

Leading Upset Training Effectiveness Into the Future

Tools to Transform In-Flight Safety



AVIATION
PERFORMANCE
SOLUTIONS



SUCCESS PACK

By Paul BJ Ransbury, CEO at Aviation Performance Solutions (APS)

Tuesday, November 8 & Wednesday, November 9, 2022

apstraining.com/bombardier2022

BOMBARDIER

Your Presenter ...

Paul BJ Ransbury, Chief Executive Officer

Aviation Performance Solutions

- Three (3) Decades Dedicated to the Full-Time Development & Delivery of Upset Prevention & Recovery Training (UPRT)
 - > 1,000 Pilots Directly Trained Annually
 - > 30,000 Pilots Trained Via License Annually
 - Personally Over 5,000 All-Attitude Upset Training - Dual Hours Given (On-aircraft Piston & Jet, Simulation)
- Chairman of the NBAA Safety Committee
- Former Airline Pilot / Military Pilot & Instructor
- 7-Time Master CFI / Fighter Weapons Instructor
- APS UPRT Customer Base
 - Owner/Operators | Corporate/Executive | Government/Military
 - Airlines | Flight Schools



apstraining.com/ransbury



We Help Pilots Bring Everyone Home Safely



Our Mission

CRUSH the Threat of Loss of Control In-flight Globally by Partnering with Safety Champions to Accelerate Adoption of Life-saving APS Upset Training.

Every Pilot Trained – In Control – All The Time

A Few of Our Partners ...



INSURANCE COMPANIES

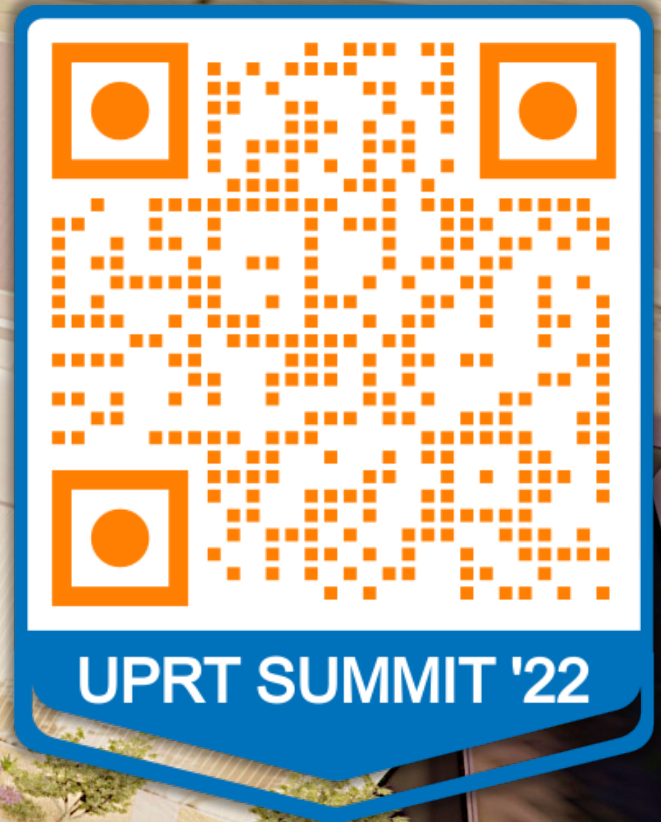


SAFETY
STAND/DOWN

Nexus of UPRT Excellence

Aviation Performance Solutions HQ

5649 South Avery Circle
Building 1 (Building on the Right)
Mesa, AZ 85212

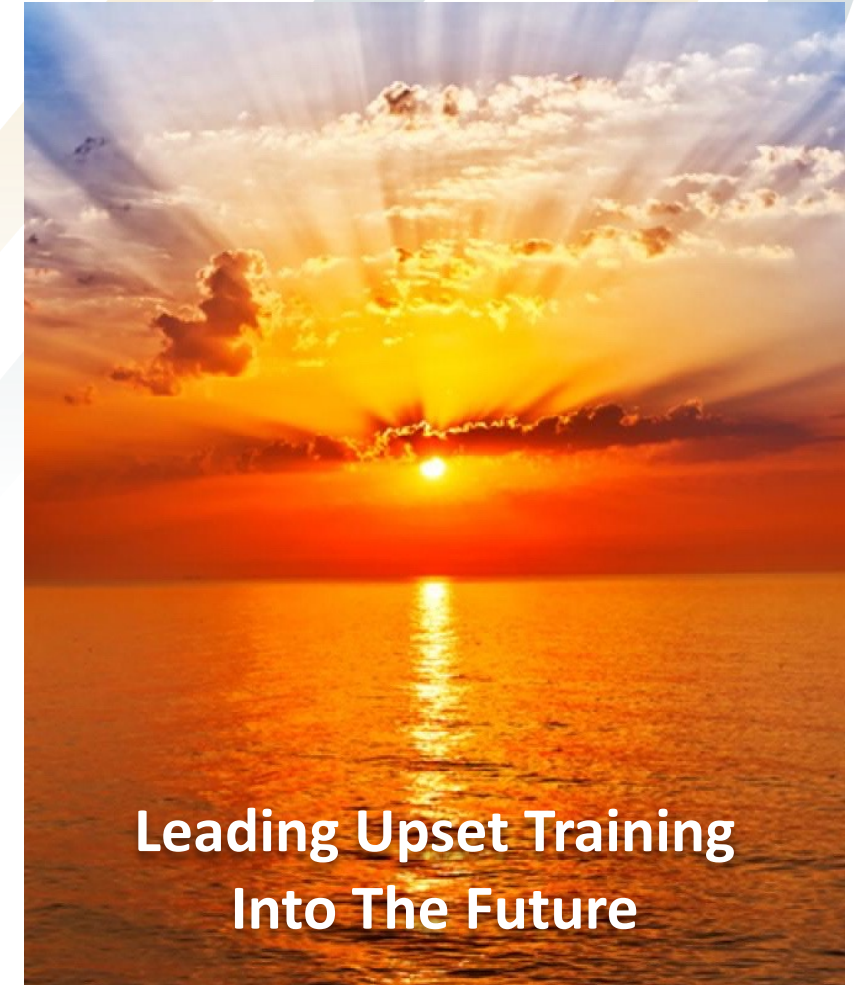
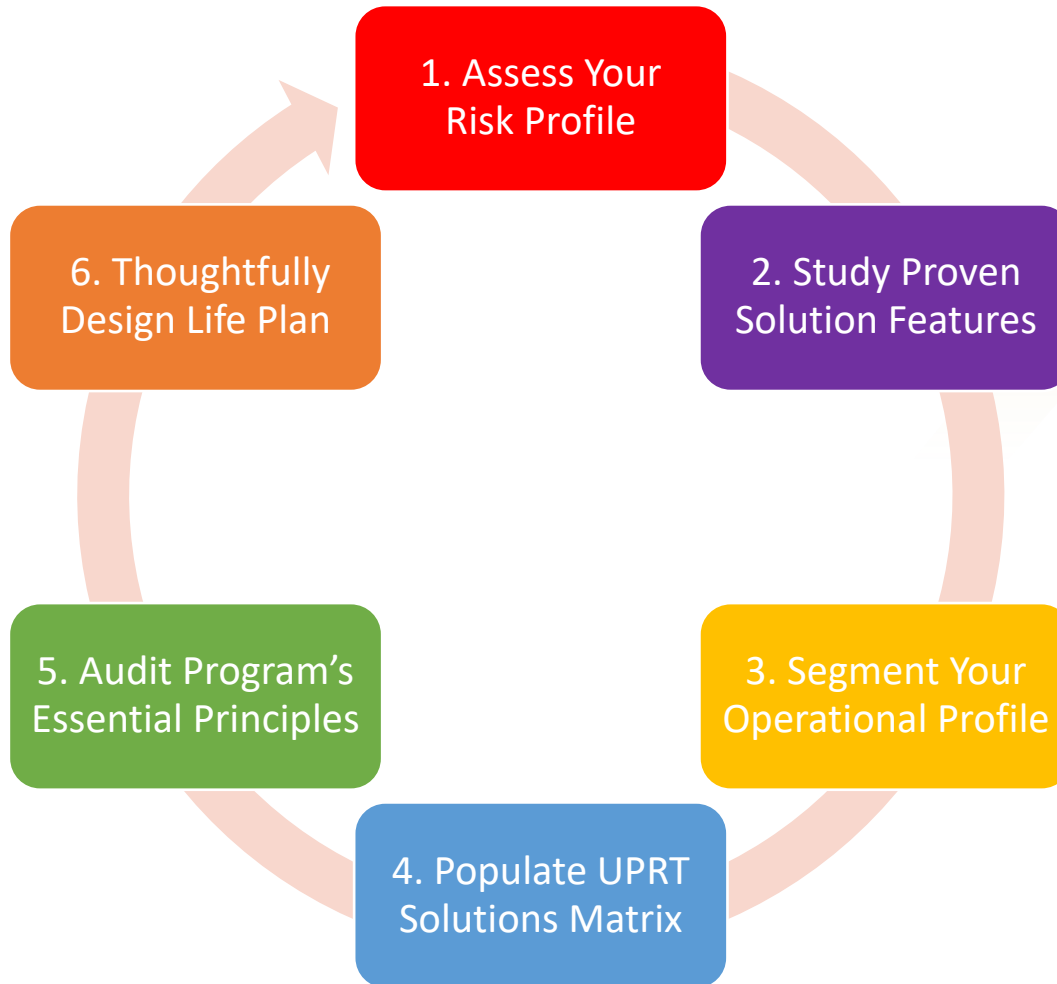


UPRT SUMMIT '22

bit.ly/linked2022uprt
Wed, November 16, 2022



Mind Map of Today's Presentation

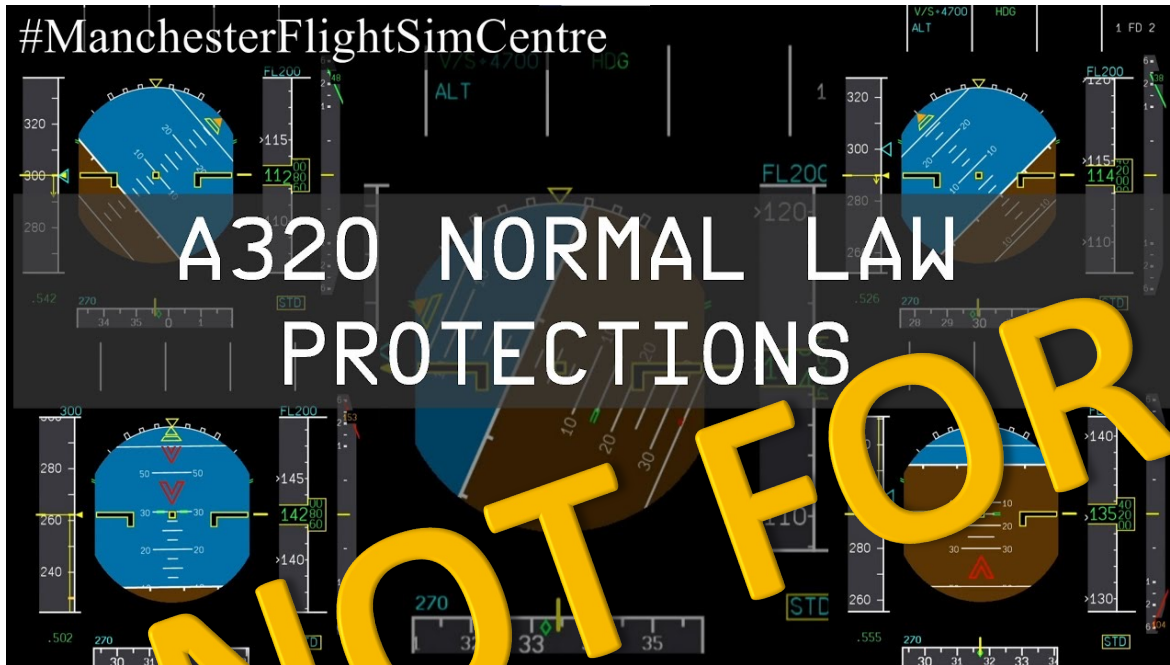


What Could the Future of UPRT Look Like?

SAFETY
STAND/DOWN

2022

MOVING SAFETY FORWARD



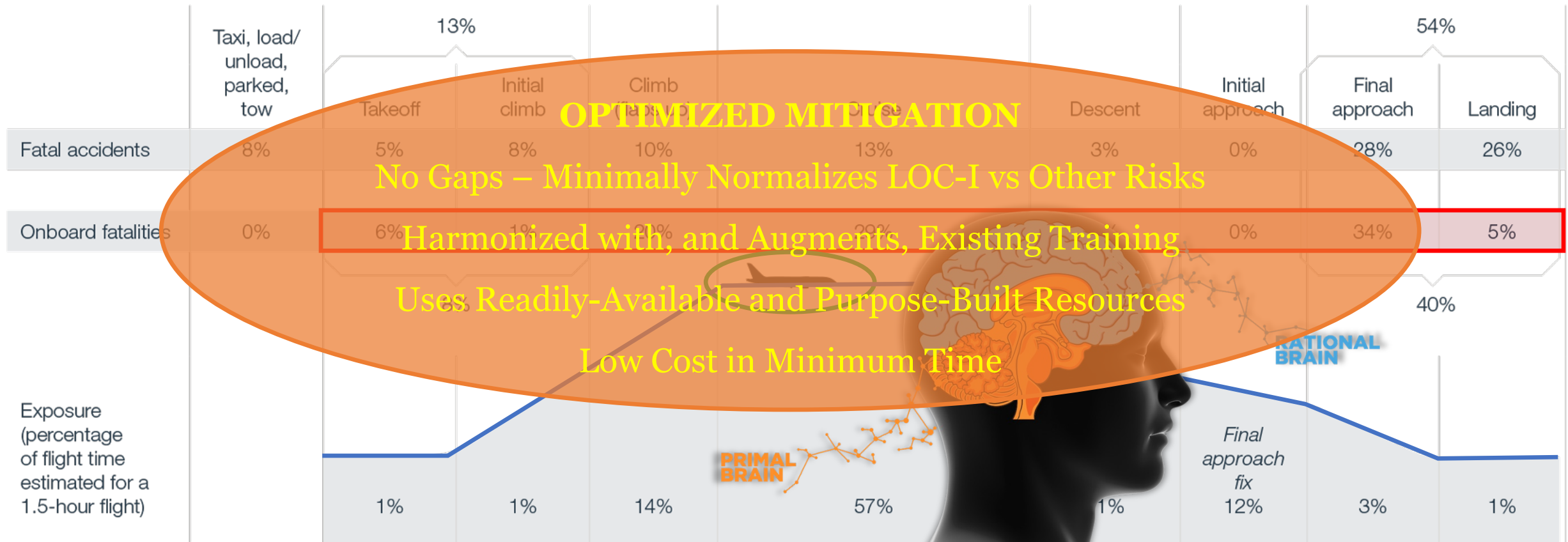
What Does the Future of UPRT Look Like?

SAFETY
STAND/DOWN

2022

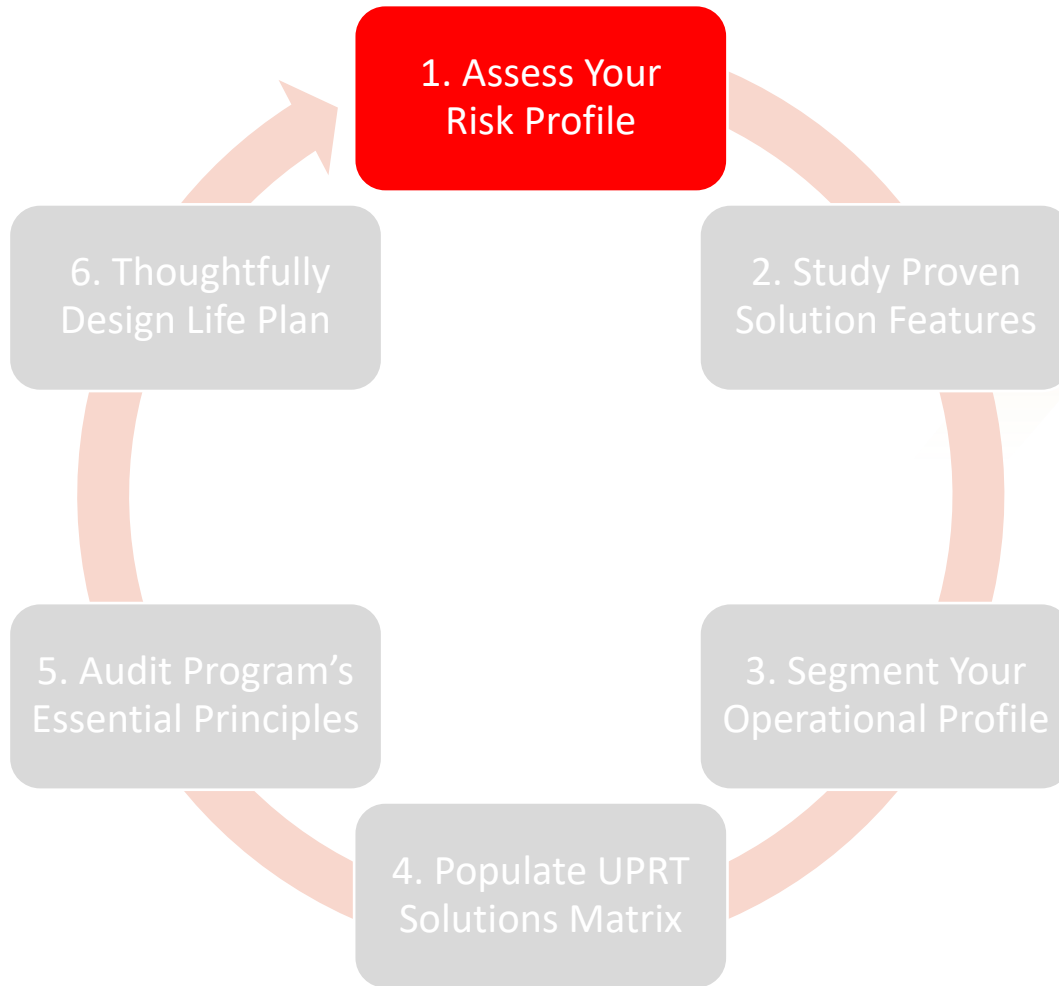
MOVING SAFETY FORWARD

Percentage of fatal accidents and onboard fatalities | 2011 through 2020



Note: Percentages may not sum to 100% because of numerical rounding.

Safety Management System Approach



Stage 1: Assess Your Risk Profile

FIGURE 5
Risk Assessment Matrix

Incident outcomes				Likelihood of occurrence				
Severity rating	Health effects (people)	Property damage	Environment impact	1	2	3	4	5
				Very unlikely	Unlikely	Possible	Likely	Very likely
5	Death or permanent total disability	Catastrophic damage	Significant impact	5	10	15	20	25
4	Permanent partial disability; hospitalizations of three people or more	Severe damage	Significant, but reversible impact	4	8	12	16	20
3	Injury or occupational illness resulting in one or more days away from work	Significant damage	Moderate reversible impact	3	6	9	12	15
2	Injury or occupational illness not resulting in a lost work day	Moderate damage	Minimal impact	2	4	6	8	10
1	First aid only or no injuries or illnesses	Light damage	No impact	1	2	3	4	5

Very high risk: 15 or greater High risk: 9-14 Moderate risk: 5-8 Low risk: 1-4

What is LOC-I?

Loss of Control In-flight

An extreme manifestation of a deviation from intended flight path (ICAO, CAST, EASA)

An adverse flight condition placing an airplane outside of the normal flight envelope with an inability of the pilot to control the airplane (Media)



Definition – Airplane Upset

An airplane upset is defined as an airplane in flight unintentionally exceeding the parameters normally experienced in line operations or training.

In other words, the airplane is not doing what it was commanded to do and is approaching unsafe parameters.



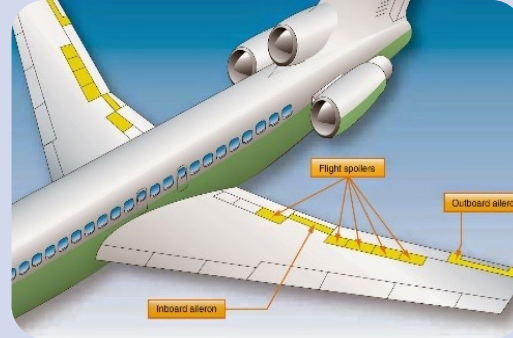
Causes of Airplane Upsets

And the #1 Resulting Event Leading to Loss of Control In-Flight...?



Environmental

- Turbulence
- CAT
- Mountain Wave
- Windshear
- Thunderstorms
- Wake
- Airplane Icing



Systems Anomaly

- Flight Instruments
- Autopilot Systems
- Flight Controls

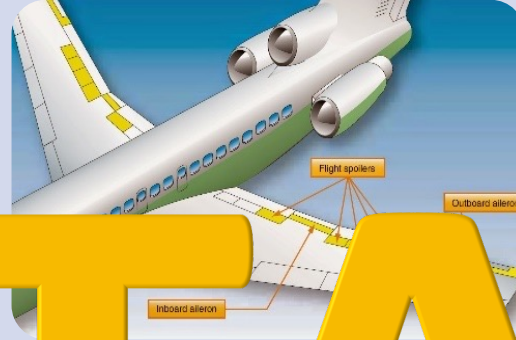


Pilot Induced

- Crosscheck
- Pilot Techniques
- Inattention
- Distraction
- Vertigo / SD
- Incapacitation
- Automation

Causes of Airplane Upsets

And the #1 Resulting Event Leading to Loss of Control In-Flight...?



STALL

Environmental

- Turbulence
- CAT
- Mountain wave
- Windshear
- Thunderstorms
- Wake
- Airplane Icing

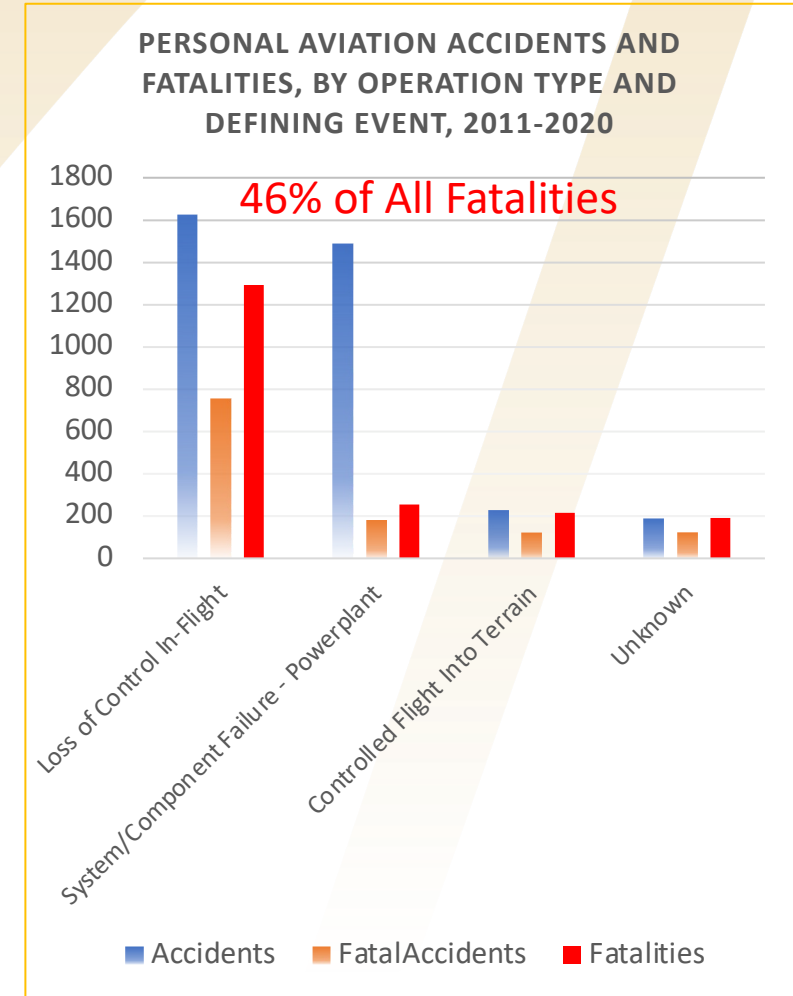
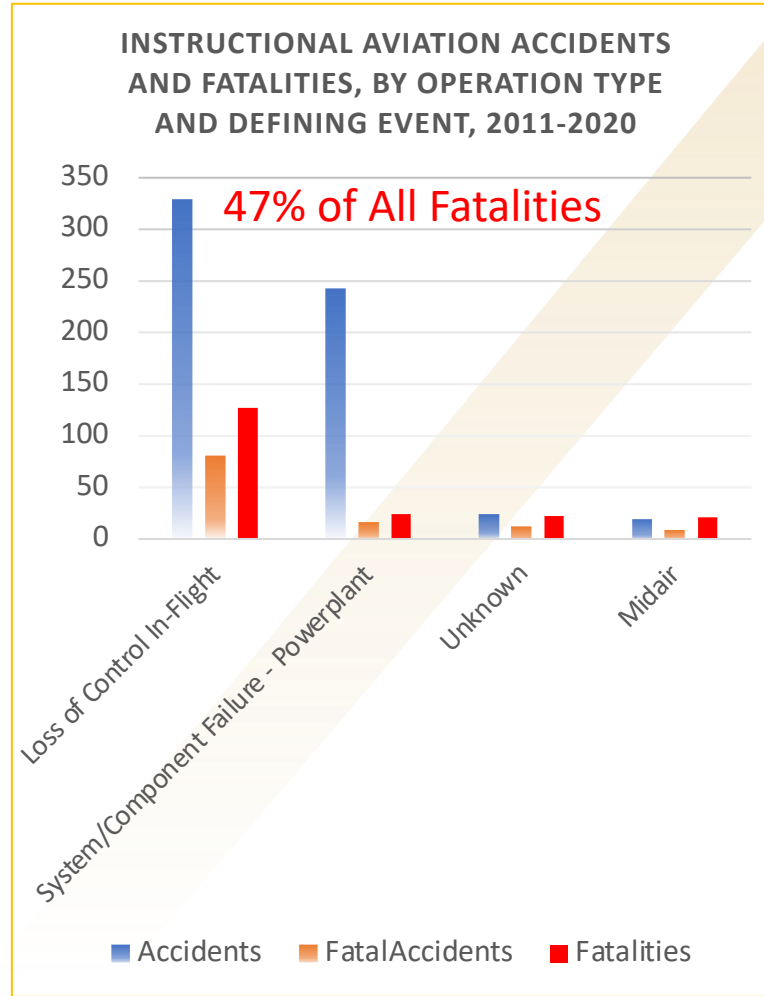
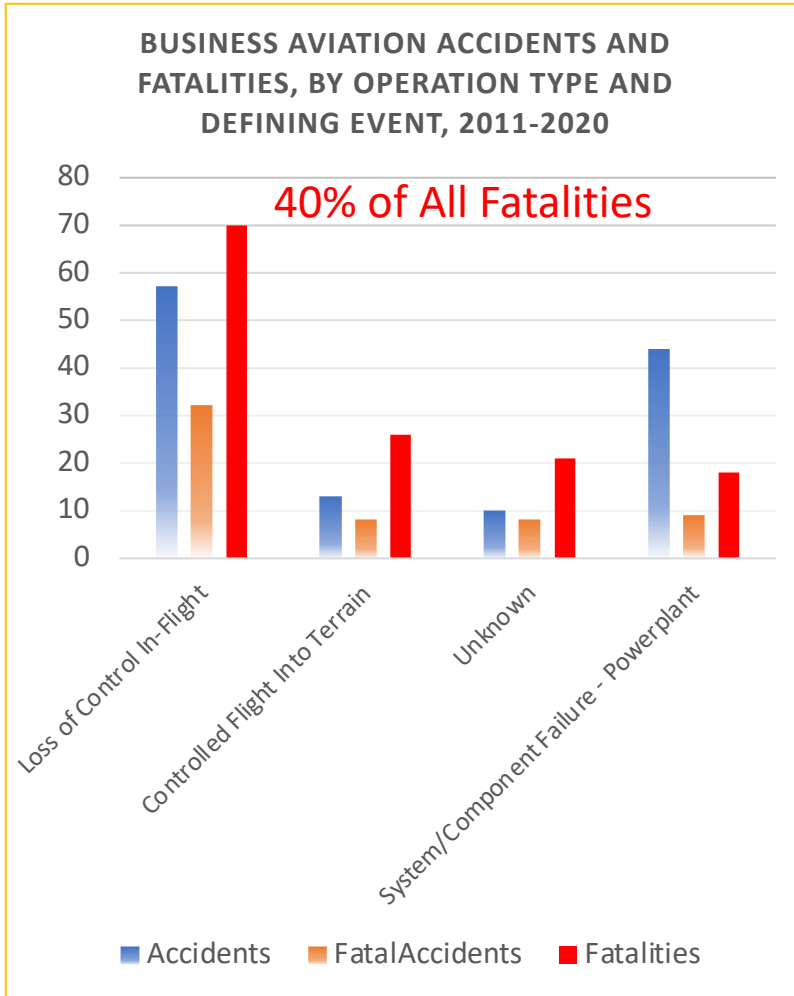
Systems Anomaly

- Instrument
- Pilot/Systems
- Flight Controls

Pilot Induced

- Loss of Control
- Loss of Technique
- Inattention
- Distraction
- Vertigo / SD
- Incapacitation
- Automation

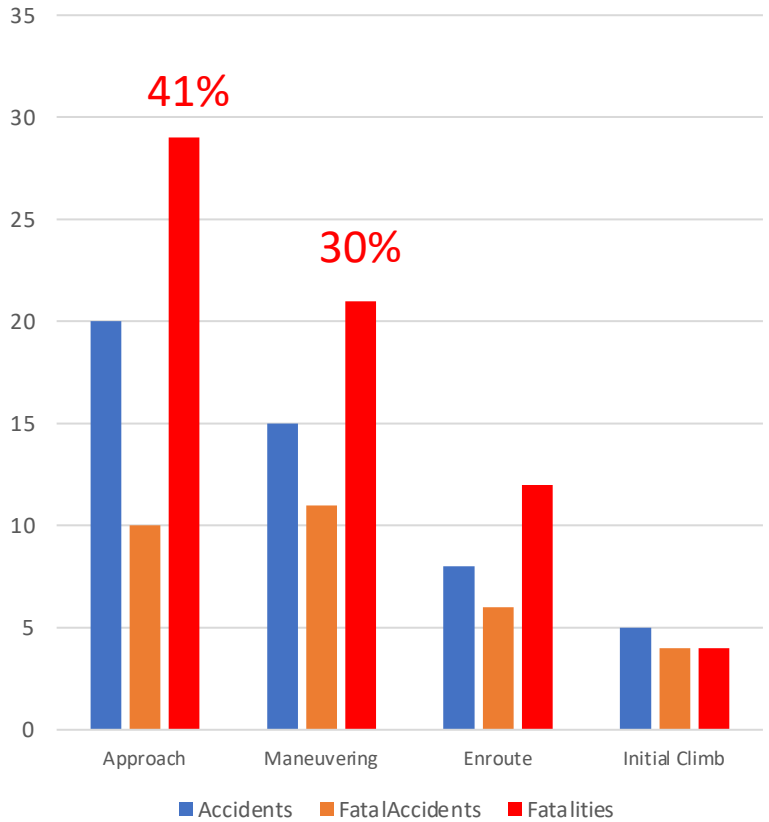
NTSB Inflight Loss of Control Accidents & Fatalities (2011-2020)



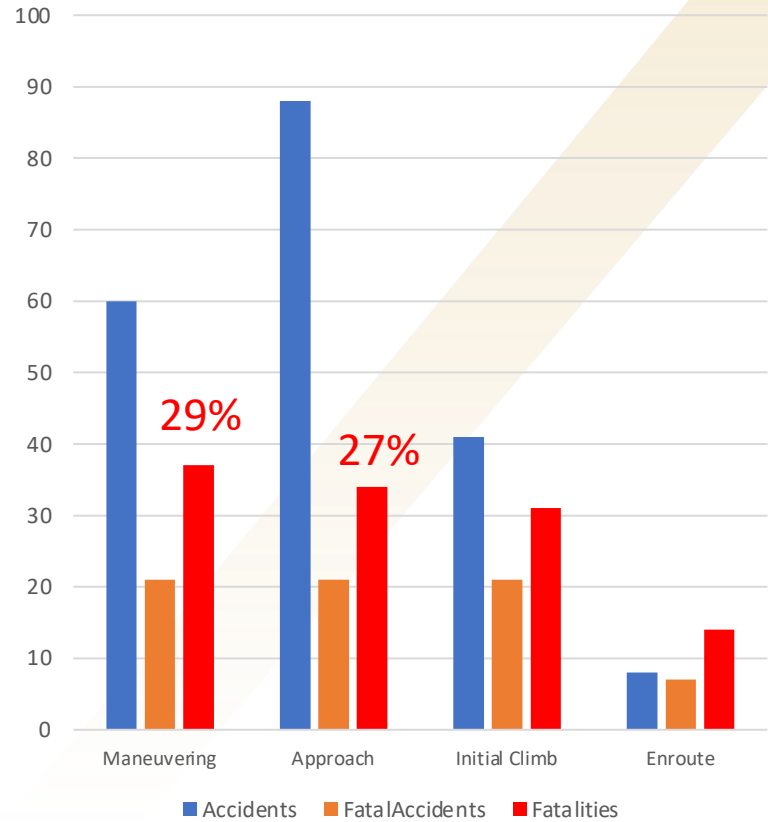
NTSB Inflight Loss of Control Accidents & Fatalities (2011-2020)



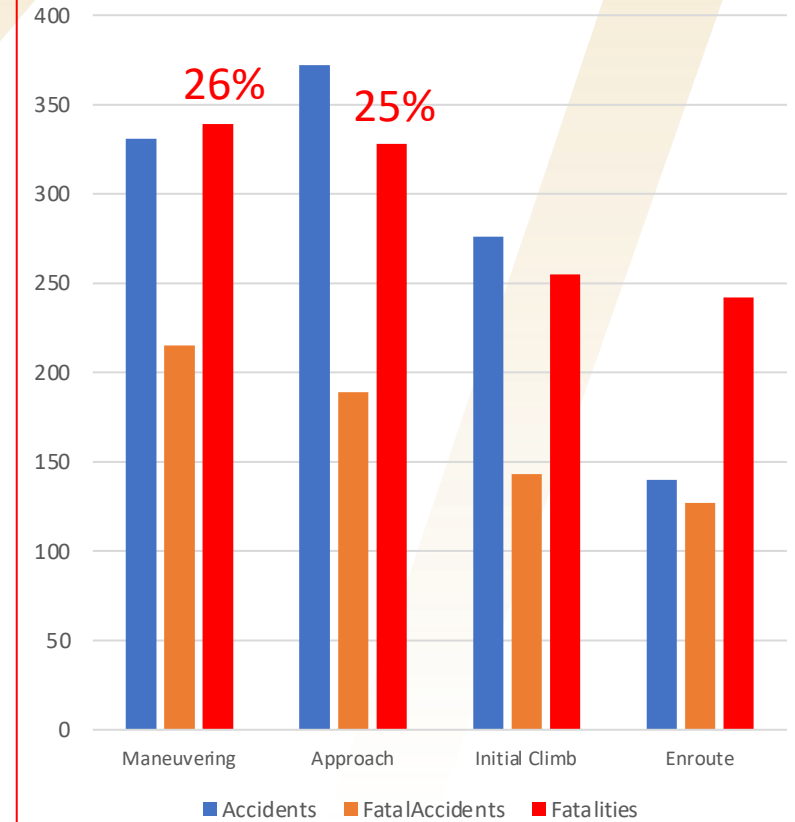
Business Aviation Inflight Loss of Control Accidents and Fatalities, by Phase of Flight, 2011-2020



Instructional Aviation Inflight Loss of Control Accidents and Fatalities, by Phase of Flight, 2011-2020



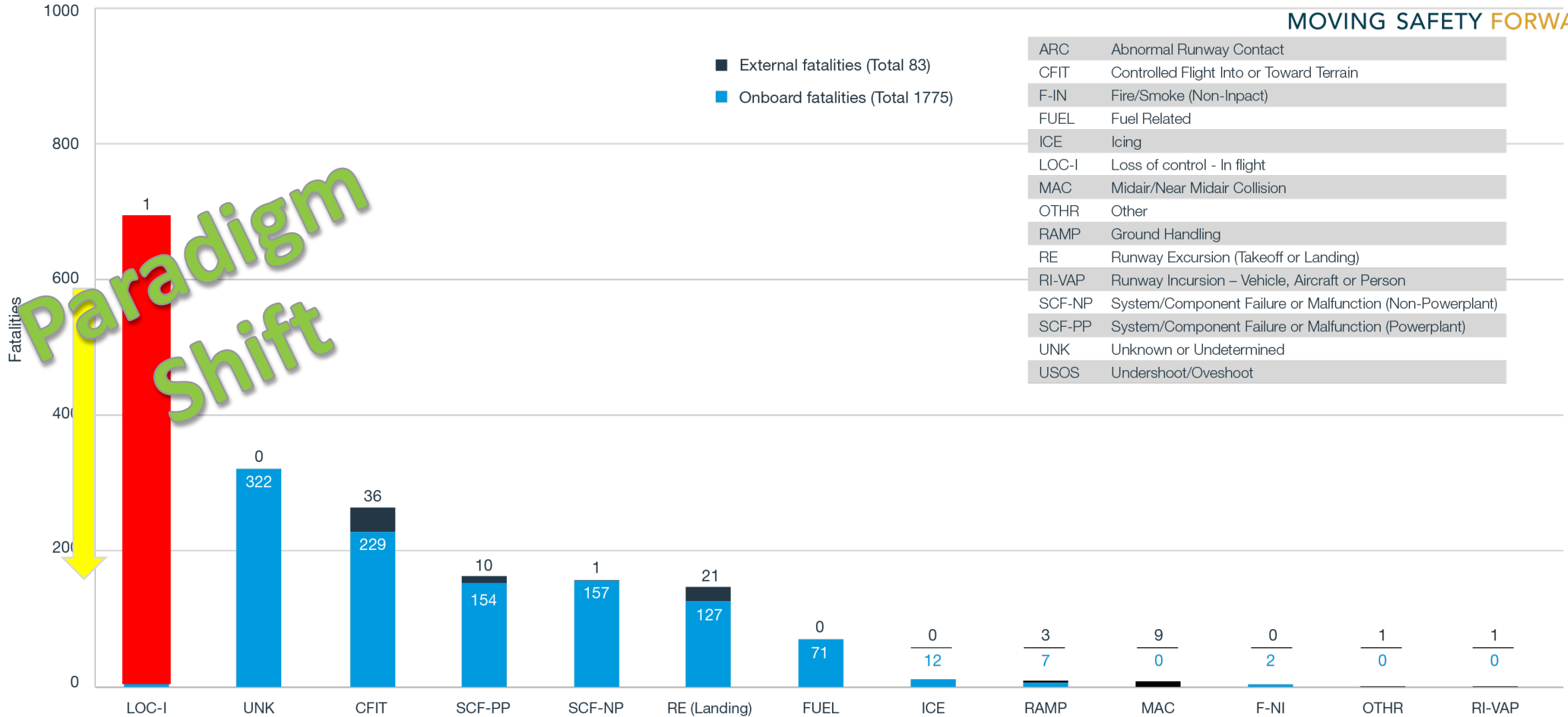
Personal Aviation Inflight Loss of Control Accidents and Fatalities, by Phase of Flight, 2011-2020



Fatal Accidents | Worldwide Commercial Jet Fleet | 2011 - 2020

2022

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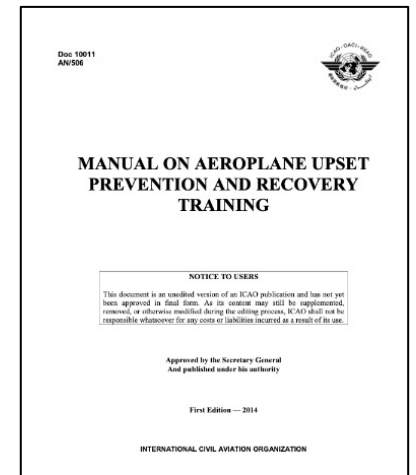
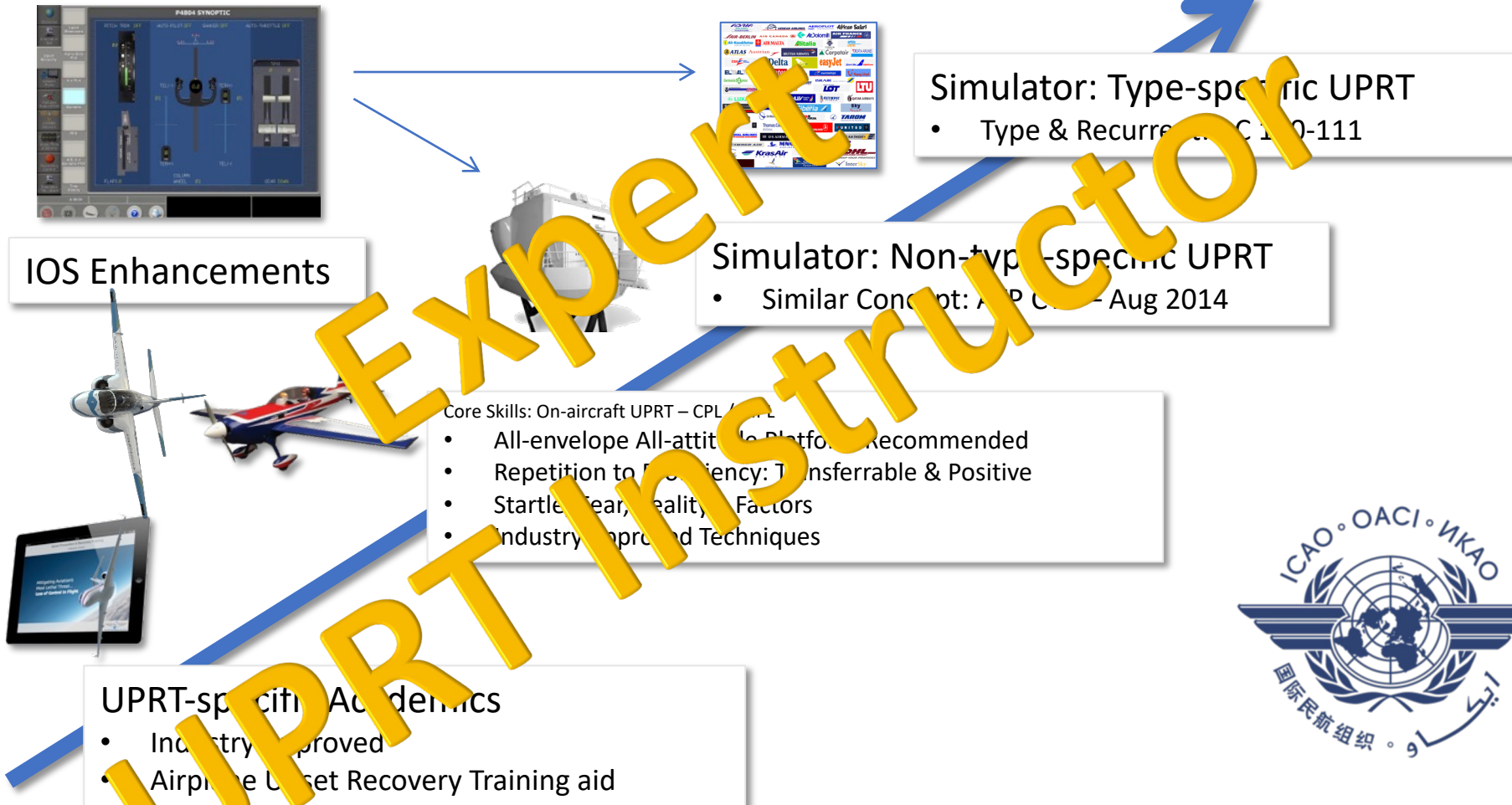


80 Experts & 40 Organizations Over 5 Years

SAFETY
STAND/DOWN

2022

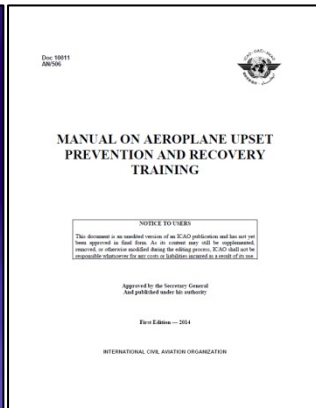
MOVING SAFETY FORWARD



Global Initiatives to Overcome LOC-I



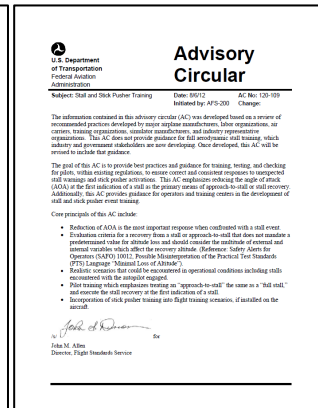
Airplane Upset Recovery Training Aids Revisions 2 & 3



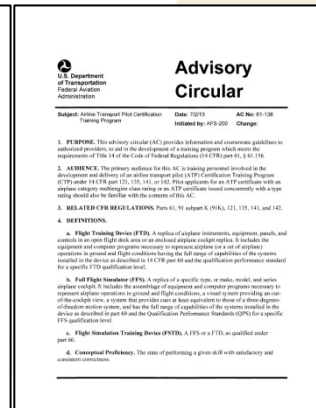
ICAO Manual On Aeroplane UPRT ICAO Document 10011



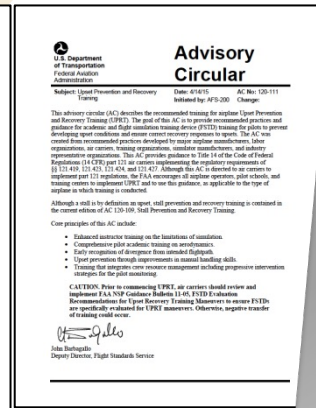
EASA Stall and Stick Pusher Training EASA SIB 2013-02



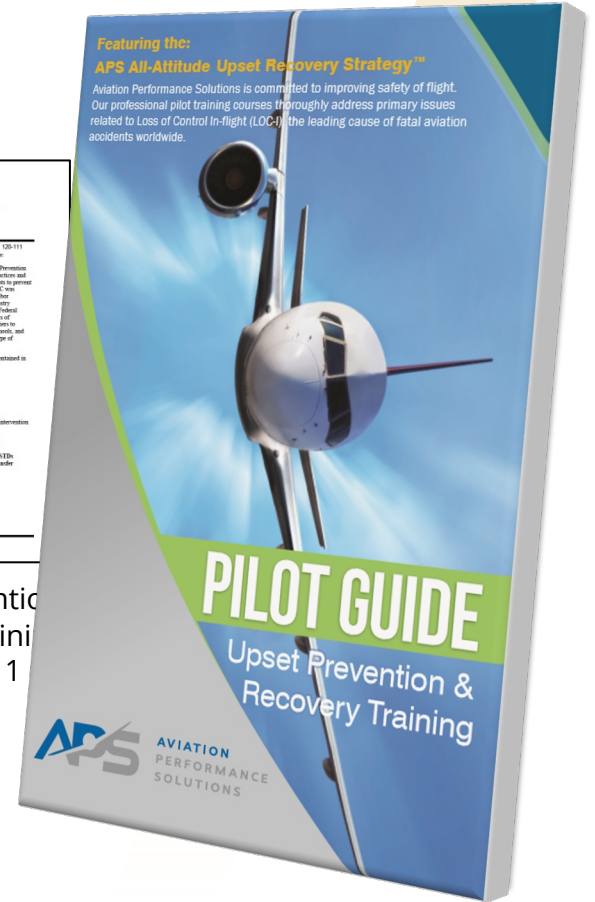
FAA Stall and Stick Pusher Training FAA AC 120-109A



FAA ATP Certification Training Program FAA AC 61-138



FAA Upset Prevention and Recovery Training FAA AC 120-111



SAFETY STAND/DOWN

NTSB Presentation at Bombardier Safety Standdown 2022

Honorable Mike Graham



Understanding Your Risks

- Do you know and understand the risks of your operation?
- Decisions made every day impact your operation's margin of safety
- Failing to identify previously unknown risks and mitigate the risks known to the operation increases the likelihood of an accident
- Case study demonstrating how an operator failed to understand the risk of its operation which led to a preventable accident
- Update to CL-605 Accident – July 26, 2021; Truckee, CA

Stage 1: Assess Your Risk Profile

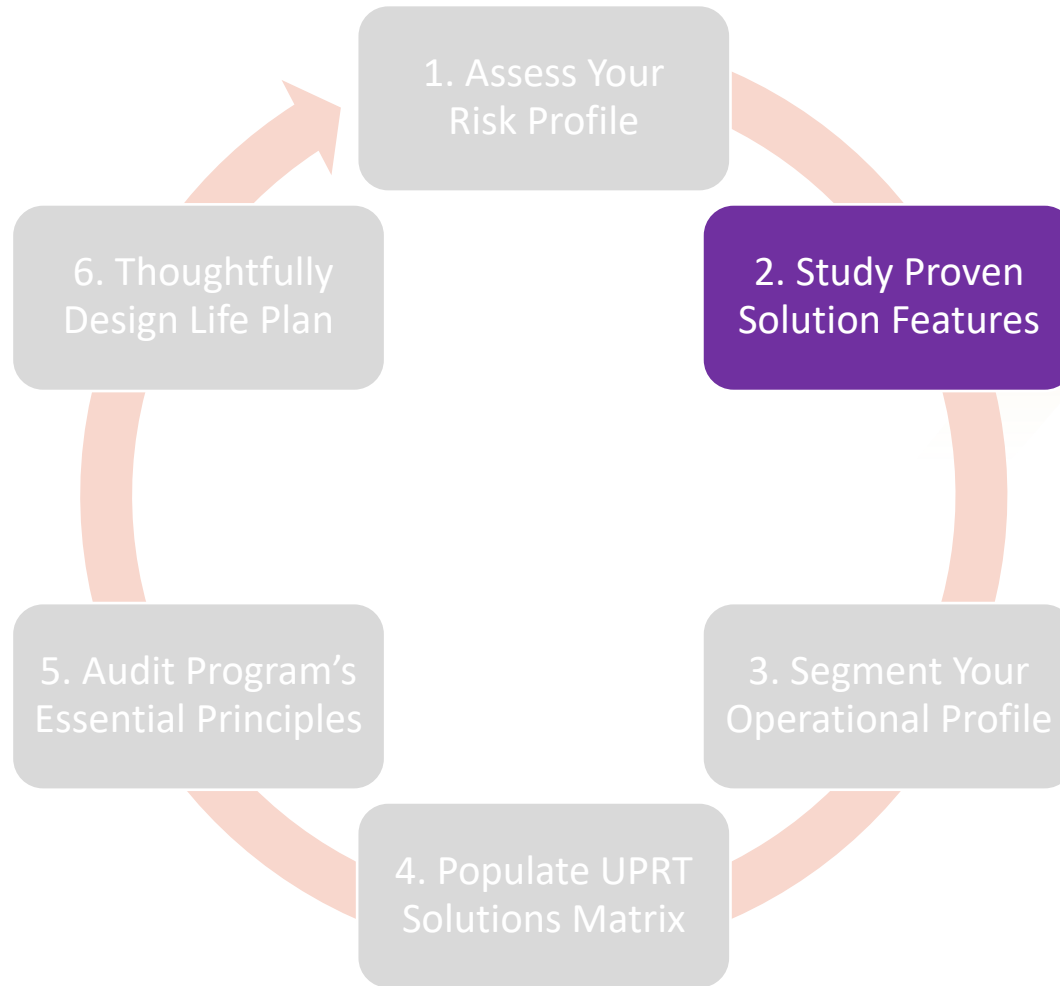
FIGURE 5
Risk Assessment Matrix

Where Are You?

Incident outcomes				Likelihood of occurrence				
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Very high risk: 15 or greater High risk: 9-14 Moderate risk: 5-8 Low risk: 1-4

Stage 1: Study Prove-Effective UPRT Solution Requirements



Quantitative LOC-I Mitigation Criteria™



Eight (8) Critical Mitigation Criteria

1. Representative Control Feel & Responses
2. CRM or SRM (Single-Pilot Resource Management)
3. G-Awareness
4. Repetition to Proficiency
5. Human Factors
6. All-Attitude Environment Immersion
7. Very Low Altitude & All-Weather Upsets
8. Strategy Application, Resilience in Crisis

Quantitative LOC-I Mitigation Criteria™

QLMC™ ELEMENTS*	WEIGHT	PRIORITY	BEST PLATFORM
Human Factors	10	Critical	Best: High Performance Aerobatic Piston Adequate: Aerobatic Jet Marginal: Non-Aerobatic Piston and Jet, Rotational-G Device Ineffective: Simulator
All-Attitude Environment Immersion	10	Critical	Best: High Performance Aerobatic Piston and Jet Adequate: Simulator Ineffective: Non-Aerobatic Piston and Jet, Rotational-G Device
Strategy Application, Resilience in Crisis	10	Critical	Best: High Performance Aerobatic Piston and Jet Adequate: Simulator Marginal: Non-Aerobatic Piston and Jet, Rotational-G Device
G-Awareness	8	Essential	Best: High Performance Aerobatic Piston and Jet Adequate: Non-Aerobatic Piston and Jet, Rotational-G Device Ineffective: Simulator
Repetition to Proficiency	8	Essential	Best: High Performance Aerobatic Piston and Jet Adequate: Simulator and Non-Aerobatic Piston and Jet, Rotational-G Device
Very Low Altitude & All-Weather Upsets	7	Important	Best: Simulator Marginal: Aerobatic & Non-Aerobatic Piston <u>with</u> Robust View Limiting Devices Ineffective: Aerobatic & Non-Aerobatic Piston & Jet <u>without</u> Robust View Limiting Devices
Crew Resource Management (CRM)	6	Important	Best: Simulator (flight department pilots-in-training in both seats) Marginal: Aerobatic Piston and Jet, Simulator, and Non-Aerobatic Piston & Jet with Instructor Acting as One Crew Member
Representative Control Feel & Responses	5	Important	Best: Simulator and Some Non-Aerobatic Pistons & Jets, Some Rotational-G Devices Adequate: Aerobatic Jet Marginal: High Performance Aerobatic Piston

Preview: Vetted Upset Training Solutions

Compare Applications

- Single-Engine Piston Single-Pilot Pilot
- High Performance Multi-Engine Turbofan Crewed Jet Pilot

SE Piston Single Pilot - Core Essentials Upset Training

- Core Instructor-Led Academics
- Four (4) Flights Over 2.5 Days
- Integrated Industry-vetted Recovery Strategy

ME Jet as Crew - Jet Pilot Integrated Upset Training

- Core Program + App + All-Attitude Jet + High Altitude Jet
- Specialized High Performance Academics
- Advanced Class-specific Simulation
- Type-Specific Transition

SAFETY
STAND/DOWN

2022

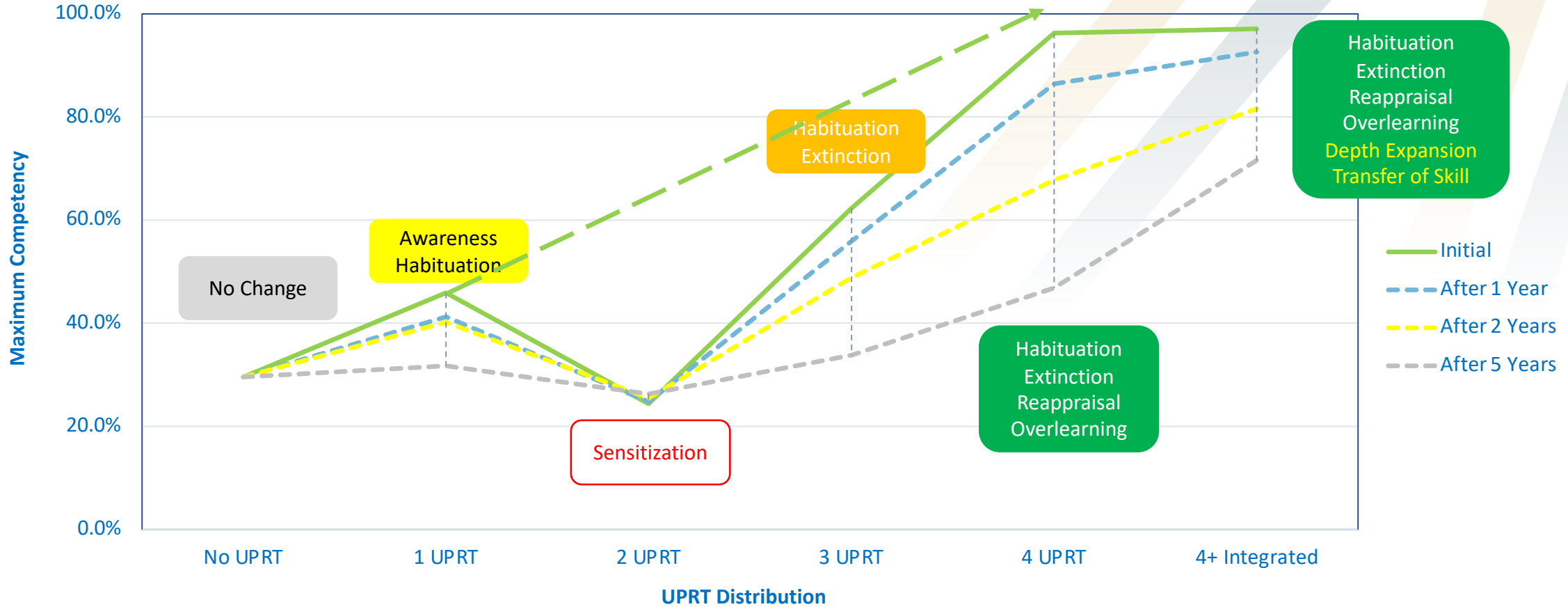
MOVING SAFETY FORWARD



Training Intensity

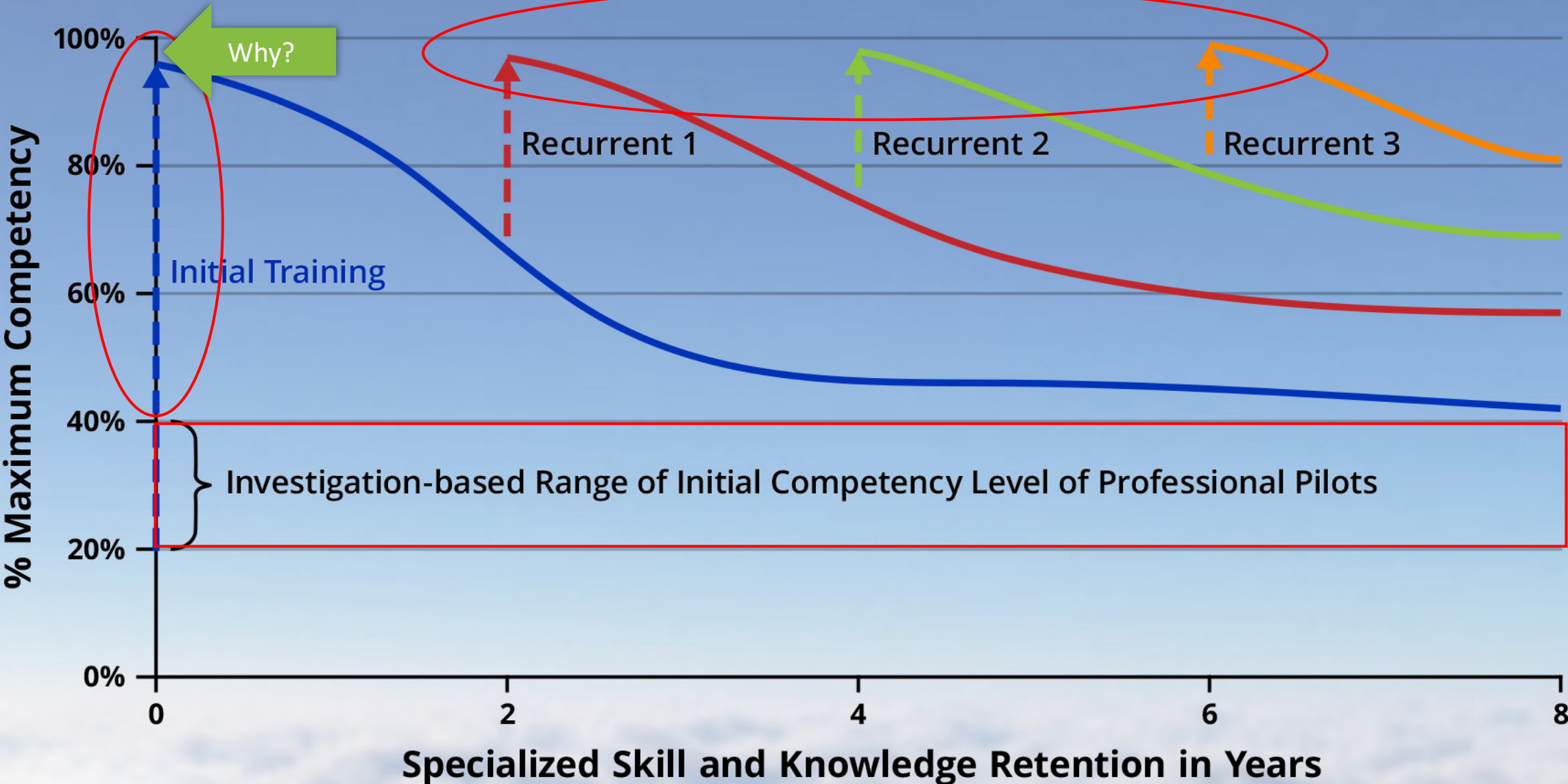
Importance in Achieving Lasting Resilience

Upset Training Cognitive and Psychomotor Learning Process

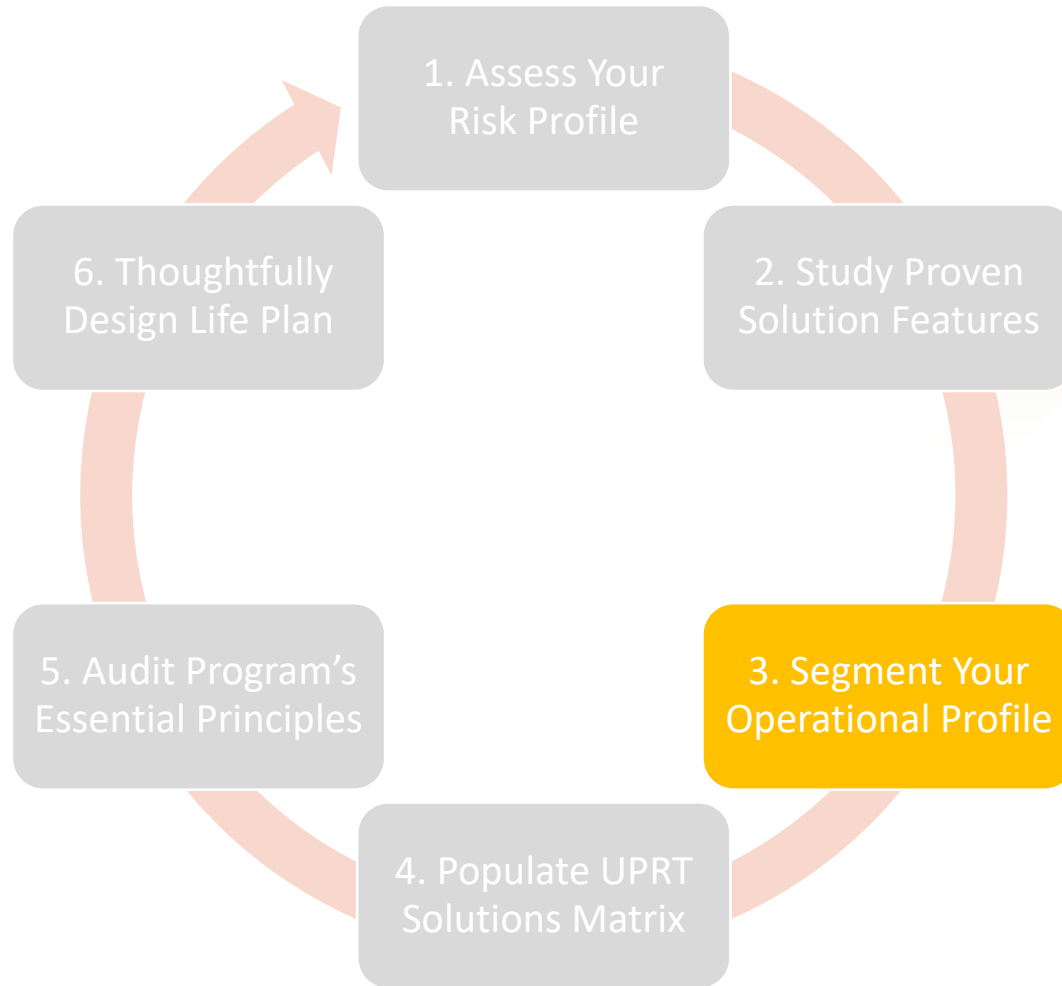


Internal Analysis and Measured Performance

IMPACT OF LIFETIME UPRT REGIME



Stage 3: Segment Your Operational Profile



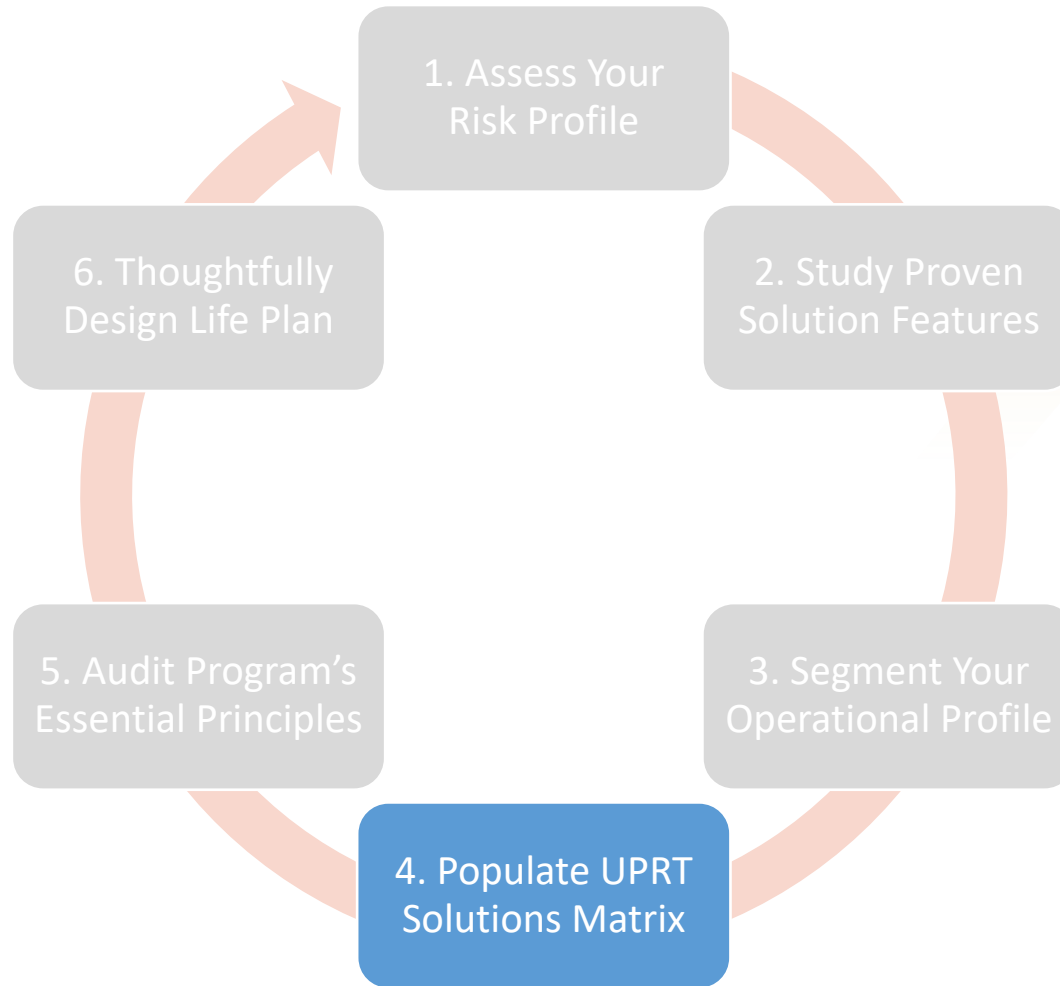
LOC-I Mitigation Matrix Sample

		HOW YOU OPERATE		
MATRIX EPIC-S2™ ASSUMED		MULTI-ENGINE JET CREWS + HIGH ALTITUDE	SINGLE-PILOT JET / TP + HIGH ALTITUDE	SINGLE-PILOT PISTON LOW ALTITUDE ONLY
OPTIMUM PLATFORM RANKING	Academics	✓	✓	✓
	Virtual Reality	✓	✓	□
	Non-Aerobatic Piston	□	□	*
	Non-Aerobatic Complex Jet	*	*	□
	Rotational-G Device	□	□	□
	High Altitude Aerobatic Jet	✓	✓	□
	Class-Specific Simulator Fixed-Base or Full Motion	✓	✓	✓
	Type-Specific Simulator Level C, Level D, Extended Envelope	✓	✓	□
	Aerobatic Jet	✓	✓	□
	Aerobatic Piston	✓	✓	✓

Expanded Matrix Development Flow

Quantitative LOC-Mitigation Criteria (OLMC)	Weight	Max Mitigation Value	Priority	Academic Remote	Academic Live	On-Aircraft All-Att Piston	On-Aircraft All-Att Jet	Combined All-Att Piston & Jet	On-Aircraft Norm Cat Piston	On-Aircraft Norm Cat Jet	Integrated Piston + Sim	Integrated Piston, Jet, Sim	Simulator	Class-Specific	
Human	Engine Type	Turbojet / Turbofan High Performance				Turboprop				Piston					
All-Attitude	Configuration	Turbojet / Turbofan High Performance				Turboprop				Piston					
Strategy	Configuration + Crew	ME Crewed	ME Single Pilot	SE Crewed	SE Single Pilot	ME Crewed	ME Single Pilot	SE Crewed	SE Single Pilot	ME Crewed	ME Single Pilot	SE Crewed	SE Single Pilot		
G-Aware	On-Aircraft	On-Aircraft Only Solutions													
Repetitive	4P + 0J	Partial Only	Partial Only	Partial Only	Partial Only	Partial Only	Partial Only	Partial Only	Partial Only						
Very Low	4P + 0J	4P + 0J VFR Pilot Upset Training	Partial Only	Partial Only	Partial Only	Partial Only	Partial Only	Partial Only	Partial Only	B	B	B	B	8	
Repress	3P + 1J	4P + 0J Professional Pilot Upset Training (PPUT)	B	B	B	B	B	B	B	A	A	A+	A+	9	
Crew Rtr	2P + 2J	3P + 1J PPUT	A-	A-	A-	A-	A-	A-	A-	A-	A-	A-	A-	8	
By-Med	0P + 4J	2P + 2J PPUT	A-	A-	A-	A-	A-	A-	A-	A-	A-	A-	A-		272
QLMC	0P + 4J	0P + 4J PPUT	B	B	B	B	B	B	B	B	B	B	B		42.5%
Requires	Integrated	Integrated On-Aircraft + In-Class Simulator Training													
Per Hour	4P + 0J	4P + 0J Integrated Upset Training (IUT)	A-	A-	A-	A-	A-	A-	A-	A+	A+	A+	A+		4
*AKA	3P + 1J	2P + 1J IUT	A-	A-	A-	A-	A-	A-	A-	A-	A-	A-	A-		10.6%
	2P + 2J	3P + 1J IUT	A-	A-	A-	A-	A-	A-	A-	A-	A-	A-	A-		
	0P + 4J	2P + 2J IUT	A	A	A	A	A	A	A	A-	A-	A-	A-		
	0P + 4J	0P + 4J IUT	A-	A-	A-	A-	A-	A-	A-	B	B	A-	A-		
	Unique	Integrated Enhanced Programs													
	3P + 1J	3P + 1J IUT + High Altitude	A+	A+	A+	A+	A	A	A	A	A+	A+	A+	A+	
	2P + 2J	2P + 2J IUT + High Altitude	A+	A+	A+	A+	A+	A+	A+	A	A	A+	A+		
	4P + 0J	4P + 0J PPUT + High Altitude	A-	A-	A-	A-	A-	A-	A-	A-	A-	A	A		
	Simulator	Simulator-Only (In-Class / Type-Specific)													
	2P + 2J	2P + 2J IUT + High Altitude + VR	Partial Only	Partial Only	Partial Only	Partial Only	Partial Only	Partial Only	Partial Only	B	B	A-	A-		
	Recurrent	2P + 2J IUT + High Altitude + VR	A+	A+	A+	A+	A+	A+	A+	A	A	A+	A+		
	1-Day	Recurrent Upset Training													
	2P + 0J	1-Day 2-Flight													
	1P + 1J	2P + 0J Recurrent Upset Training	B	B	B	B	B	A-	B	A	A	A+	A+		
	0P + 2J	1P + 1J Recurrent Upset Training	A-	A-	A-	A-	A-	A-	A-	A-	A-	A-	A-		
	2-Day	0P + 2J Recurrent Upset Training													
	1P + 1J	2-Day 3 or 4-Flight													
	1P + 1J	Recurrent + High Altitude Jet	A+	A+	A+	A+	A	A	A	A	A+	A+	A+	A+	
	1P + 1J	Recurrent + Simulator	A	A	A	A	A	A+	A	A-	A-	A-	A-		
	Academ	Recurrent + High Altitude Jet + Simulator	A+	A+	A+	A+	A+	A+	A+	A	A	A+	A+		
	Self-Pac	Academic-Only Solutions													
	Instructo	Self-Paced App/CBT Upset Training	Partial Only	Partial Only	Partial Only	Partial Only	Partial Only	Partial Only	Partial Only	Partial Only	Partial Only	Partial Only	Partial Only		
	Licensed	Instructor-Lead Live Upset Training	Partial Only	Partial Only	Partial Only	Partial Only	Partial Only	Partial Only	Partial Only	Partial Only	Partial Only	Partial Only	Partial Only		
	APS-Ce	Licensed Instructor Solutions													
	APS-Ce	APS-Certified Airline UPRT Instructor Upgrade	A+	A+	A+	A+	A+	A+	A+	A+	A+	A+	A+		
	APS-Ce	APS-Certified On-Aircraft UPRT Instructor Upgrade	A+	A+	A+	A+	A+	A+	A+	A+	A+	A+	A+		

Stage 4: Populate UPRT-Effectiveness Solutions Matrix





What Do You Want?

Full or Partial LOC-I Mitigation?

(You Decide on Your Risk Tolerance)

LEADING UPSET TRAINING INTO THE FUTURE

OVERCOME YOUR #1 FATAL THREAT
ON EVERY FLIGHT



EVERY PILOT TRAINED - IN CONTROL - ALL THE TIME

Transform your operational in-flight safety! Despite measurable advances made by the aviation industry in recent years to establish the framework of effective Upset Prevention and Recovery Training (UPRT), both UPRT effectiveness and its applicability to most professional pilots are suffering. Moving the safety and effectiveness of UPRT forward to a new level of transformational value is straightforward and available to every operator by following six (6) implementation stages. The stages below give guidance on how pilots can take control of their personal and flight department training to overcome the #1 fatal threat on every flight: Loss of Control In-flight (LOC-I). A worksheet can be used to facilitate your analysis and decision making.

STAGE 1: ASSESS YOUR RISK USING SAFETY MANAGEMENT SYSTEM (SMS) PRINCIPLES

- » Review Relevant Accident Statistics (Fatal Accidents and Fatalities)
- » Consider: Single Pilot vs Crew Operations, Proficiency, and Historical UPRT Activities

STAGE 2: STUDY PROVEN-EFFECTIVE UPRT SOLUTION REQUIREMENTS

- » Eight (8) Critical Quantitative LOC-I Mitigation Criteria
- » Review Central Advantages of Each Training Platform (Academy, On-Aircraft, and Simulation)
- » Review ICAO Doc 10011 Specifying Integrated (academic, on-aircraft, and simulation) Training is Required for Effective Risk Mitigation

STAGE 3: SEGMENT YOUR OPERATIONAL PROFILE (WHAT, HOW, AND WHERE YOU OPERATE)

- » Crew Complement: Single Pilot vs. Crewed Operations
- » VFR-Only vs Night/Weather Operations | Mission-Driven (Government, Law Enforcement)
- » Type of Airplane: Piston, Turbo-prop, and/or Turbofan/Turbojet
- » High Altitude Operations

STAGE 4: POPULATE THE 'LOC-I UPRT EFFECTIVENESS' SOLUTIONS MATRIX (REFERENCE WORKSHEET)

STAGE 5: AUDIT PROVIDER FOR ESSENTIAL IMPLEMENTATION PRINCIPLES TO ASSURE GRADUATE RESILIENCE

- » Core Principles Alignment: Every Pilot In Control Solution Standard™
- » Consistent and Transferable UPRT Strategy Must Be the Central Feature of Skills Development

STAGE 6: THOUGHTFULLY DESIGN A LONG TERM 'LIFE PLAN' SOLUTIONS - FOCUS ON BEST TRAINING VALUE

- » Initial Training: Ideally Fully-Integrated Solution (See High Risk Profile in Worksheet) with Required Intensity to Achieve Overlearning
- » Recurrent Training: Every Two Years Minimum (Online Academics in Off Years)
- » Touch All Integrated Components Every 5 Years (minimum recommendation)

AVIATION PERFORMANCE SOLUTIONS HEADQUARTERS
5649 SOUTH AVERY CIRCLE, BLDG 1 MESA, AZ 85212

EVERY PILOT TRAINED - IN CONTROL - ALL THE TIME

OPTIMUM UPRT SOLUTION TO OVERCOME LOSS OF CONTROL IN-FLIGHT (LOC-I)

STAGE 1: ASSESS YOUR RISK USING SAFETY MANAGEMENT SYSTEM (SMS) PRINCIPLES

Severity rating	Incident outcomes			Likelihood of occurrence				
	Health effects (people)	Property damage	Environment Impact	1	2	3	4	5
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Very high risk: 15 or greater High risk: 9-14 Moderate risk: 5-8 Low risk: 1-4



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Assumptions in Stages 2 Through 6 Below:
 • EPIC-S2™ Compliant UPRT Implementation
 • Minimum of Four (4) Training Flights
 • Jet Operators Include One (1) Jet Flight
 • Ops > FL250 Requires High Alt Jet UPRT

STAGE 2: STUDY PROVEN-EFFECTIVE UPRT SOLUTION REQUIREMENTS
Eight (8) Vital Quantitative LOC-I Mitigation Criteria(TM) (QLMC(TM))

- Human Factors (Startle, Surprise, Fear)
- All-Attitude Environment Immersion
- Strategy Application - Resilience in Crisis
- G-Awareness (Unload and Load)
- Repetition to Proficiency
- Very Low Altitude & All-Weather Upsets
- Crew Resources Management (CRM) or SRM
- Representative Control Feel and Responses

Primary Platform Roles

- Academics: Awareness and Maximizes Practical Training
- On-Aircraft: Human Factors and Crisis Resilience
- Simulation: CRM, Feel & Response, Low Alt/IFR

Core Industry References: ICAO Manual on Aeroplane Upset Prevention and Recovery Training | FAA AC 120-111 (CHG 1) UPRT | FAA AC 120-109A (CHG 1) Stall Prevention and Recovery Training

STAGE 3: SEGMENT YOUR OPERATIONAL PROFILE

Circle WHAT You Operate (Used in Simulator Selection and On-Aircraft Platform Selection)

Type of PowerPlant:	Piston	Turboprop	Turbjet/Turbofan
Number of Engines:	One	Two or More	
Complex Airplane:	No	Yes	

Circle HOW You Operate (Simulator Selection)

Crew Complement:	Single Pilot	Crewed Operation
Night and/or IFR:	VFR Only	Night and/or IFR
Maneuvering (Military, Law Enforcement, etc):	Traditional Commercial Operations	Military, Government, or Law Enforcement

Circle WHERE You Operate

High Altitude Operations?	Below 25,000'	Above 25,000'
---------------------------	---------------	---------------

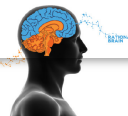
Other Important Operational Notes: _____

EVERY PILOT TRAINED - IN CONTROL - ALL THE TIME

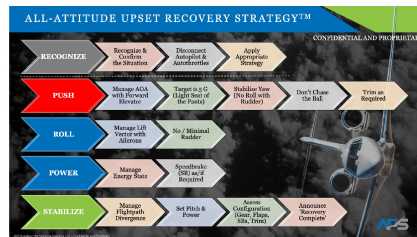
STAGE 4: POPULATE THE 'LOC-I UPRT EFFECTIVENESS' SOLUTIONS MATRIX
Effective UPRT Solutions for Your Self-Determined Risk Level

LOW RISK	MODERATE RISK	HIGH RISK	VERY HIGH RISK	RECURRENT
Online Preparatory Academic UPRT	Online Preparatory Academic UPRT	Online Preparatory Academic UPRT	Online Preparatory Academic UPRT	Online Preparatory Academic UPRT
Live Instructor-Led Academic UPRT	Live Instructor-Led Academic UPRT	Live Instructor-Led Academic UPRT	Live Instructor-Led Academic UPRT	Live Instructor-Led Academic UPRT
On-Aircraft All-Attitude Piston UPRT	On-Aircraft All-Attitude Piston UPRT	On-Aircraft All-Attitude Piston UPRT	On-Aircraft All-Attitude Piston UPRT	On-Aircraft All-Attitude Piston UPRT
On-Aircraft All-Attitude Jet UPRT*	On-Aircraft All-Attitude Jet UPRT*	On-Aircraft All-Attitude Jet UPRT*	On-Aircraft All-Attitude Jet UPRT*	On-Aircraft All-Attitude Jet UPRT*
In-Class Advanced Simulator UPRT	In-Class Advanced Simulator UPRT	In-Class Advanced Simulator UPRT	In-Class Advanced Simulator UPRT	In-Class Advanced Simulator UPRT
High Altitude On-Aircraft Jet UPRT**	High Altitude On-Aircraft Jet UPRT**	High Altitude On-Aircraft Jet UPRT**	High Altitude On-Aircraft Jet UPRT**	High Altitude On-Aircraft Jet UPRT**
Type-Specific Virtual Reality UPRT***	Type-Specific Virtual Reality UPRT***	Type-Specific Virtual Reality UPRT***	Type-Specific Virtual Reality UPRT***	Type-Specific Virtual Reality UPRT***
Normal Category Piston UPRT****	Normal Category Piston UPRT****	Normal Category Piston UPRT****	Normal Category Piston UPRT****	Normal Category Piston UPRT****
Normal Category Jet UPRT****	Normal Category Jet UPRT****	Normal Category Jet UPRT****	Normal Category Jet UPRT****	Normal Category Jet UPRT****
Rotational G Device****	Rotational G Device****	Rotational G Device****	Rotational G Device****	Rotational G Device****

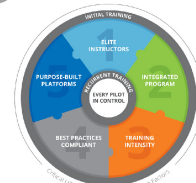
* If operating a turboprop, turboprop, or turboprop airplane
 ** If operating above FL250
 *** Only effective in conjunction with comprehensive on-aircraft UPRT (min 4 flights)
 **** Largely ineffective LOC-mitigating training platforms (not recommended)



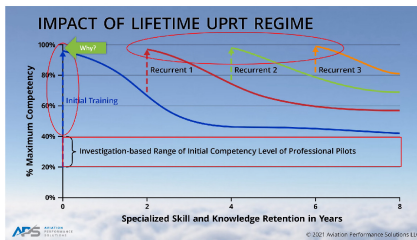
STAGE 5: AUDIT PROVIDER FOR ESSENTIAL IMPLEMENTATION PRINCIPLES (ASSURE RESILIENCE)



Every Pilot In Control
Solution Standard



STAGE 6: THOUGHTFULLY DESIGN A LONG TERM 'LIFE PLAN' SOLUTIONS - FOCUS ON BEST TRAINING VALUE



LOC-I UPRT EFFECTIVENESS ANALYST

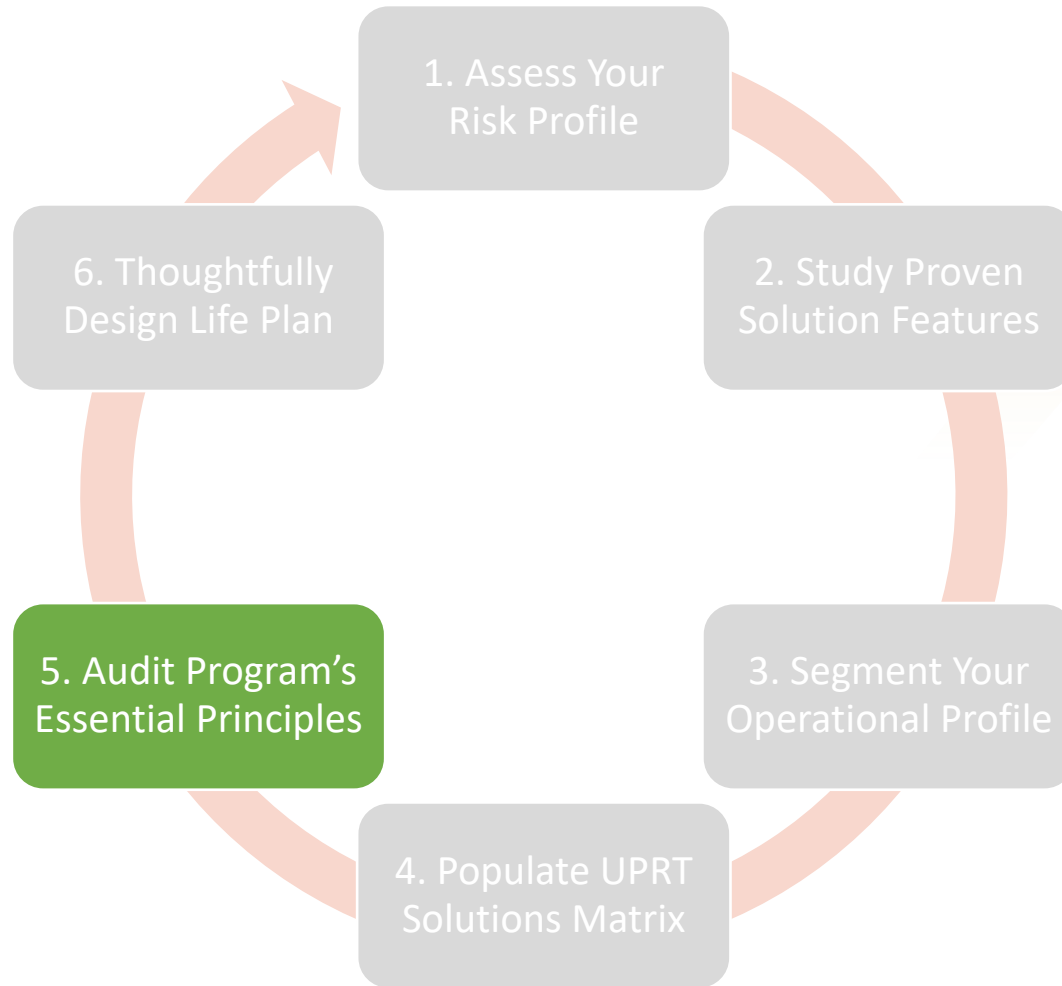
Name: _____
 Company: _____
 Fleet-Types: _____
 # of Pilots to Train: _____
 Date Completed: _____
 Evaluation Date: _____

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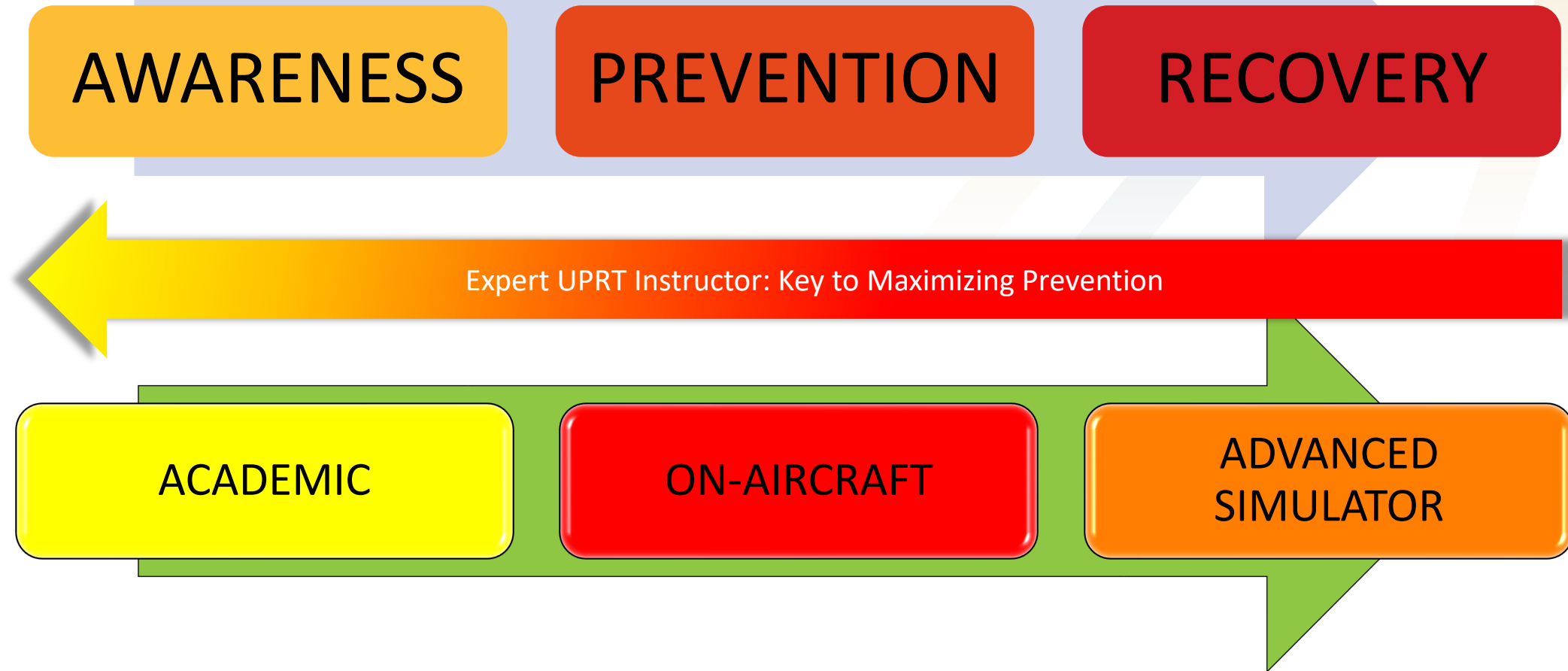
EVERY PILOT TRAINED - IN CONTROL - ALL THE TIME

TO END

Stage 5: Audit for Essential Implementation Principles



Global Perspective – ICAO Doc 10011 (Instructor Role)



Essential UPRT Features

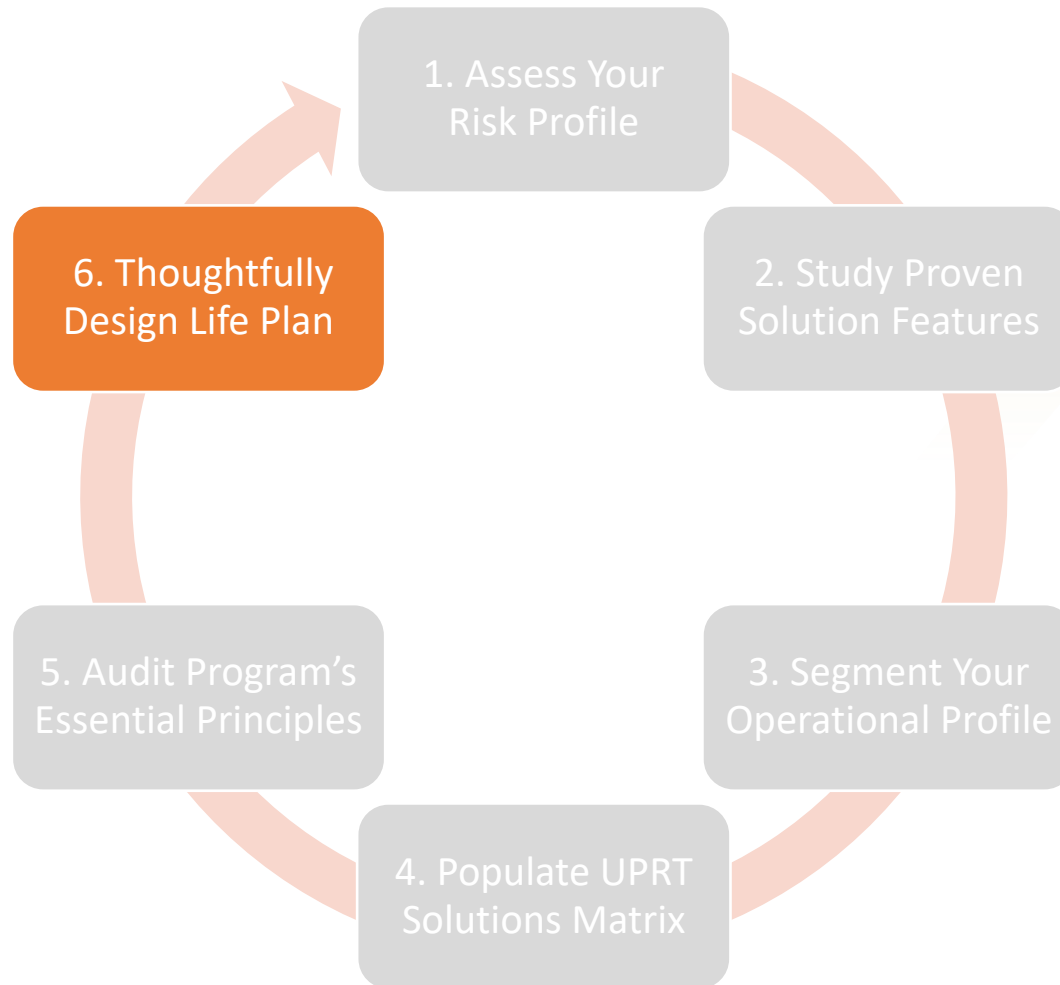


Every Pilot In Control

Solution Standard™



Stage 6: Thoughtfully Design Life Plan (Initial + 2 X Recurrent)



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Solutions Design: Initial & Recurrent

STAGE 4: POPULATE THE 'LOC-I UPRT EFFECTIVENESS' SOLUTIONS MATRIX

Effective UPRT Solutions for Your Self-Determined Risk Level

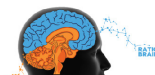
LOW RISK	MODERATE RISK	HIGH RISK	VERY HIGH RISK	RECURRENT <small>(All Very High Risk Every 5 Years)</small>
Online Preparatory Academic UPRT	Online Preparatory Academic UPRT	Online Preparatory Academic UPRT	Online Preparatory Academic UPRT <input checked="" type="checkbox"/>	Online Preparatory Academic UPRT <input type="checkbox"/>
Live Instructor-Led Academic UPRT	Live Instructor-Led Academic UPRT	Live Instructor-Led Academic UPRT	Live Instructor-Led Academic UPRT <input checked="" type="checkbox"/>	Live Instructor-Led Academic UPRT <input type="checkbox"/>
On-Aircraft All-Attitude Piston UPRT	On-Aircraft All-Attitude Piston UPRT	On-Aircraft All-Attitude Piston UPRT	On-Aircraft All-Attitude Piston UPRT <input checked="" type="checkbox"/>	On-Aircraft All-Attitude Piston UPRT <input type="checkbox"/>
On-Aircraft All-Attitude Jet UPRT*	On-Aircraft All-Attitude Jet UPRT*	On-Aircraft All-Attitude Jet UPRT*	On-Aircraft All-Attitude Jet UPRT* <input type="checkbox"/>	On-Aircraft All-Attitude Jet UPRT* <input type="checkbox"/>
In-Class Advanced Simulator UPRT	In-Class Advanced Simulator UPRT	In-Class Advanced Simulator UPRT	In-Class Advanced Simulator UPRT <input checked="" type="checkbox"/>	In-Class Advanced Simulator UPRT <input type="checkbox"/>
High Altitude On-Aircraft Jet UPRT**	High Altitude On-Aircraft Jet UPRT**	High Altitude On-Aircraft Jet UPRT**	High Altitude On-Aircraft Jet UPRT** <input type="checkbox"/>	High Altitude On-Aircraft Jet UPRT** <input type="checkbox"/>
Type-Specific Virtual Reality UPRT***	Type-Specific Virtual Reality UPRT***	Type-Specific Virtual Reality UPRT***	Type-Specific Virtual Reality UPRT*** <input checked="" type="checkbox"/>	Type-Specific Virtual Reality UPRT*** <input type="checkbox"/>
Normal Category Piston UPRT****	Normal Category Piston UPRT****	Normal Category Piston UPRT****	Normal Category Piston UPRT****	Normal Category Piston UPRT****
Normal Category Jet UPRT****	Normal Category Jet UPRT****	Normal Category Jet UPRT****	Normal Category Jet UPRT****	Normal Category Jet UPRT****
Rotational G-Device****	Rotational G-Device****	Rotational G-Device****	Rotational G-Device****	Rotational G-Device****

* If operating a turbojet, turbofan, or turboprop airplane

** If operating above FL250

*** Only effective in conjunction with comprehensive on-aircraft UPRT (min 4 flights)

**** Largely ineffective LOCI-mitigating training platforms (not recommended)



YOUR JOURNEY TO OVERCOMING LOC-I

THE LIFE PLAN

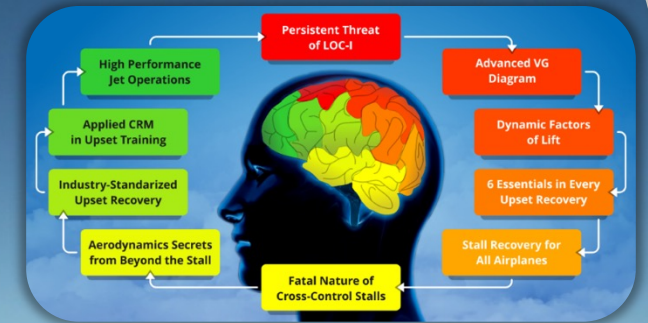


Every Pilot In Control
Solution Standard™



Initial Practical Upset Prevention & Recovery Training (UPRT)

Designed for Your Operations
On-aircraft Piston
On-aircraft Jet
In-Class Advanced Simulation
Virtual Reality
Intensity and Density Matters



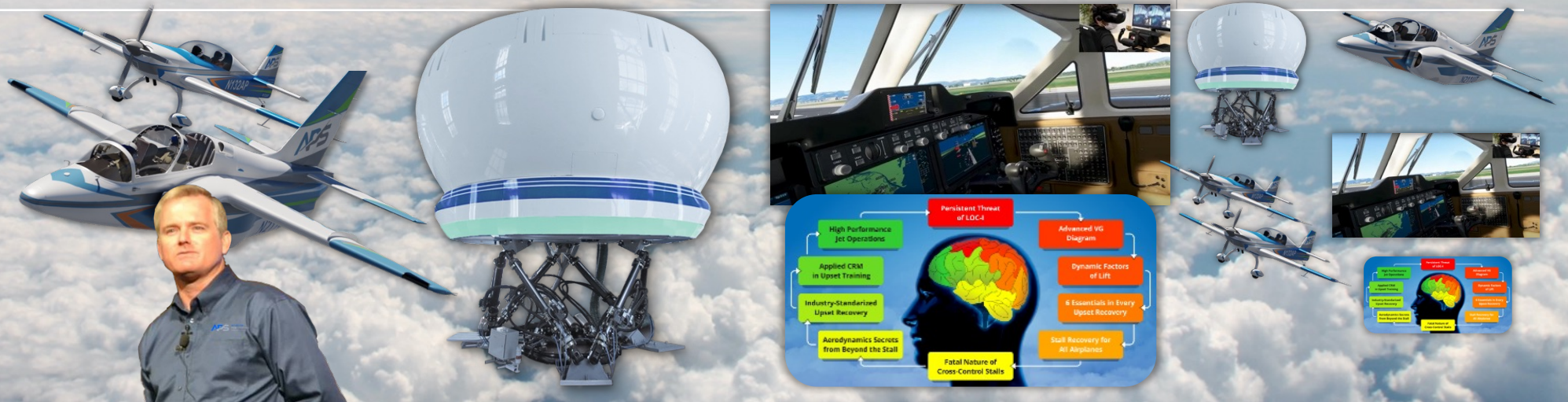
**2-Year
Recurrency
+
Customization &
Enhancements**



YOUR JOURNEY TO OVERCOMING LOC-I

Sample Solution Designs

Professional Pilot Programs	Core UPRT 2.5-Day+	Integrated UPRT 3-Day+	Advanced Integrated UPRT 4-Day+	Recurrent UPRT 1-Day+
High Performance UPRT	Grd + 2 Jet, 3 Piston Flts	+ ME Jet/Airline Adv Sim	+ ME Jet/Airline VR + Academy	Grd + 2 x Jet Flts
Jet UPRT	Grd + 1 Jet, 3 Piston Flts	+ ME Jet/Airline Adv Sim	+ ME Jet/Airline VR + Academy	Grd + 1 Piston, 1 Jet Flts
ME Turboprop (TP) UPRT	Grd + 4 x Piston/TP Flts	+ ME TurboProp Adv Sim	+ ME TurboProp VR + Academy	Grd + 2 x Piston/TP Flts
SE Turboprop (TP) UPRT	Grd + 4 x Piston/TP Flts	+ TurboProp Adv Sim	+ SE TurboProp VR + Academy	Grd + 2 x Piston/TP Flts
ME Piston UPRT	Grd + 4 x Piston Flts	+ Piston Adv Sim	+ ME Piston VR + Academy	Grd + 2 x Piston Flts
SE Piston UPRT	Grd + 4 x Piston Flts	+ SE Piston Adv Sim	+ SE Piston VR + Academy	Grd + 2 x Piston Flts



Where Are You?

FIGURE 5
Risk Assessment Matrix

Incident outcomes				Likelihood of occurrence				
Severity rating	Health effects (people)	Property damage	Environment impact	1	2	3	4	5
				Very unlikely	Unlikely	Possible	Likely	Very likely
5	Death or permanent total disability	Catastrophic damage	Significant impact	5	10	15	20	25
4	Permanent partial disability; hospitalizations of three people or more	Severe damage	Significant, but reversible impact	4	8	12	16	20
3	Injury or occupational illness resulting in one or more days away from work	Significant damage	Moderate reversible impact	3	6	9	12	15
2	Injury or occupational illness not resulting in a lost work day	Moderate damage	Minimal impact	2	4	6	8	10
1	First aid only or no injuries or illnesses	Light damage	No impact	1	2	3	4	5

Very high risk: 15 or greater High risk: 9-14 Moderate risk: 5-8 Low risk: 1-4

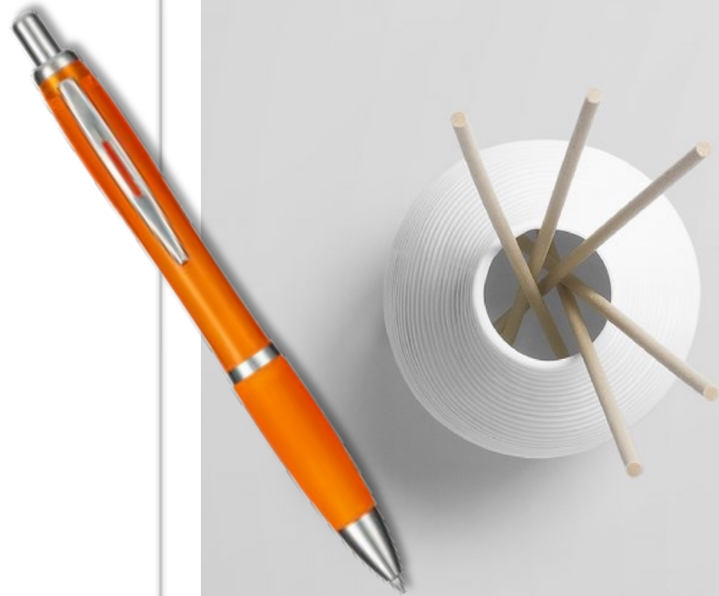


What Do You Want?

Full or Partial LOC-I Mitigation?

(You Decide on Your Risk Tolerance)

Worksheet Analysis – What, How, and Where You Operate



APS AVIATION PERFORMANCE SOLUTIONS

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LEADING UPSET TRAINING INTO THE FUTURE

OVERCOME YOUR #1 FATAL THREAT ON EVERY FLIGHT

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We Help Pilots Bring Everyone Home Safely

measurable advances made by the aviation industry in recent years. Moving the safety and effectiveness of UPRT forward to every pilot and available to every operator by following six (6) key principles on how pilots can take control of their personal and flight deck during every flight: Loss of Control In-flight (LOC-I). The back page

SAFETY PRINCIPLES

Practical UPRT Activities

UPRT

(on-Aircraft, and Simulation) UPRT, and simulation) Training is Required

PROFILE

(Law Enforcement)

ACTIVENESS' SOLUTIONS

IMPLEMENTATION PRINCIPLES

development

TERM 'LIFE PLAN' SOLUTIONS -

with Required Intensity to Achieve Overlearning

EVERY PILOT TRAINING - IN CONTROL - ALL THE TIME

LOC-I Mitigation Matrix Sample

HOW YOU OPERATE

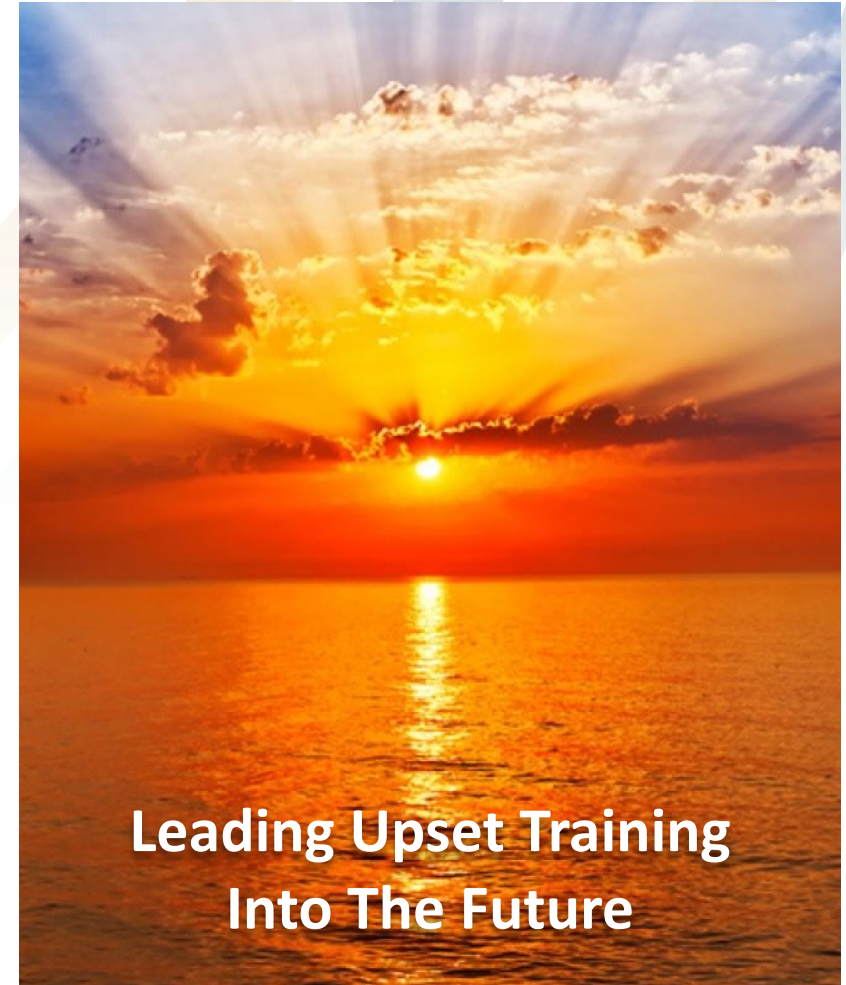
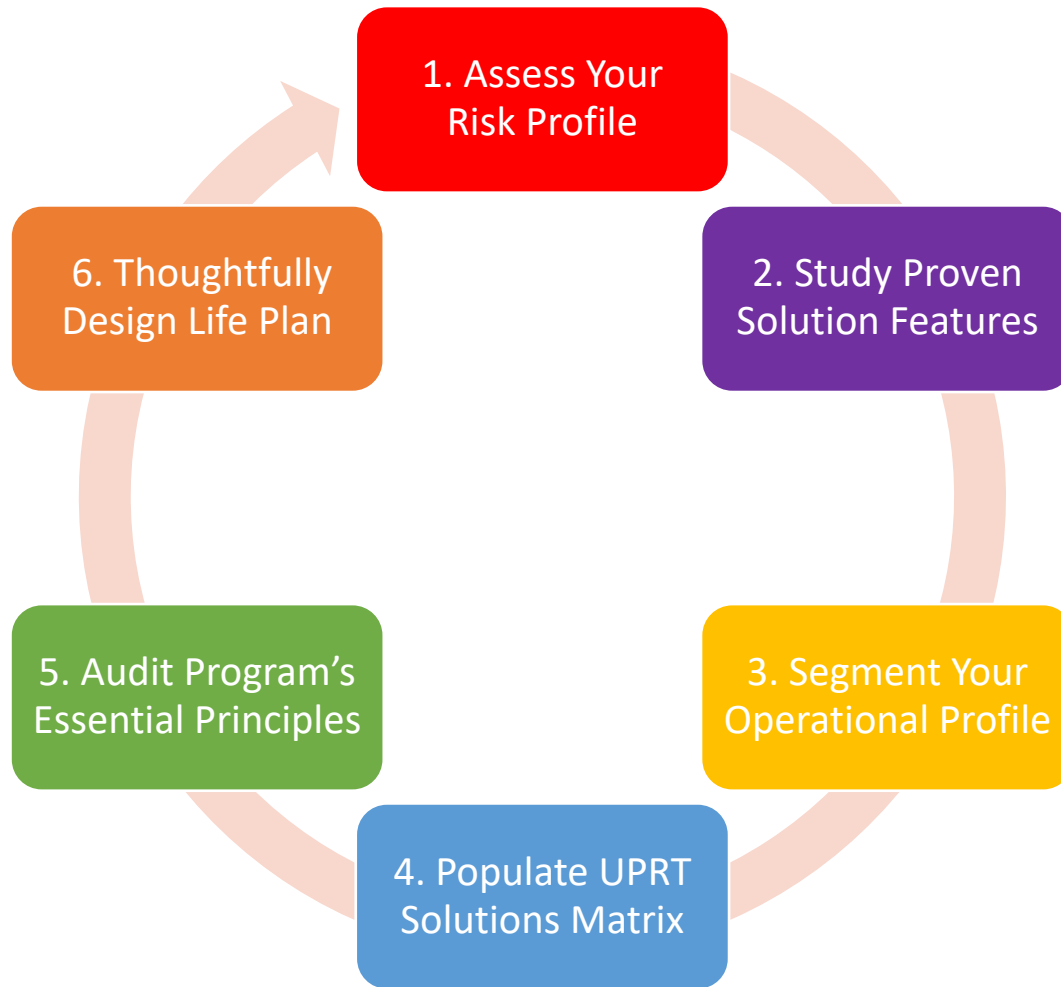
MATRIX	MULTI-ENGINE JET CREWS + HIGH ALTITUDE	SINGLE-PILOT JET / TP+ HIGH ALTITUDE	SINGLE-PILOT PISTON LOW ALTITUDE ONLY
EDIC-S2™ ASSUMED Crew Resource Management	✓	✓	✓
Virtual Reality	✗	✗	☐
Non-Aerobatic Piston	☐	☐	☐
Non-Aerobatic Complex Jet	☐	☐	☐
Rotational G Device	☐	☐	☐
Class-Specific Simulator Fixed-Base or Full Motion	✓	✓	✓
Type-Specific Simulator Level C, Level D, Extended Envelope	✗	✗	☐
Aerobatic Jet	✓	✓	☐
Aerobatic Piston	✓	✓	✓

Design Your Mitigation on How You Operate

Technical Compromises are Unnecessary

OPTIMUM PLATFORM RANKING

The Future of UPRT is SMS-Informed Solutions Design



Learn – Apply - Share

1. LOC-I is Your #1 Threat. There is a 50% Likelihood the Next Fatal Accident will be LOC-I
2. UPRT Solutions to Overcome LOC-I Must Consider:
 - WHAT You Operate
 - HOW You Operate
 - WHERE You Operate
 - **Technical Compromises Are Unnecessary**
3. Fairly Assess Your Risk Level. **Choose Wisely.**



Leading Upset Training Effectiveness Into the Future

Tools to Transform In-Flight Safety



AVIATION
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SOLUTIONS



APS EVALUATION

By Paul BJ Ransbury, CEO at Aviation Performance Solutions (APS)

Tuesday, November 8 & Wednesday, November 9, 2022

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