ELEMENTS OF EFFECTIVE TEACHING
THAT INCLUDE RISK MANAGEMENT & ACCIDENT PREVENTION

OVERVIEW

WHAT

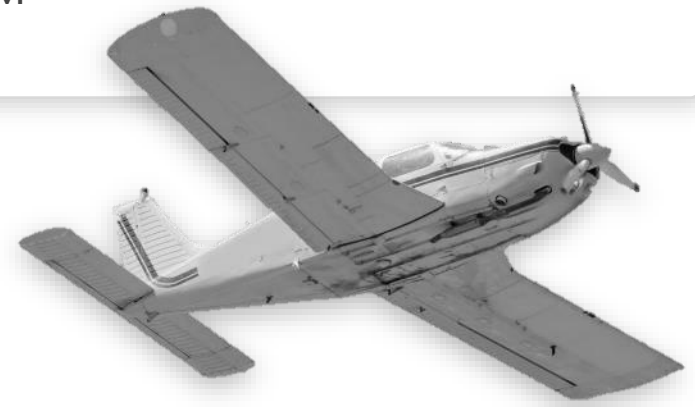
- Risk management is a decision-making process designed to perceive hazards, systematically assess the risk associated with the hazard, and determine the best course of action
- The instructor needs to understand and effectively apply these principles as well as be able to teach future learners

WHY

- Flying is inherently dangerous, but there is no reason to accept unnecessary risk
- Risk management skills are foundational to flying, providing the learner the ability to recognize and minimize the danger associated with each flight, and make logical decisions regarding safety

CONTENT

- Principles of Risk Management
- Risk Management Process
- Level of Risk
- Assessing & Mitigating Risk
- Risk Management Tools
- Teaching Risk Management
- ADM, CRM, & SRM



PRINCIPLES OF RISK MANAGEMENT

- Accept no unnecessary risk
- Make risk decisions at the appropriate level
- Accept risk when benefits outweigh the costs
- Integrate risk management into planning at all levels

Proactively identify safety-related hazards & mitigate the risks

RISK MANAGEMENT PROCESS

Identify the Hazard

- Anything that can cause degradation, injury, illness, damage, etc.

Assess the risk

- Determine the level of risk associated with the hazards
- Assess in terms of likelihood and severity

Mitigate the risk

- Reduce, mitigate, or eliminate the risk
- Analyze options that can reduce unnecessary risk
  - Cancel, delay, bring more experienced pilot, etc.

RISK MANAGEMENT PROCESS

RISK ASSESSMENT MATRIX

Assesses likelihood and severity of an event

- Severity (extent of possible loss)
- Probability (likelihood that a hazard will cause a loss)

RISK MANAGEMENT TOOLS

PAVE CHECKLIST

Risk is divided into 4 categories

P

- **P**ilot in Command:
  Am I ready?

A

- **A**ircraft:
  Is the aircraft appropriate for the trip?

V

- En**V**ironment:
  Is the environment conducive to the trip?

E

- **E**xternal Pressures:
  Are there influences outside of the flight that create pressure to complete the flight?
- Can lead to ignoring all other risk factors

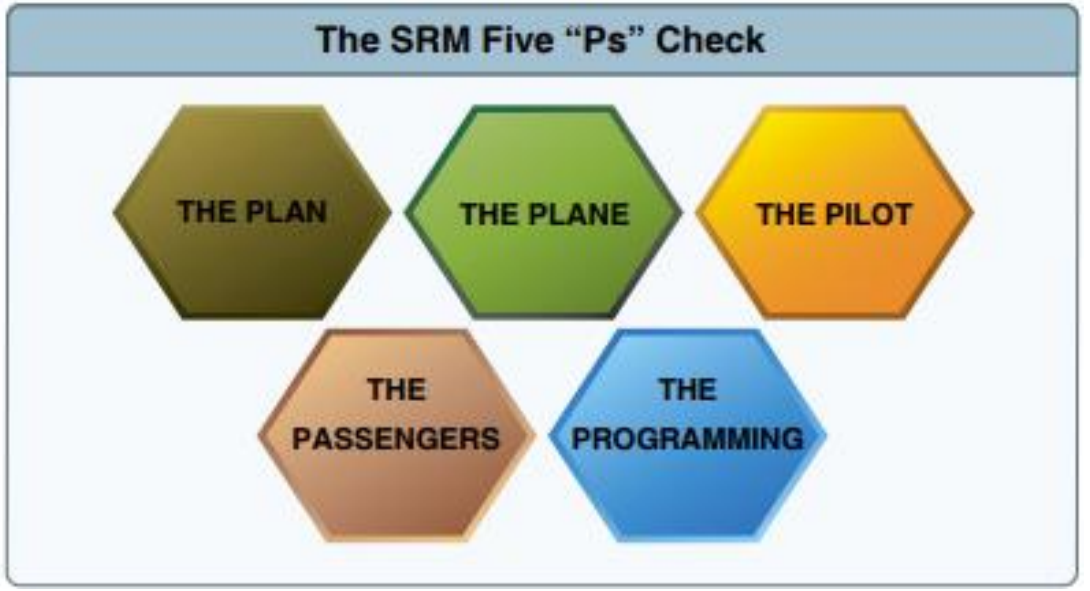
Decide whether the risk can be managed safely. If it can't, delay or cancel the flight

RISK MANAGEMENT TOOLS

5P CHECKLIST

Evaluates the situation at key decision points during flight

- Review the 5 Ps at least 5 times and make a decision
- Preflight, Pre- Takeoff, Hourly/Midpoint, Pre-Descent, FAF/Pattern



RISK MANAGEMENT TOOLS

FLIGHT RISK ASSESSMENT TOOL (FRAT)

Formal process to remove personal desires & emotion from decision making

Determine acceptable level of risk for the operation

- Create realistic thresholds that trigger additional scrutiny
  - Green: Good to fly, mitigate risk as able
  - Yellow: Some risk needs to be reduced before departure
  - Red: Do not fly until risk is reduced/mitigated
- Hazards are based on severity
- When risks exceeds the acceptable level, reevaluate

National Business Aviation Association FRAT

RISK MANAGEMENT TOOLS

IMSAFE CHECKLIST

I Illness

M Medication

S Stress

A Alcohol

F Fatigue

E Emotion

Mitigate risk by determining your own physical & mental readiness for flight

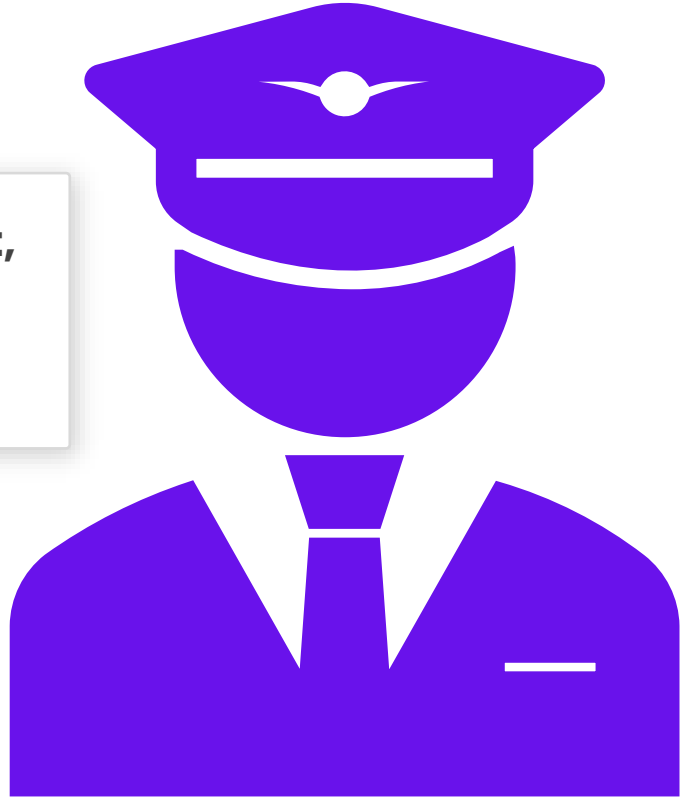
TEACHING RISK MANAGEMENT

WHEN & HOW

Most beneficial if taught FIRST & then integrated into all training

Include in all pre & postflight briefings

Include in recurrent, transition, flight reviews, IPCs, etc.



TEACHING RISK MANAGEMENT

PHASES OF INSTRUCTION

Pre-Solo

- Part of every pre & postflight brief
- Introduce a non-numerical FRAT and demo its use
- Learner can conduct basic risk management analysis by solo

Post-Solo to XC

- Perform risk analysis of planned flight with instructor help
- Instructor reviews RM prior to solo flight and learner debriefs all aspects of solo flight

XC

- Learner master RM techniques
- Completes full risk analysis for every flight and reviews it with the instructor

TEACHING RISK MANAGEMENT

PHASES OF INSTRUCTION

Instrument

- Emphasize broad RM techniques to analyze complex weather & other elements

Transition

- Employ scenarios emphasizing RM & SRM aspects of the new plane

Recurrent, Flight Reviews, IPCs

- Use RM scenarios that mirror the pilot's typical operating profile

Operational Flights

- Encourage RM on all operational flights & to the flight's complexity

Professional Pilots

- Emphasize RM factors specific to the training

TEACHING RISK MANAGEMENT

MANAGING RISK DURING INSTRUCTION

Best Practices

- **Follow RM procedures discussed**
- **Always include the learner in Risk Management**

P
- **P**ilot:
  Be familiar with the aircraft & avionics before instructing

A
- **A**ircraft:
  Determine airworthiness & resolve any concerns

V
- En**V**ironment:
  Emphasize precise risk assessment & mitigation

E
- **E**xternal:
  Be conscious of limitations, concerns, & other factors

TEACHING RISK MANAGEMENT

MANAGING RISK DURING INSTRUCTION

Takeoff

- Majority of teaching should be done prior to taking the runway
- Create realistic training scenarios

Landing

- Don’t teach mechanically
- Teach only when the learner can listen/absorb
- Be aware & ready for the unique risks associated with certain landings

OBSTACLES TO MAINTAINING SA

Distraction

- Divide attention
- Flying always comes first

Fatigue

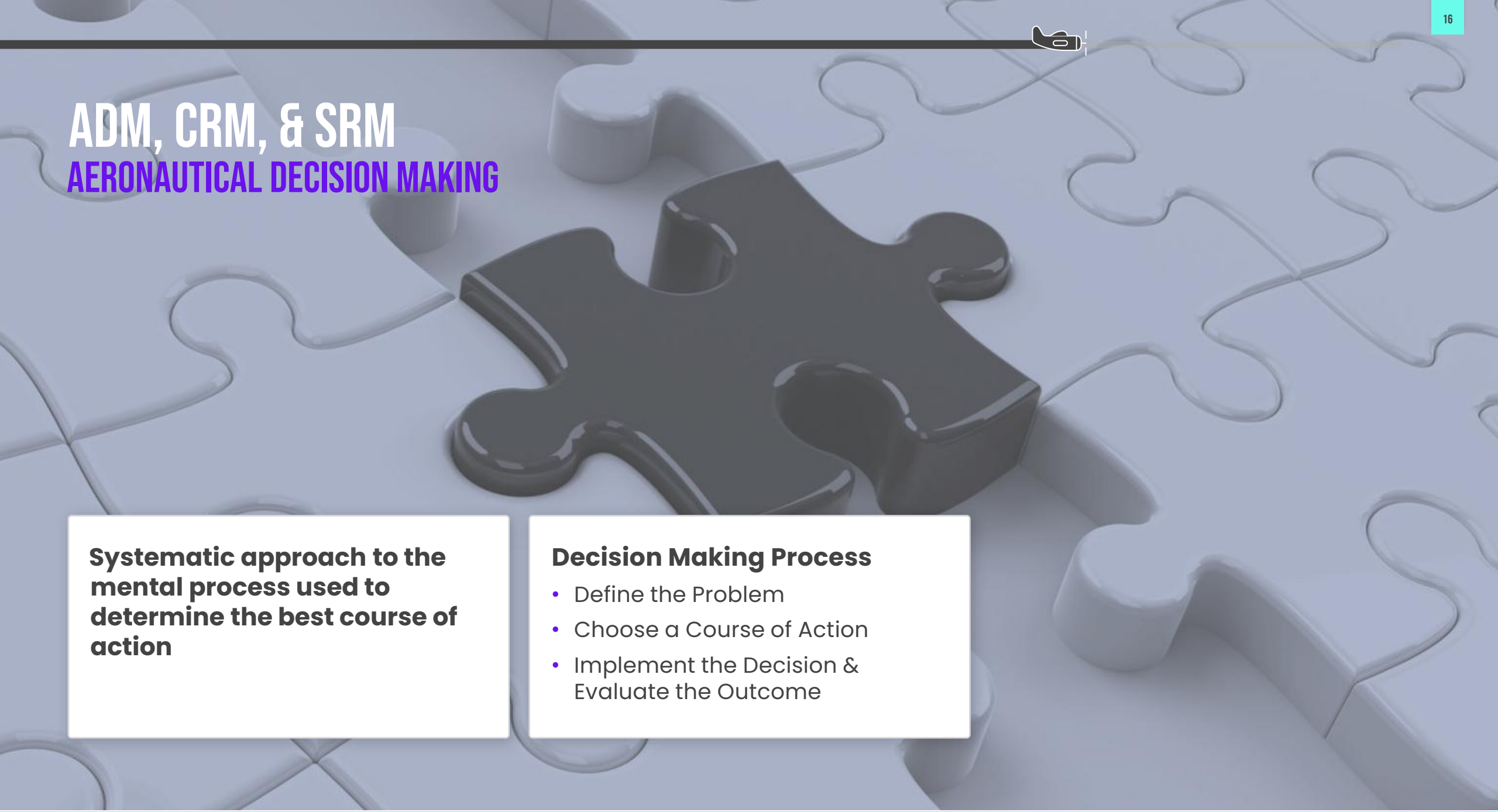
- Major phenomena: Sleep loss & circadian rhythm disruption
- Only effective treatment is sleep

Complacency

- Overconfidence from repeated experience
- Reduces effectiveness
- Difficult to recognize

ADM, CRM, & SRM

AERONAUTICAL DECISION MAKING



Systematic approach to the mental process used to determine the best course of action

Decision Making Process

- Define the Problem
- Choose a Course of Action
- Implement the Decision & Evaluate the Outcome

ADM, CRM, & SRM

FACTORS AFFECTING DECISION MAKING

Hazardous Attitudes

- Attitude affects the quality of decisions
- Spot hazardous attitudes & remove them

Hazardous Attitude	Antidotes
Macho Steve often brags to his friends about his skills as a pilot and how close to the ground he flies. During a local pleasure flight in his single-engine airplane, he decides to buzz some friends barbecuing at a nearby park.	Taking chances is foolish.
Anti-authority Although he knows that flying so low to the ground is prohibited by the regulations, he feels that the regulations are too restrictive in some circumstances.	Follow the rules. They are usually right.
Invulnerability Steve is not worried about an accident since he has flown this low many times before and he has not had any problems.	It could happen to me.
Impulsivity As he is buzzing the park, the airplane does not climb as well as Steve had anticipated and, without thinking, he pulls back hard on the yoke. The airspeed drops and the airplane is close to stalling as the wing brushes a power line.	Not so fast. Think first.
Resignation Although Steve manages to recover, the wing sustains minor damage. Steve thinks to himself, "It doesn't really matter how much effort I put in—the end result is the same whether I really try or not."	I'm not helpless. I can make a difference.

ADM, CRM, & SRM
FACTORS AFFECTING DECISION MAKING

Stress Management

3 Types of Performance Affecting Stress:

- Physical
- Physiological
- Psychological

Recognize when stress is affecting the learner

Stressors

Physical Stress
Conditions associated with the environment, such as temperature and humidity extremes, noise, vibration, and lack of oxygen.

Physiological Stress
Physical conditions, such as fatigue, lack of physical fitness, sleep loss, missed meals (leading to low blood sugar levels), and illness.

Psychological Stress
Social or emotional factors, such as a death in the family, a divorce, a sick child, or a demotion at work. This type of stress may also be related to mental workload, such as analyzing a problem, navigating an aircraft, or making decisions.

ADM, CRM, & SRM

CREW & SINGLE PILOT RESOURCE MANAGEMENT

How to gather information, analyze it, & make decisions

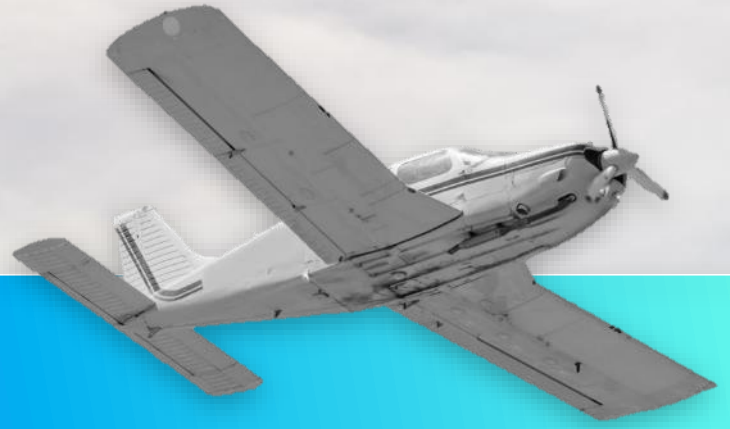
- Includes all groups working with the flight crew

Resources

- Internal: Equipment, systems, charts, books, ingenuity, knowledge, skill, other people
- External: ATC, FSS, Guard, etc.
- Workload Management
  - Plan, Prioritize & Sequence to prevent overload
  - Prepare for and recognize high workload situations

5 P's

- Plan
- Plane
- Pilot
- Passengers
- Programming



QUESTIONS?