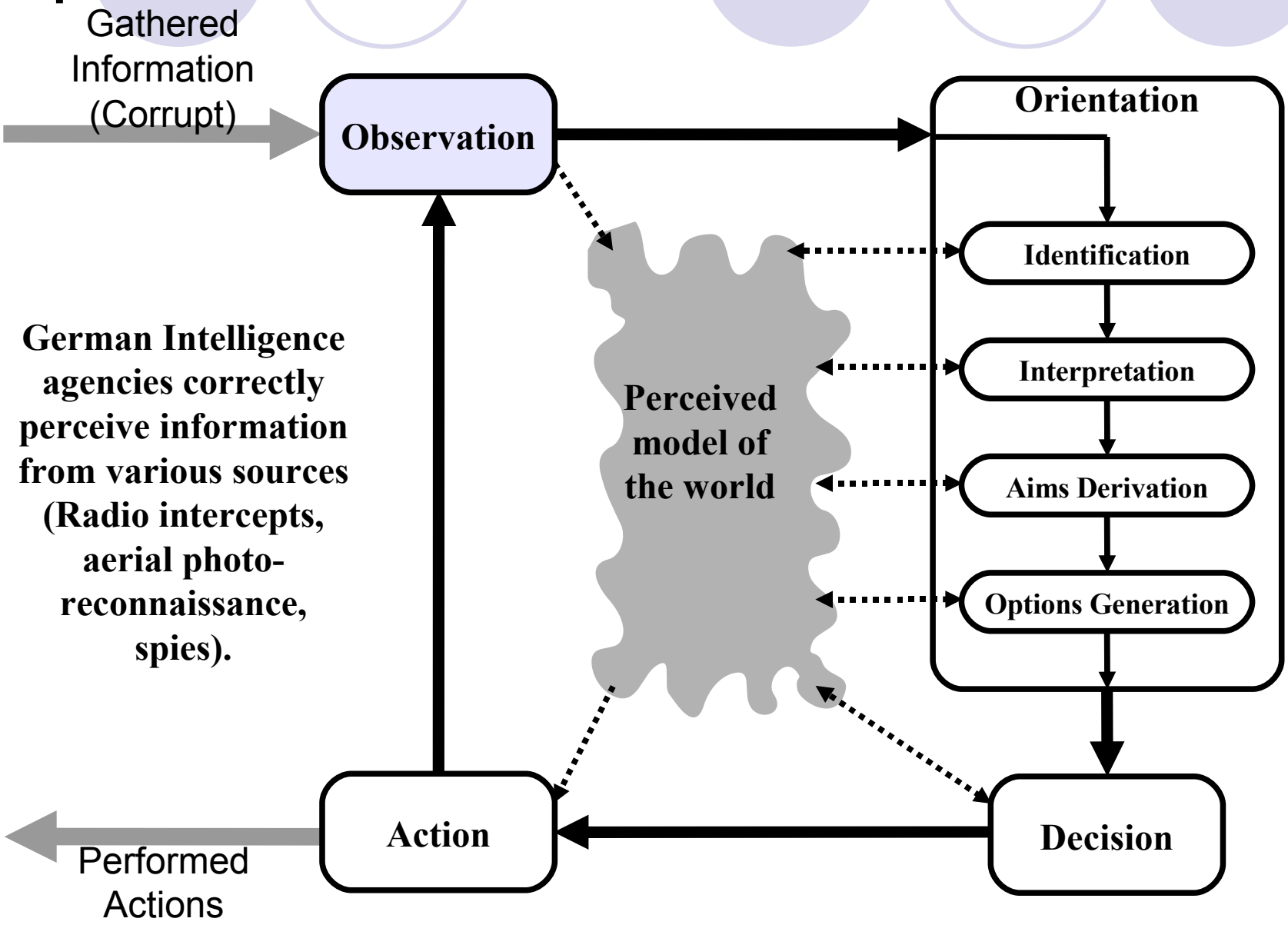
Case Studies

- Demonstrate where deception and self-deception cause errors in the Orientation step of the OODA loop
- Deception – Operation Fortitude
- Self-deception – Challenger Disaster

Operation Fortitude

- Deception plan for the D-Day landings during World War II
- Deceived the Germans as to the target of the invasion and the time of the invasion

Operation Fortitude



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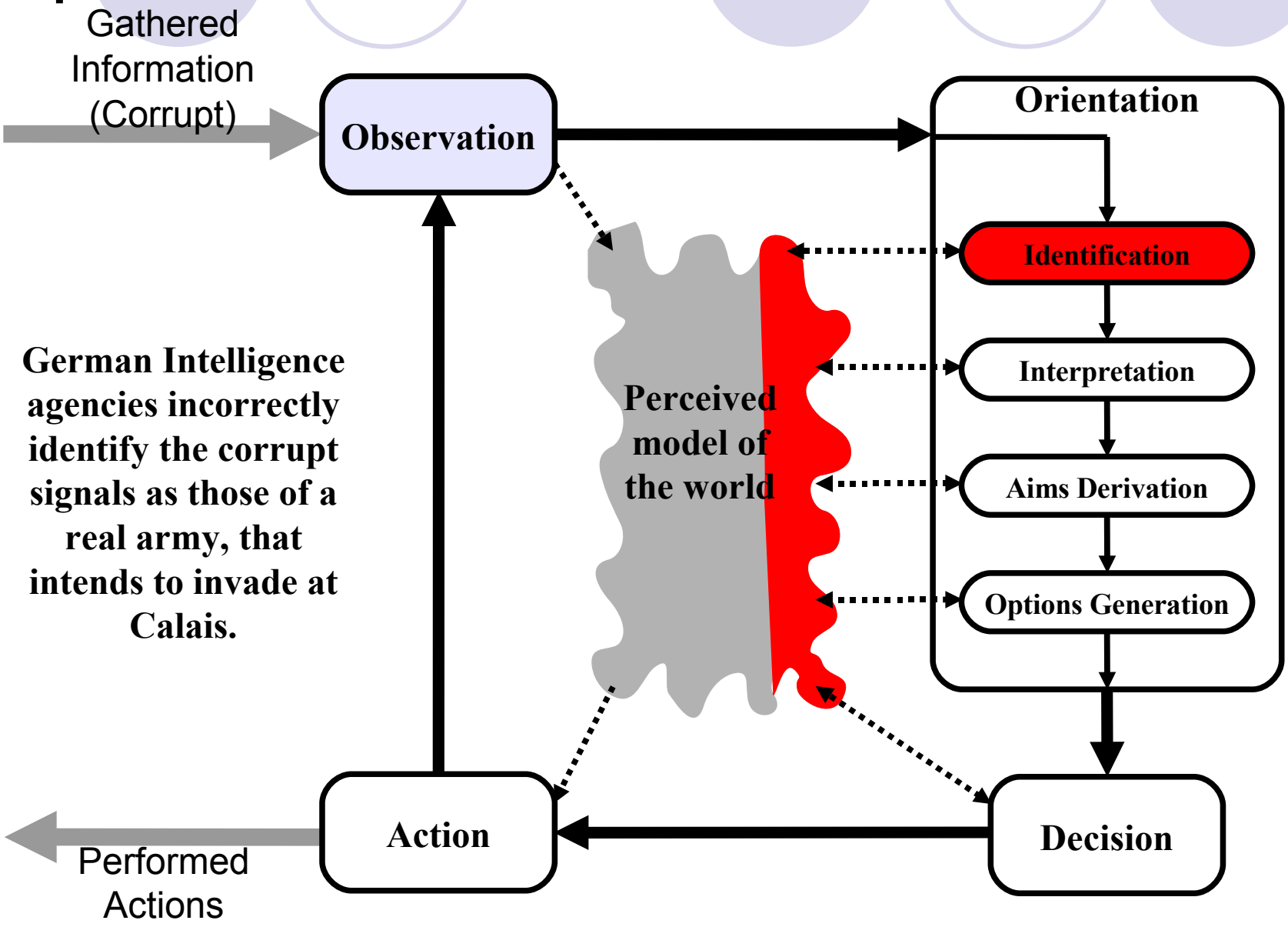

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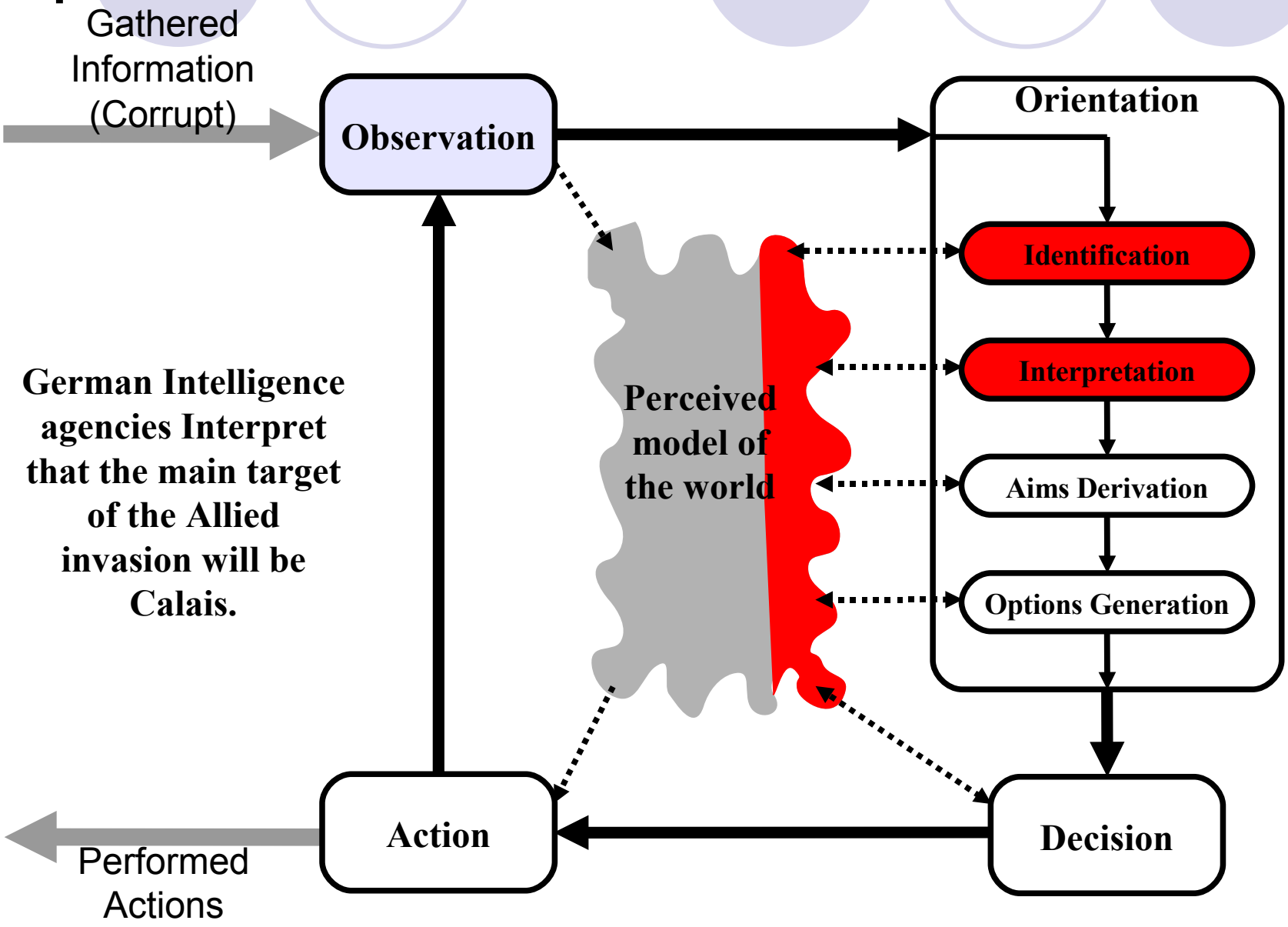

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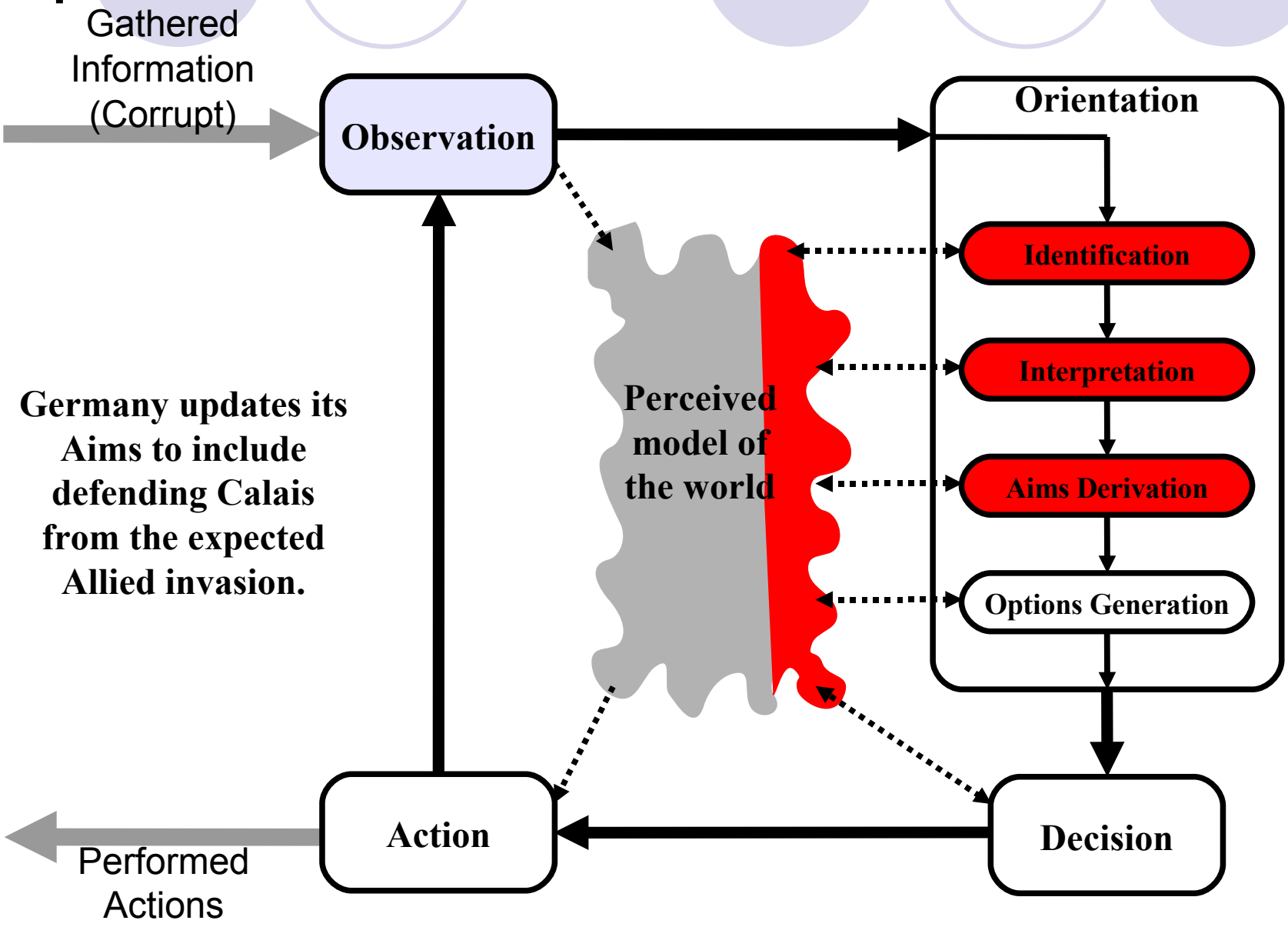

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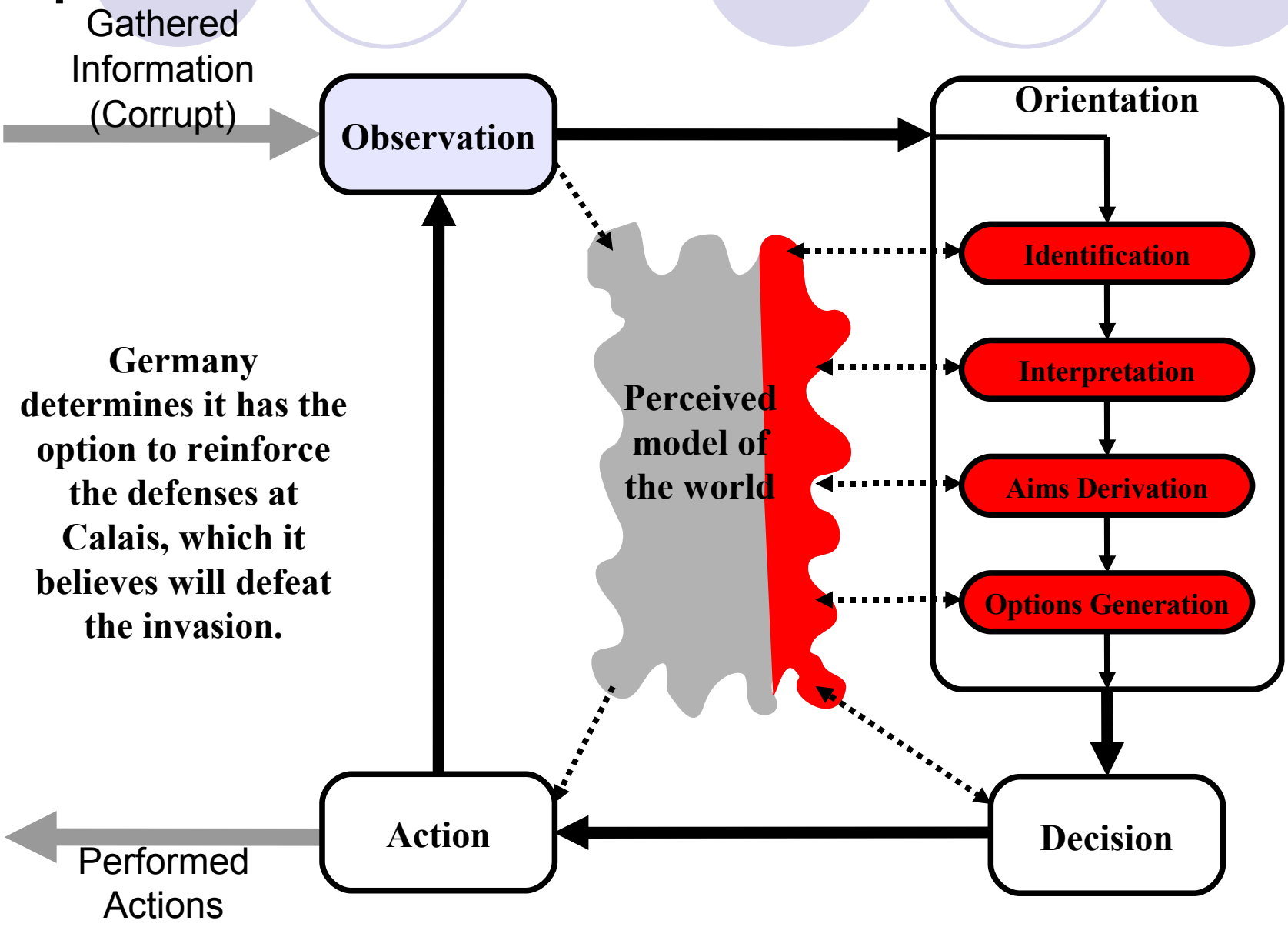

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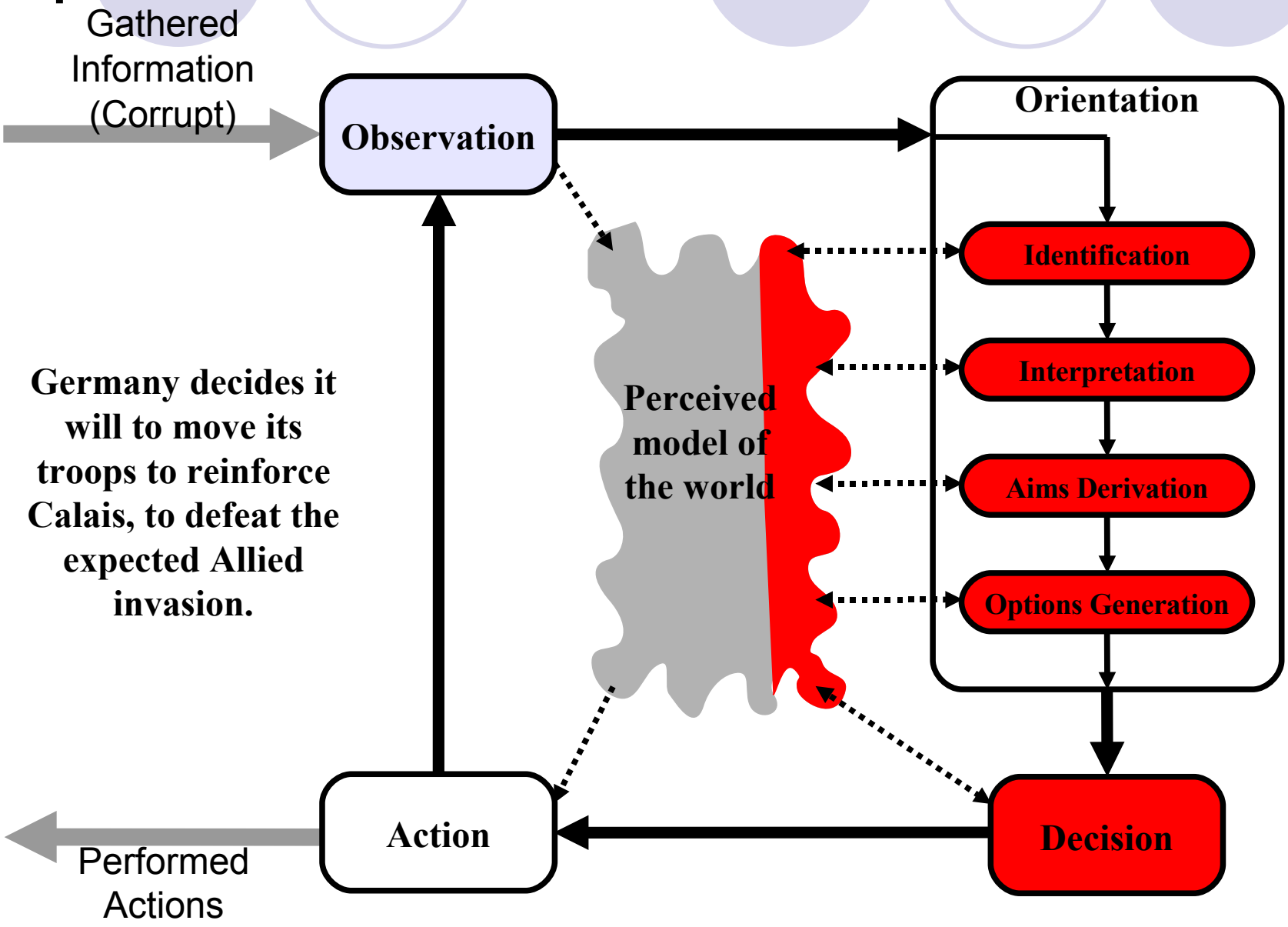

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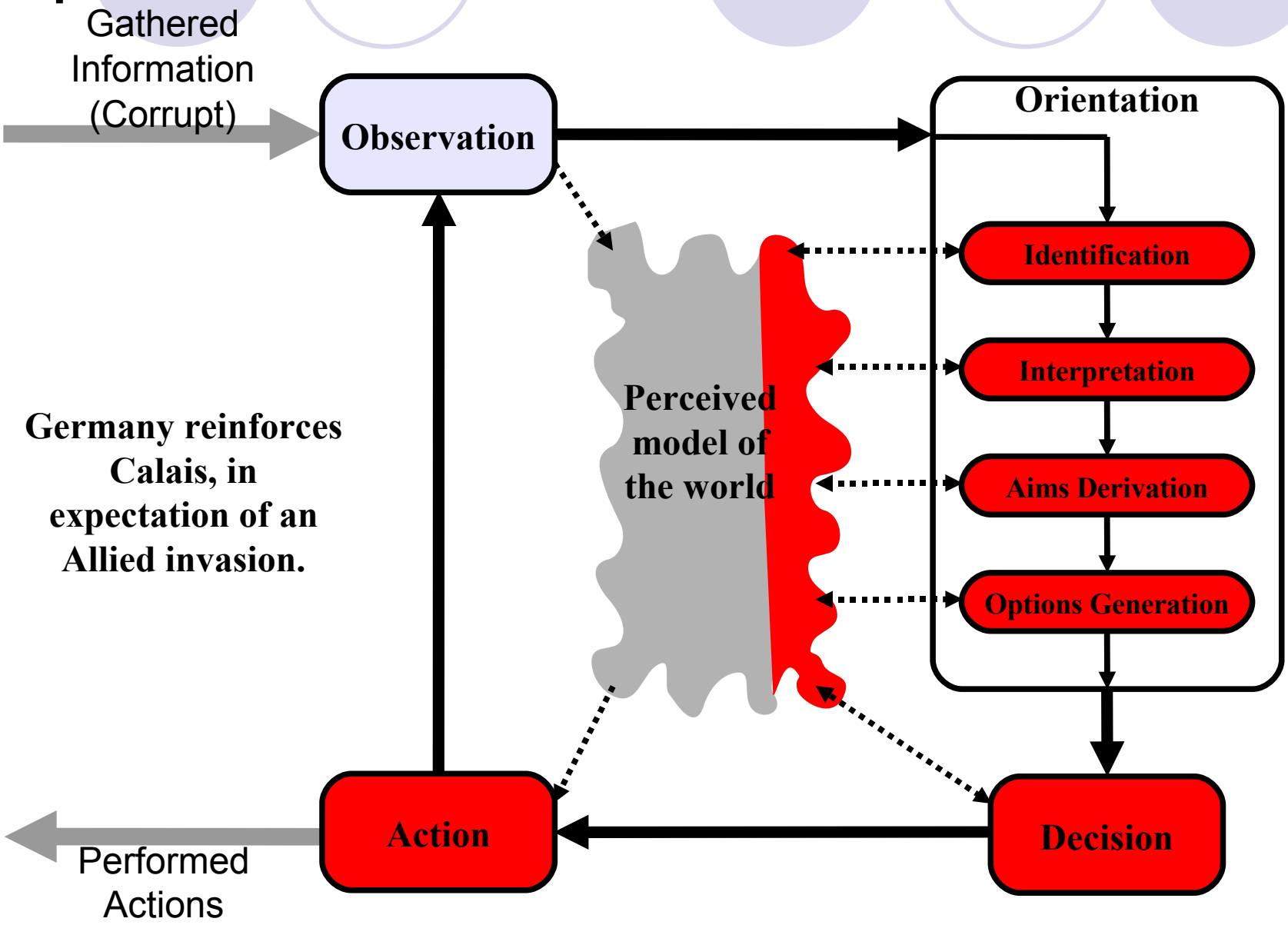
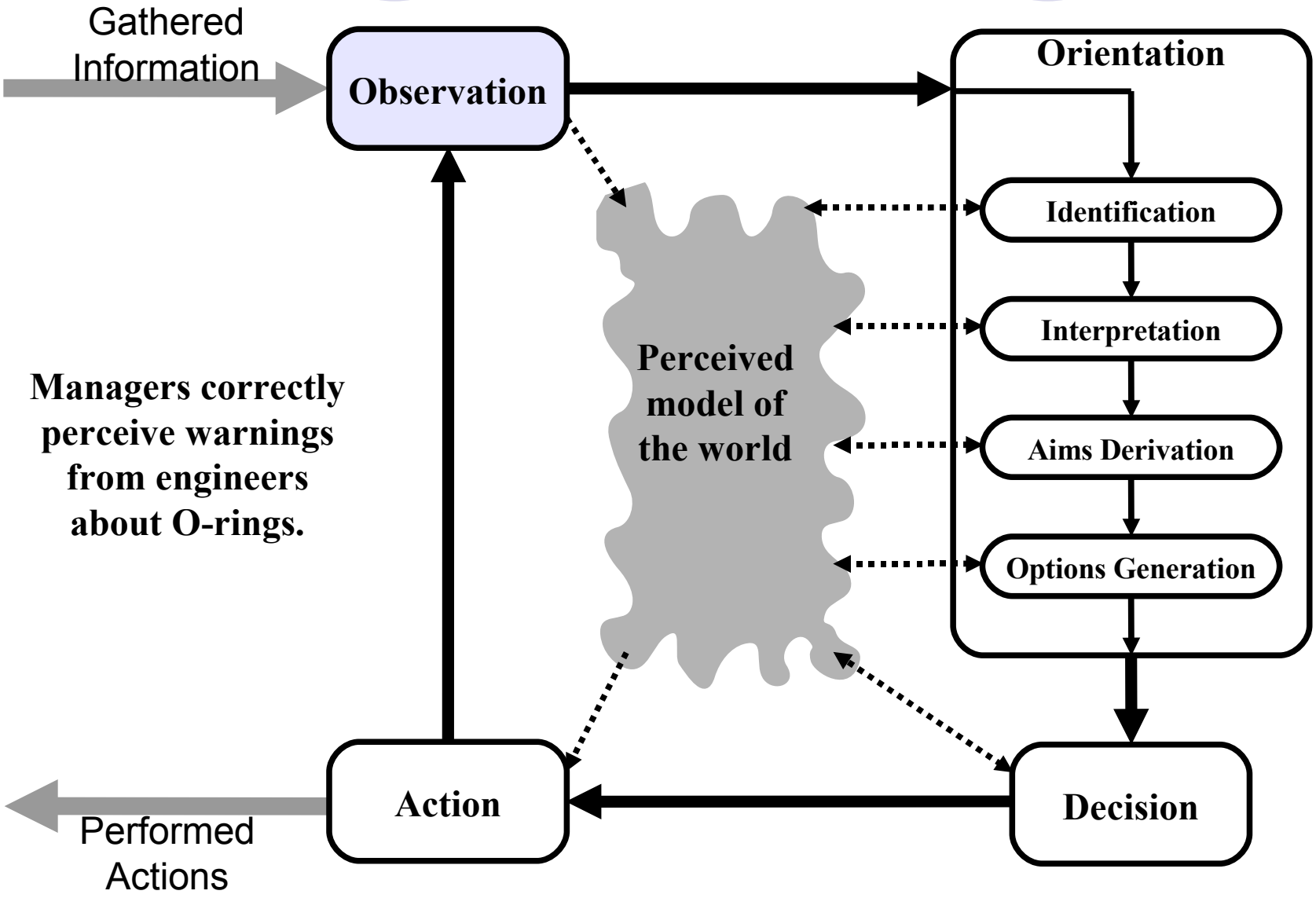


Challenger Disaster

- The space shuttle Challenger disintegrated shortly after takeoff due to an O-ring failure, caused by the low temperature at the time of the launch
- The self-deception in this disaster was performed by Morton Thiokol management
- They were warned that the O-rings were damaged more during low temperature launches, however they misinterpreted the damage as proof of a safety factor

Challenger Disaster



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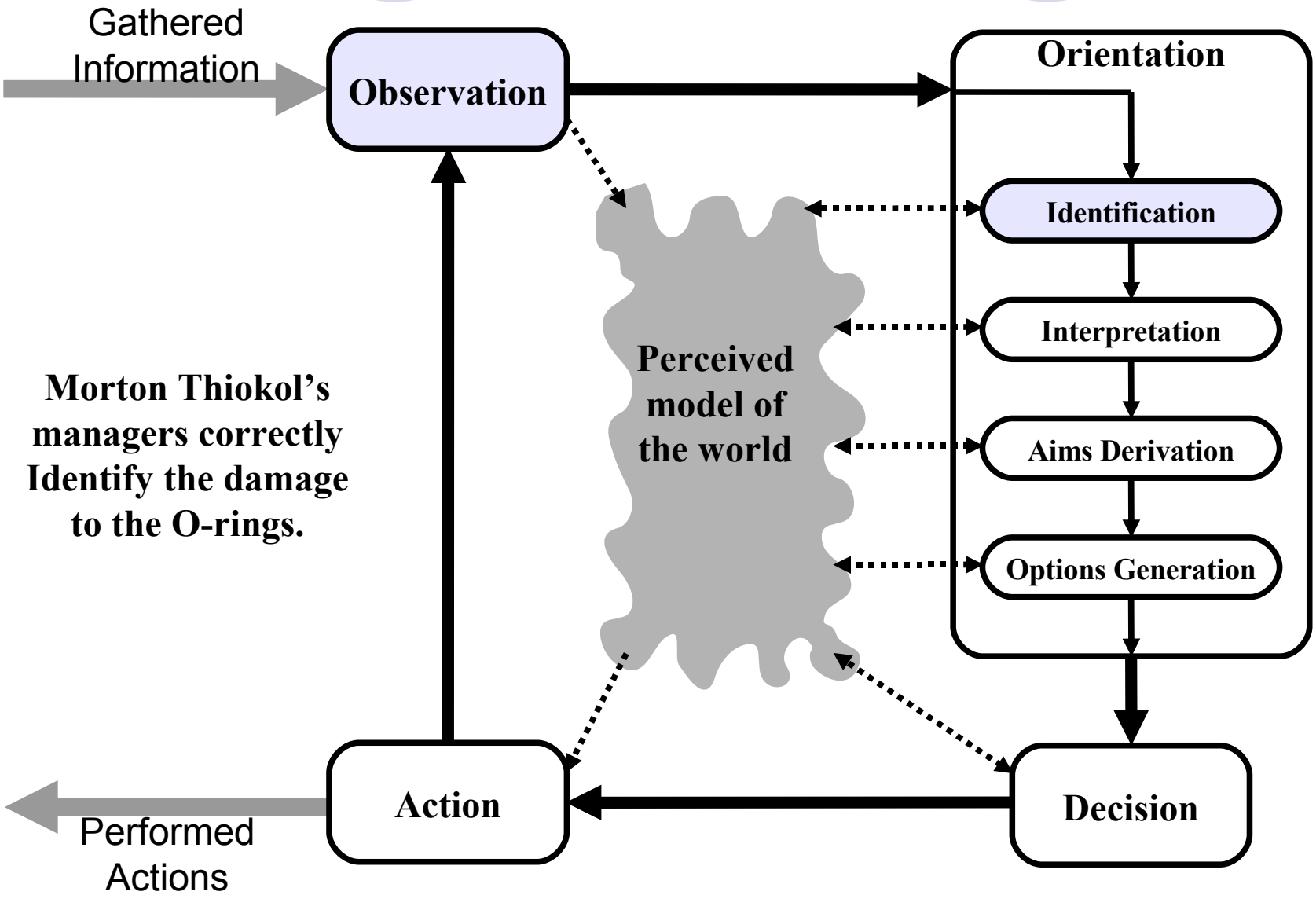

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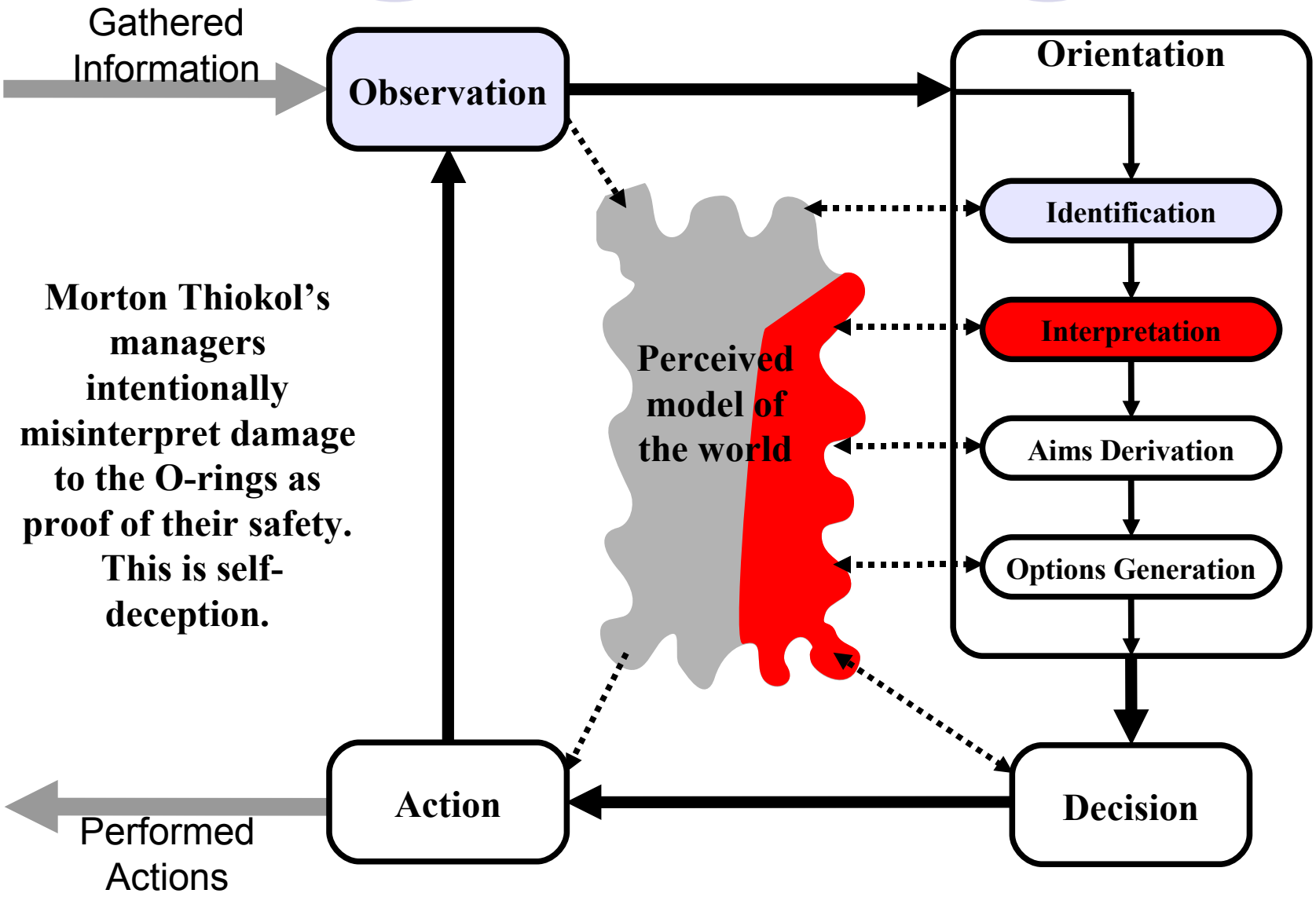

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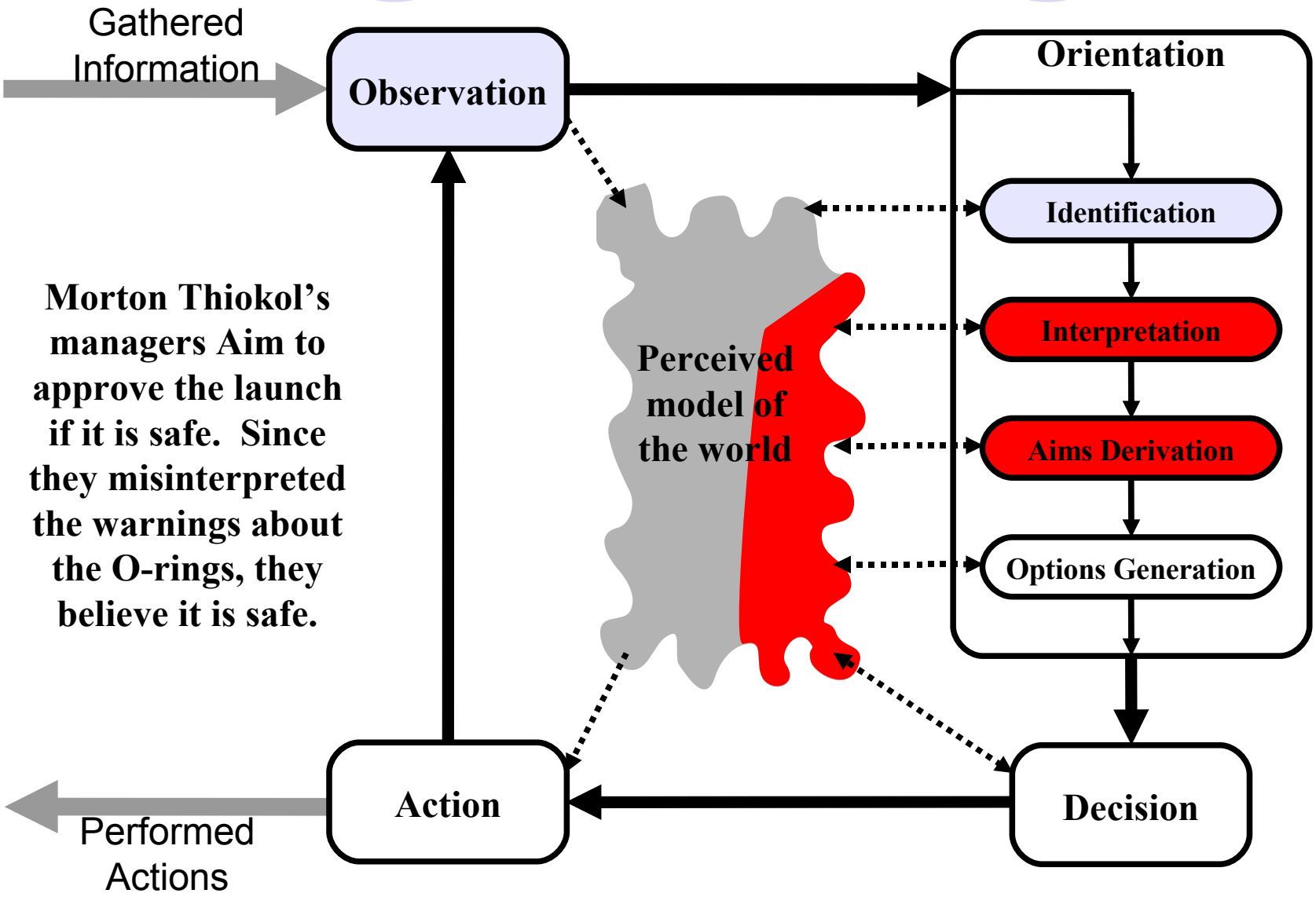

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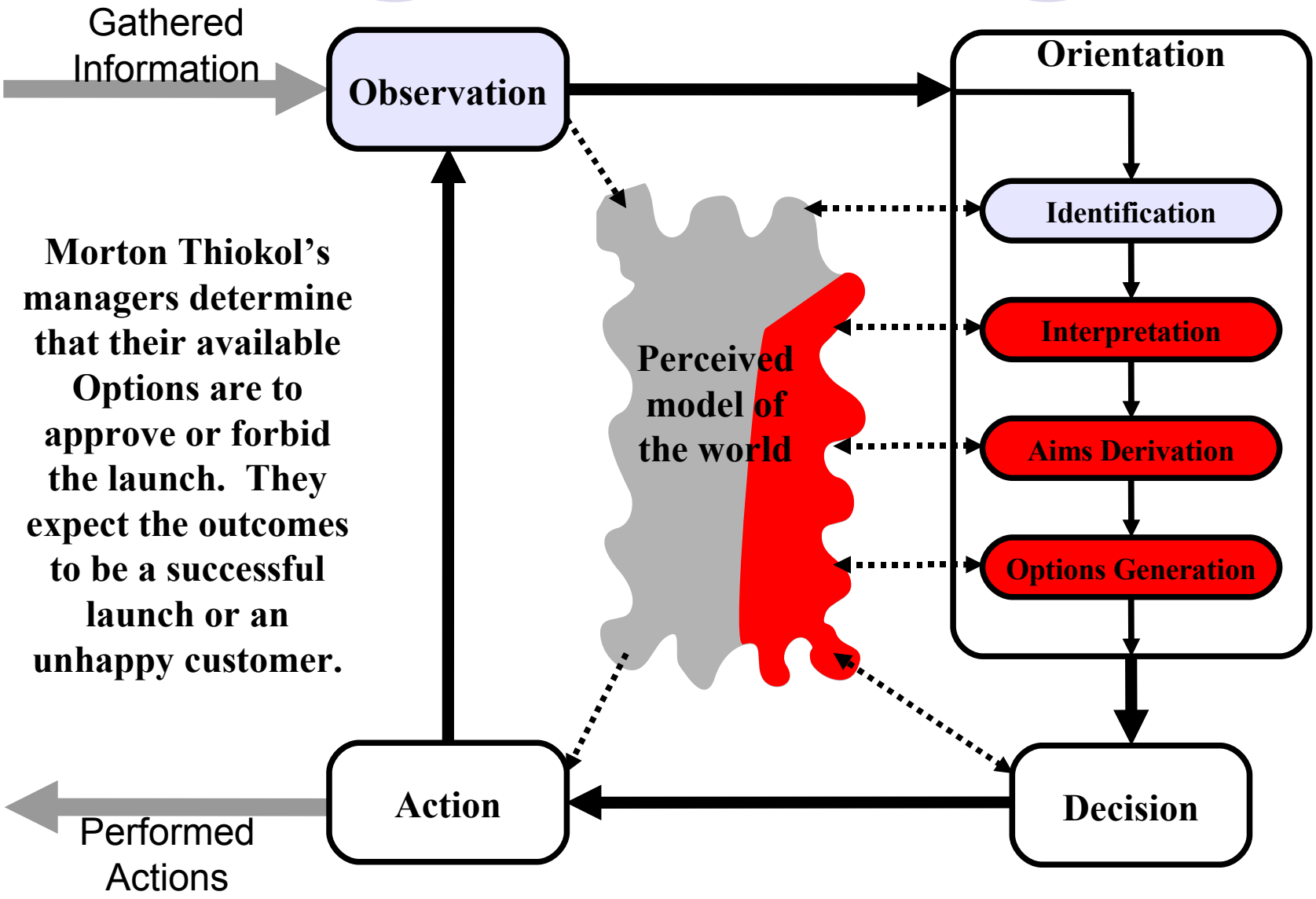

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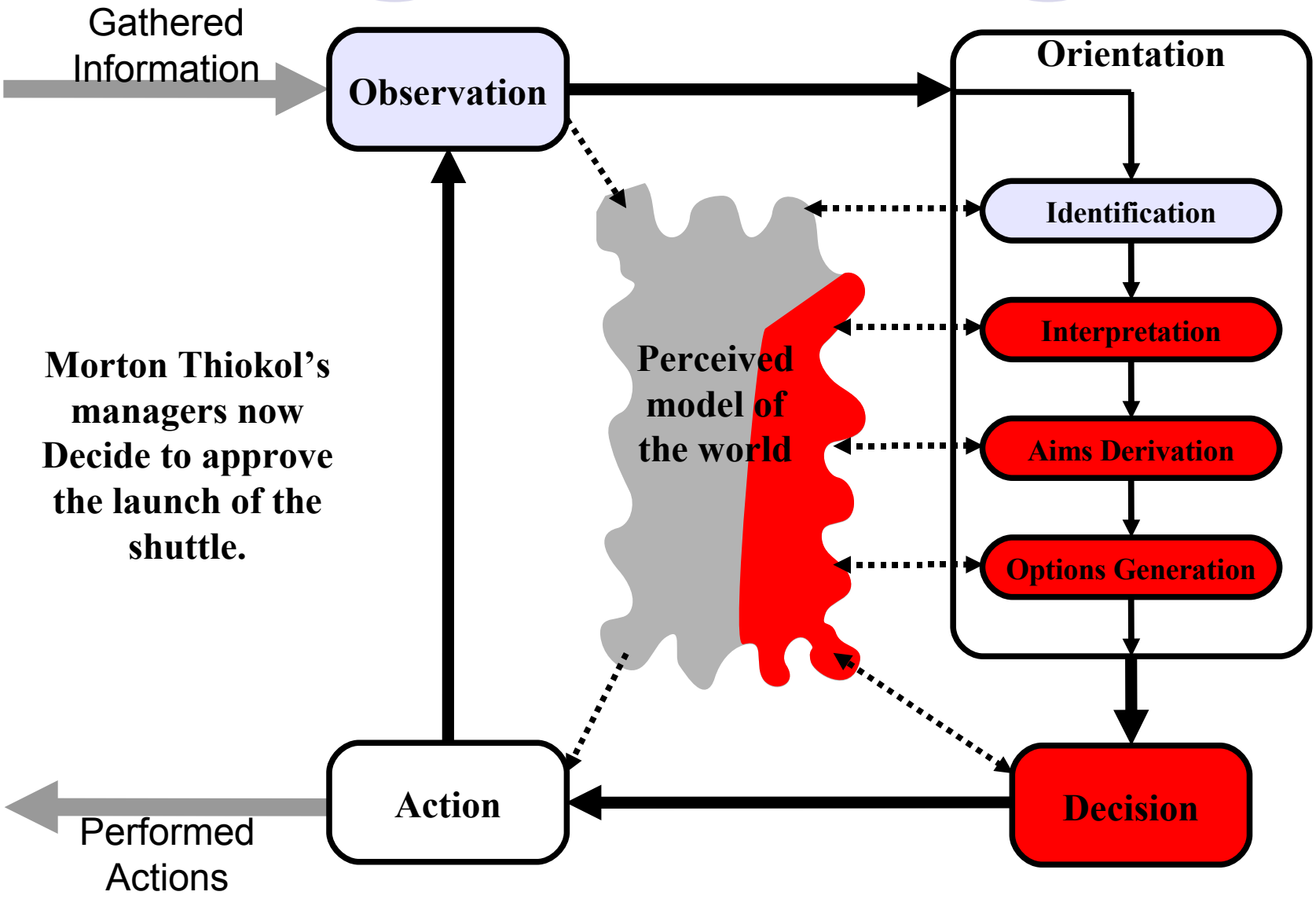

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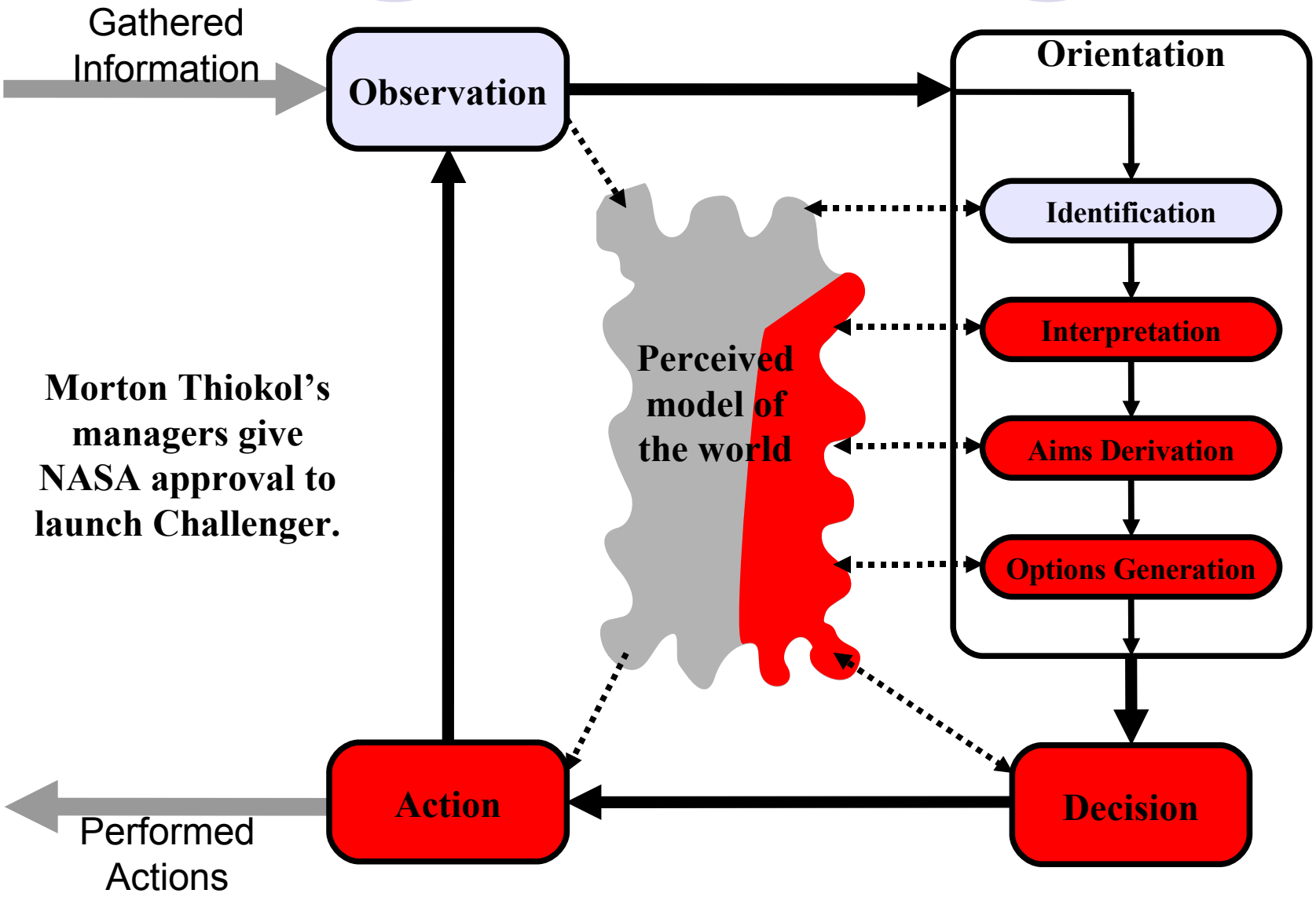

Conclusion

- Orientation step details the updating of the decision-maker's model of the world and as such is a target for IW attacks
- Described a model of the internal processes of the Orientation step

Questions?