



NESA Annual Safety Meeting2025

Aeronautical Decision-Making (ADM)

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Aeronautical Decision-Making

“...a systematic approach to the mental process used by pilots to consistently determine the best course of action in response to a given set of circumstances.”

Pilot's Handbook of Aeronautical Knowledge, p. 2-1







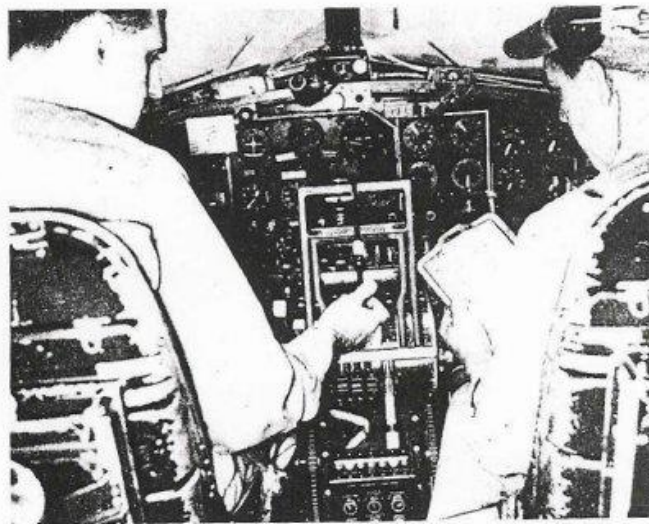




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Cockpit Checklist



Every B-17 has a checklist on the copilot's side of the cockpit. Individual sections of the cockpit checklist are described at length in the chapters that follow.

Bear this in mind: **It is absolutely essential that the cockpit checklist be used properly by pilot and copilot at all times.**

The number of procedures necessary for the safe and efficient operation of the B-17 are far too many for even the most experienced pilot to carry in his head. The best trained pilots are likely to forget things occasionally. **There is no place for forgetfulness in flying the B-17!** Your cockpit checklist is the only sure safeguard against it.

Proper use of the checklist requires a **definite procedure and active cooperation** between the pilot and copilot.

1. The copilot takes the checklist in his hand and, in a clear, loud voice, calls out each item.
2. The specific operation or check is then performed, either by pilot or copilot (as specified by the checklist), whereupon pilot or copilot repeats aloud the item as "Checked!"

For example:

Copilot: "Gear switch . . ."

The pilot places his hand on the landing gear switch and ascertains that it is in the neutral position.

Pilot: "Gear switch neutral."

Copilot: "Intercoolers . . ."

The intercooler controls are on a separate stand to the right of the copilot. Therefore, the copilot places his hand on the controls and makes sure that they are in the "COLD" position.

Copilot: "Intercoolers cold."

There are some duties which must be performed by both the pilot and copilot, as in the case of checking the fire guard and calling "Clear!" before starting engines.

The copilot, with checklist in hand, has the responsibility of seeing that no item on it is left unchecked inadvertently. He must keep his finger on each item as it is called aloud, and not move on to the next item until he has personally seen the pilot check the first item or checked it himself.

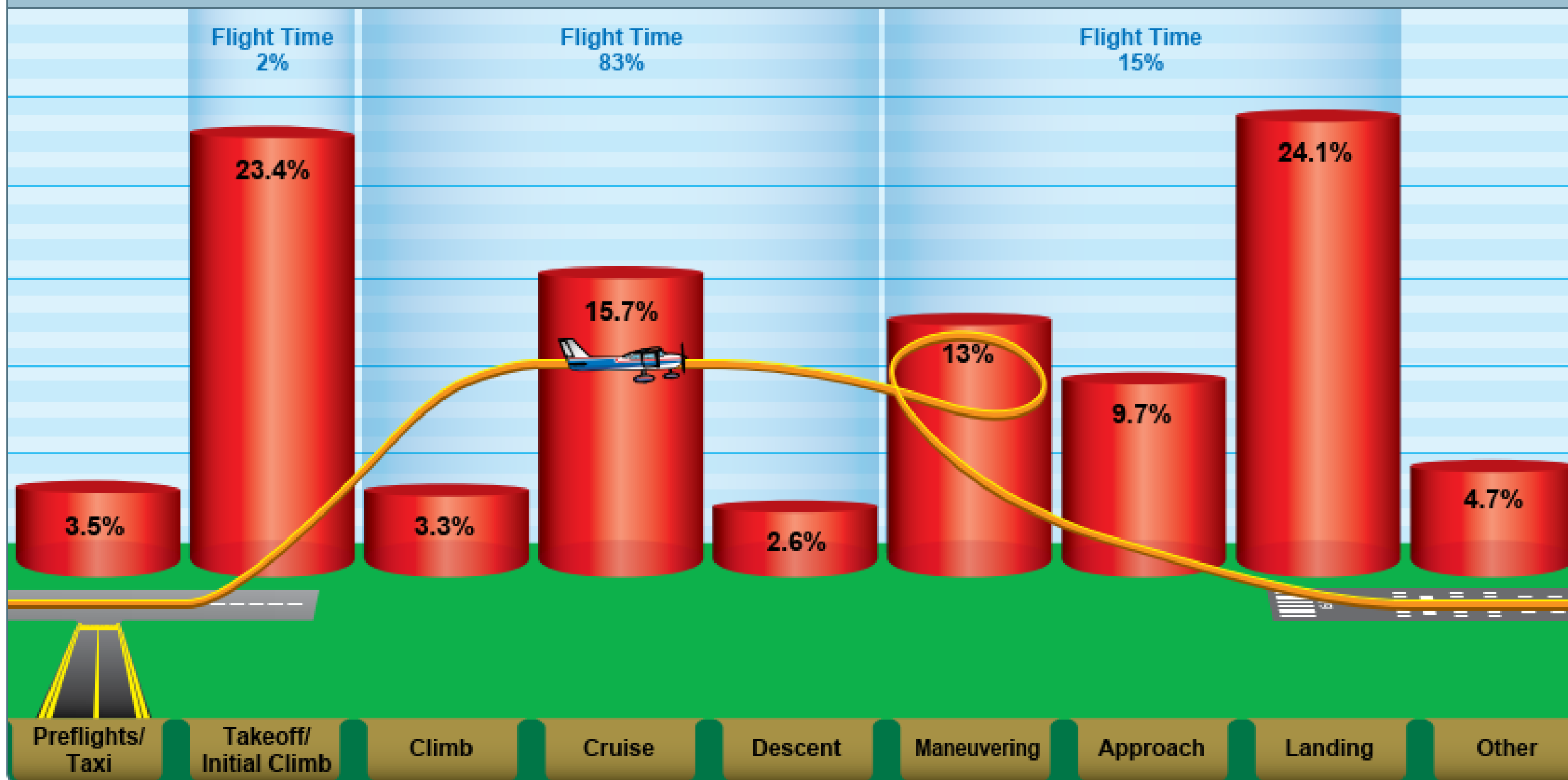
Practical necessity demands that a few portions of the checklist (such as After Takeoff, After Landing, Running Takeoff, Go-Around, Approach, Before Takeoff) be memorized by pilot and copilot, since both will be too busy during these operations to refer to the printed checklist. In such cases, the checklist is called aloud from memory; but both pilot and copilot have the same responsibility to see that the checks and double-checks are made.

Every B-17 has a checklist on the left side of the cockpit. Individual sections of the cockpit checklist are described at length in the chapters that follow.

Bear this in mind: It is absolutely essential that the cockpit checklist be used properly by pilot and copilot at all times.

The number of procedures necessary for the safe and efficient operation of the B-17 are far too many for even the most experienced pilot to carry in his head. The best trained pilots are likely to forget things occasionally. There is no

Percentage of General Aviation Accidents



Glider Flight Handbook



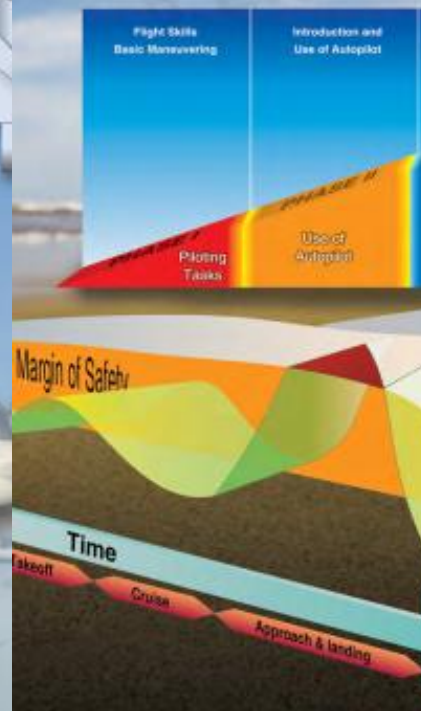
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Chapter 2

Aeronautical Decision-Making

Introduction

Aeronautical decision-making (ADM) is a unique environment—aviation is a high-stakes environment. It is what a pilot uses to determine the best course of action in a given set of circumstances. It is what a pilot uses to make the latest information he or she has.



U.S. Department of
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Subject: AERONAUTICAL DECISION-MAKING

1. PURPOSE. This Advisory Circular provides introductory material, information, and reference material in this AC provides an approach to risk assessment and management in aviation, illustrates attitudes can influence decision making in the cockpit. This AC also provides techniques and skills in conjunction with conventional flight instruction. This AC is not intended to replace the knowledge contained in the reference materials listed in paragraph 1.2, but rather to support them and to serve as a reference for further study.

2. APPLICATION. The material in this AC is applicable to pilots of airplanes or helicopters under Federal Regulations (FAR) Parts 61, 91, 135, and 141.

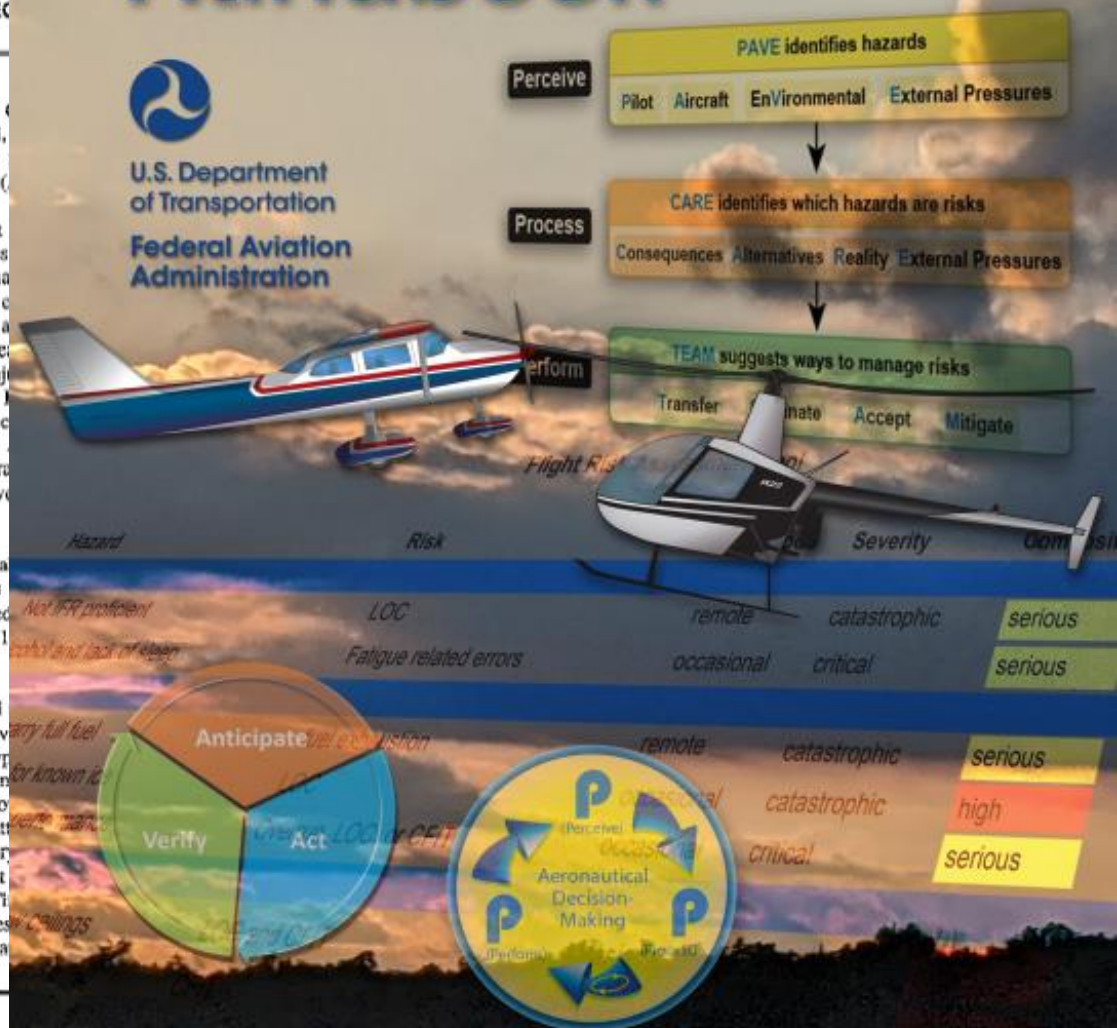
3. FOCUS. This AC is designed to address risks associated with aviation activities. Underlying behavioral causes of type errors and the effects of stress on decision-making are emphasized. These materials provide for an individual to develop an "Attitude Inventory" through a self-assessment inventory, detailed explanations of preflight stress management techniques. This is that persons exposed to these techniques will develop a positive attitude.

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Risk Management Handbook



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Aeronautical Decision-Making

Risk Management
Factors

Decision-Making
Systems

Risk Management





I'M SAFE CHECKLIST

Illness—Do I have any symptoms?

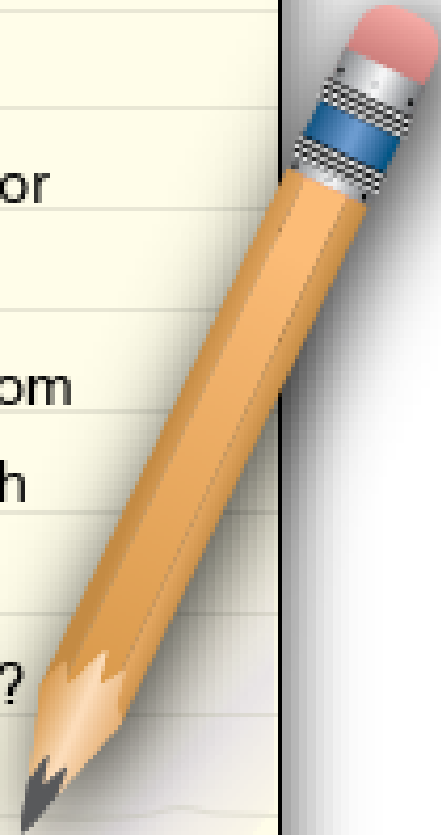
Medication—Have I been taking prescription or over-the-counter drugs?

Stress—Am I under psychological pressure from the job? Worried about financial matters, health problems, or family discord?

Alcohol—Have I been drinking within 8 hours?
Within 24 hours?

Fatigue—Am I tired and not adequately rested?

Emotion—Am I emotionally upset?



PAVE

PAVE identifies hazards

Pilot

Aircraft

EnVironmental

External Pressures

EXTERNAL PRESSURES

Trip Planning

Allowance for delays..... minutes

Diverson or Cancellation Alternate Plans

Notification of person(s) you are meeting

Passengers briefed on diversion or cancellation plans and alternatives

Modification or cancellation of car rental, restaurant, or hotel reservations

Arrangement of alternative transportation (airline, car, etc.)

Personal Equipment

Credit card and telephone numbers available for alternate plans

Appropriate clothing or personal needs (eye wear, medication...) in the event of an unexpected stay

▶ _____



Importance of Trip

The more important the trip, the more tendency there is to compromise your personal minimums, and the more important it becomes to have alternate plans.

Your Personal Minimums Checklist—

- An easy-to-use, personal tool, tailored to your level of skill, knowledge, and ability
- Helps you control and manage risk by identifying even subtle risk factors
- Lets you fly with less stress and less risk

Practice “Conservatism Without Guilt”

Each item provides you with either a space to complete a personal minimum or a checklist item to think about. Spend some quiet time completing each blank and consider other items that apply to your personal minimums. Give yourself permission to choose higher minimums than those specified in the regulations, aircraft flight manuals, or other rules.

How To Use Your Checklist

Use this checklist just as you would one for your aircraft. Carry the checklist in your flight kit. Use it at home as you start planning a flight and again just before you make your final decision to fly.

Be wary if you have an item that's marginal in any single risk factor category. But if you have items in more than one category, you may be headed for trouble.

If you have marginal items in two or more risk factors/categories, don't go!

Periodically review and revise your checklist as your personal circumstances change, such as your proficiency, recency, or training. You should never make your minimums less restrictive unless a significant positive event has occurred. However, it is okay to make your minimums more restrictive at any time. Never make your minimums less restrictive when you are planning a specific flight, or else external pressures will influence you.

Have a fun and safe flight!



<http://www.faa.gov/avr/news/ppams.htm>



PERSONAL MINIMUMS CHECKLIST

Think...

P ILOT
A IRCRAFT
E NVIRONMENT
E XTERNAL PRESSURES

Pilot: _____

Date Revised: _____

Reviewed with: _____
 (if applicable)

Crew Resource Management (CRM)

Single-Pilot Resource Management (SRM)

Throughout the practical test, the evaluator must assess the applicant's ability to use sound aeronautical decision-making procedures **in order to identify hazards and mitigate risk**. The evaluator must accomplish this requirement by developing **scenarios** that incorporate and combine tasks appropriate to assessing the applicant's risk management in making safe aeronautical decisions. For example, the evaluator may develop a scenario that incorporates weather decisions and performance planning.

In assessing the applicant's performance, the evaluator should take note of the applicant's use of CRM and, if appropriate, SRM.

CRM/SRM are the set of competencies that includes situational awareness, communication skills, teamwork, task allocation, and decision-making within a comprehensive framework of SOP. SRM specifically refers to the management of all resources onboard the aircraft, as well as outside resources available to the single pilot.

Risk Assessment Matrix

Likelihood

Severity

Catastrophic

Critical

Marginal

Negligible

Probable

High

High

Serious

Occasional

High

Serious

Remote

Serious

Medium

Low

Improbable

Hazardous Attitudes

Anti-Authority

Impulsivity

Invulnerability

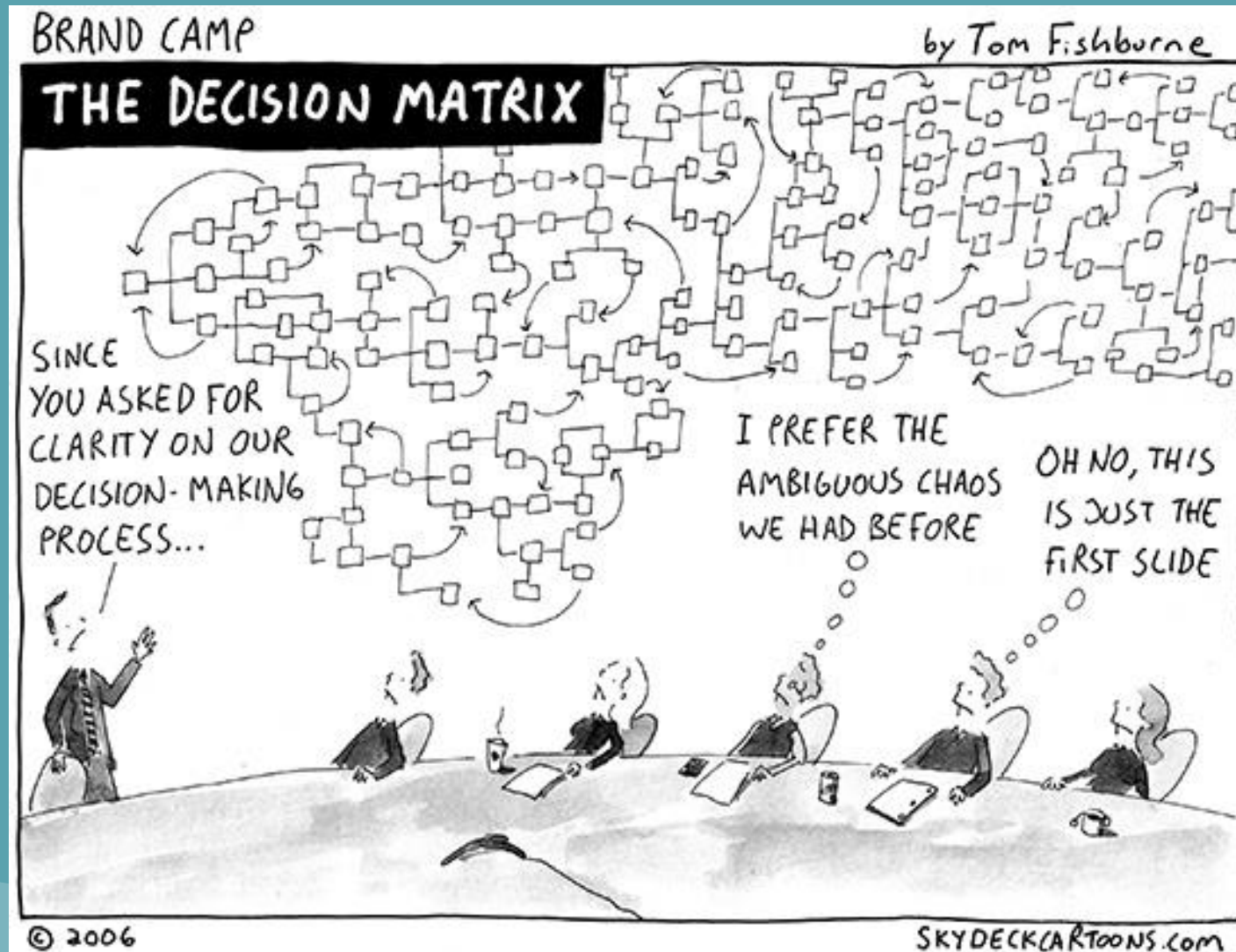
Macho

Resignation

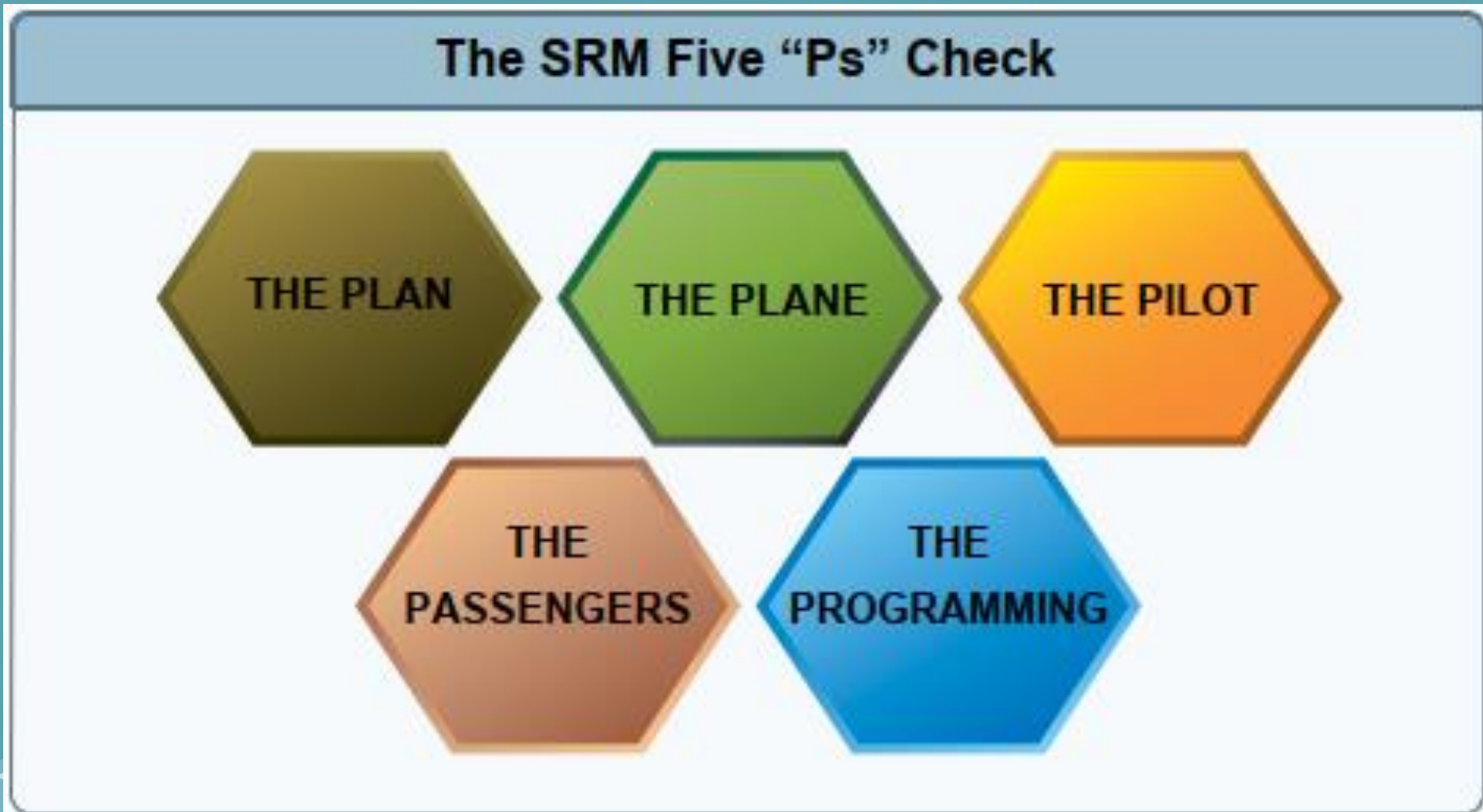
What to do about Hazardous Attitudes

Attitude	Antidote
Anti-Authority	Follow the Rules. They help prevent accidents
Impulsivity	Not so fast. Think First.
Invulnerability	It could happen to me.
Macho	Taking chances is foolish.
Resignation	I'm not helpless. I can make a difference

Decision-Making Systems



The 5 Ps



The DECIDE model

1. **Detect.** The decision maker detects the fact that change has occurred.
2. **Estimate.** The decision maker estimates the need to counter or react to the change.
3. **Choose.** The decision maker chooses a desirable outcome (in terms of success) for the flight.
4. **Identify.** The decision maker identifies actions which could successfully control the change.
5. **Do.** The decision maker takes the necessary action.
6. **Evaluate.** The decision maker evaluates the effect(s) of his/her action countering the change.

The 3P Model



Perceive

PAVE identifies hazards

Pilot

Aircraft

EnVironmental

External Pressures



Process

CARE identifies which hazards are risks

Consequences

Alternatives

Reality

External Pressures



Perform

TEAM suggests ways to manage risks

Transfer

Eliminate

Accept

Mitigate

CRM

3P Model

IMSAFE

ADM

PAVE 5 Ps

CARE

DECIDE

TEAM

SRM

