OOPS !

Flight Analysis Tool

SPRM/CRM - Systemic Approach
& Serious Game by MentalPilote

« How to improve safety by understanding the nature of accidents rather than finding their causes ».

Erik HOLLNAGEL

« ... Operational consideration of human performance in aviation had largely overlooked the most important factor influencing human performance in dynamic work environments : the interaction between people and the operational context ... »

Captain Dan MAURINO

I WILL NO LONGER FLY AS I USED TO !*

Your flight was not perfect, why ? Because, being newly type-rated, you did not master yet the new FMS ? Because you did not expect the last-minute runway change ? Because you suffered from fatigue after a short rest-period ? Or is it a subtle combination of all these reasons ?

Mentalpilote is a tool intended to help understanding how threats, and their interactions, increase our vulnerability to errors.
The process includes a grid that allows identifying prevailing threats and an operating model that allows to illustrate how these threats combine each other and challenge our technical competencies, our non-technical skills and our personal resources.

Our pilot's behaviour is a subtle mix of rigor/strictness, vigilance and anticipation. Understanding the root cause of our errors, gaining an acute awareness of our possible weaknesses/deficiencies/failures and understanding the complex unfolding sequence of any occurence are essential steps in enhancing our human performance. This requires a learning curve ; the objective of Mentalpilote is to help you in this self-analysis process in order to better appraise the importance of your own behaviour and, thus, enhance your current airmanship.

Thanks to a global and systemic approach and to the use of widely accepted aeronautical terms, Mentalpilote can easily fit into and match any current safety model.

*A remark heard at the end of a safety conference

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MENTALPILOTE PROCESS

Can you briefly describe the Mentalpilote process ?

Mentalpilote is a tool for the analysis of human performance, it is hinged on the analysis of the pilot's main resources and of threats that threaten his/her conduct of the flight. These resources and threats are mapped in an operational model, based on the concept of information processing (input / output flow), in order to identify weaknesses and failures as well as their cascading effects.

Operational pressure that induces stress, stress that affects judgement, judgement that affects the quality of decision making, ... is one example of such a cascading sequence. Progressing from one failure to another, the process allows to reconstruct the dynamics of the occurence scenario.

The operational model consist of four domains ; personal engagement, communication, non-technical skills and technical competencies. Each domain is sub-divided into sub-sets such as situational awareness, decision making, ...

How does the operational model work ?

The starting point is the «error» or its consequences (e.g., a skipped checklist, an undesired aircraft state, ...) ; you enter the model looking for a failure or a string of failures, asking yourself Why ? For example, starting from a skipped checklist (technical competencies) you will probably identify an excessive workload, walking backwards in the occurence sequence, you may attribute this workload to an unknown situation (non-technical skill).

Continuing further into the analysis and exploring the operational model, you may conclude that the unknown situation might have been anticipated when preparing the flight ... if you had not been rushed by time pressure (e.g., late arrival to airport, unanticipated aircraft change, personal agenda, ...).

So, would time pressure at the time of flight preparation be the originating cause for omitting the checklist ?

Yes, walking back the chain of events, we unveil that a flight preparation that could not be performed as thoroughly as desired by the pilot was the weak link in the error chain. It is worth noting that many in-flight occurrences have their root cause in flight preparation, creating a latent condition that may reveal itself ... or not, during the flight.

However, starting from the same skipped checklist, navigating the grid and model we could have identified other scenarios leading to omitting this checklist. Indeed, a given combination of weaknesses / failures may result from multiples different causes.

For a complex event, causes are often many ; the analysis must be repeated for each individual deviation (inaccuracy, error, violation, ...). A causal tree can then be constructed following the sequence of various phases of flight. This tree can be enriched by adding external threats that have contributed to or compounded the occurence. A global picture then appears that reveals the true complexity of involved factors and their contribution / combination (failures, contingencies, hazards, adverse combination of circumstances, ...) that the pilot / flightcrew cannot even recognize when engaged in the full swing of flying the aircraft.
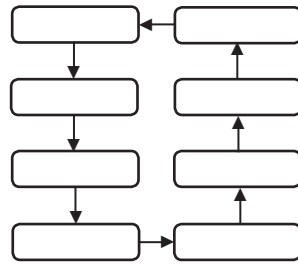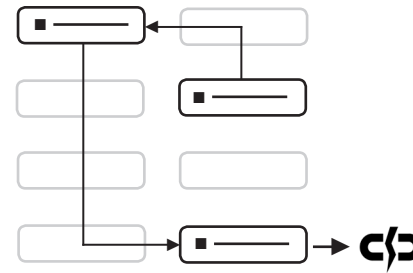
MENTALPILOTE PROCESS
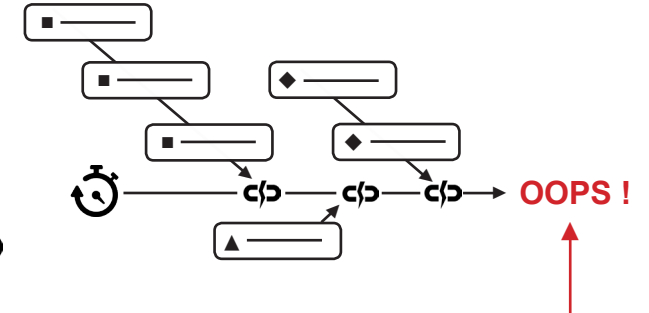

External Threats

Internal Threats

Operating Model

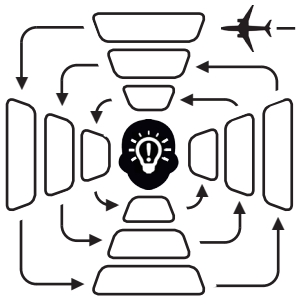**Threat(s), Failure(s) and Consequence(s)**

A Scenario

OOPS !

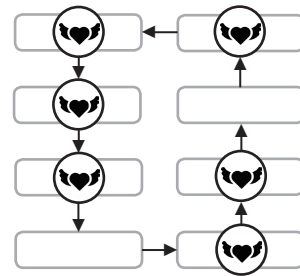■ Poor Vigilance → Lack of anticipation → High Workload → Detection Error ▲ Runway change → Challenging Situation ◆ Poor assertivity → Poor Situational Awareness → Procedural Error
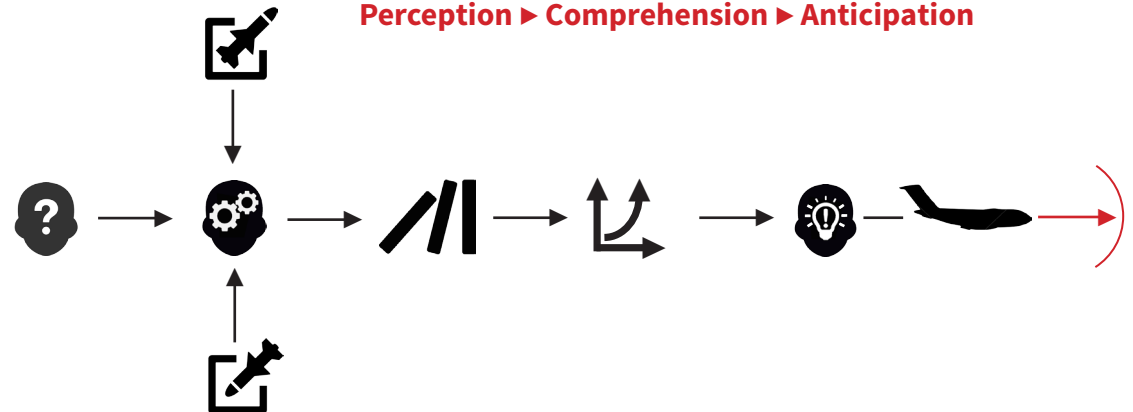
Tell Us Your Story

Your Airline Model

Perception ▶ Comprehension ▶ Anticipation

Is the Mentalpilote concept somehow related to the Threat-and-Error Management (TEM) concept ?

At the end of the process, we speak of failures (we could also say missed opportunities), but at the beginning of the timeline we have mostly threats. From a tutorial standpoint, the objective is to understand how these threats have induced failures, in order to build corresponding defences / countermeasures and, thus avoid or mitigate such situations. That why the term threat is widely used throughout the analysis. The Mentalpilote process is chiefly a tool for the analysis of threats that have resulted in weaknesses / failures and have allowed errors to happen.

As such, the Mentalpilote process fully fulfils the TEM objectives in terms of understanding and anticipation / trapping / mitigation of operational threats.

Your operational model includes a domain dedicated to personal engagement, this is fairly unique ; does this aspect deserve being a domain in itself ?

This part is paramount, indeed, competencies and performance cannot be discussed without integrating personal engagement in the equation. For example, you can pass with flying colours your check ride but loose all your assertiveness and judgement under stress, or simply do errors when suffering from acute fatigue. Performance must be seen from a global / systemic perspective.

This is the foundation of the Mentalpilote operational model that is primarily aimed at helping at a better understanding of occurrences.

You also take into account the pilot's attitude that is a very personal aspect, why ?

Flight safety is a mindset that translates into an attitude, as illustrated by research and literature. Sexton JB aptly states « *Highly effective cockpit crews use one third of their communications to discuss threats and errors in their environment, regardless of their workload, whereas poor performing teams spend about 5% of their time doing the same* ». Tony Kern does not hesitate speaking of rogue pilots to qualify pilots that routinely deviate from / violate applicable rules and procedures.

Fortunately, deviations and violations often are simply the result of a level of vigilance, discipline and rigor that is not set at a level commensurate with expectations and issues at stake.

As a fact of matter, do you believe that personal engagement is a key domain among the multiple factors that contribute to a safety event ?

We often observe, upstream of the event scenario, one or more deficiencies in the pilot's personal engagement that look minor in nature, but that routinely appear to be a turning point leading to our errors. Understanding this particular aspect is paramount for reaching the desired behaviour, that is a subtle mix of vigilance, anticipation and rigor.

This self / critical analysis is not new ; most pilots attempt to understand the root cause of their errors. What is new is the tool that helps explore each domain and facilitate the post-flight analysis. The personal engagement domain does not need to be reviewed for each and every occurence, but it is an option that must be made available and suggested.

MENTALPILOTE PROCESS

The analysis grid refers to threats that are negative factors, but there are also positive factors in an occurence scenario ; how do you take them into account ?

You are right, learning from safety events is both learning lessons from failures but also learning from successful recoveries. Human performance is a double-sided sword ; the flight crew may be in a great shape or just fine, he/she may be just tired or suffer from acute fatigue, ... The situation at hand may be known/documented/trained or unknown/... . Workload may be low or high, ... Each threat can be turned into a positive factor if corresponding countermeasures and best-practices are in place to avoid/trap/mitigate their possible effects.

These best practices are underlying behind each individual threat and are listed in a specific repository. This is epitomized by the cards of the Serious Game, that feature a red part if the factor adversely affected the event (the pilot fell prey to the threat) and a green part if the factor positively affected the outcome of the event (the pilot took advantage of best practices to take the correct decision / action).

Considering this, could the tool be used to analyse remarkable events ?

Definitely ! Not only this is possible ... but it is also desirable to take credit of remarkable events. Such events do exist in aviation history, some famous and known from the general public, some known only to experts. The analysis principle is basically the same ; in such an event we would certainly identify an excellent level of hand-flying, along with a text-book task sharing and an accurate situational awareness ... all of this having contributed to a timely and appropriate decision ... along with the support of a large experience and an effective management of stress, we have here some important ingredients of what aviators call Airmanship !

How did you select the various elements of the Mentalpilote model ?

The operational model takes advantage of multiple sources, some are academics drawing on human performance research, some are operational drawing on best practices developed by pilots and operators over decades of line operations. Development started a few years ago blending safety models such as NOTECHS, FITS, LOSA, ... Recent developments in the frame of IATA ITQI and ICAO EBT programs have reinforced the contents of the model as far as competencies are concerned.

Differences may exist between the flight analysis system currently used by an airline and the Mentalpilote model ; how do you manage such differences ?

The Mentalpilote model uses concepts (words, terms) that are further qualified by attributes ; for example, the word Aircraft is associated with two specific attributes that are Control and Procedures. Adapting the Mentalpilote model to an existing system just requires that concepts and attributes are identical ; this is true for more than 90 % of them as most models used in our industry are the result of a cross-fertilization that has progressively harmonized various terminologies.

It is interesting to note that the French Air Force (one of the early adopter of Mentalpilote) has not deemed necessary to adjust / customize the proposed operational model.
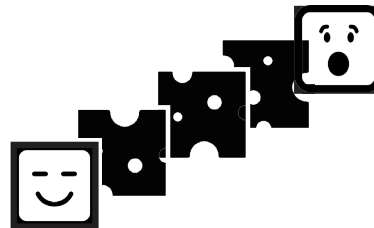
How did you build-up the repository of threats ?

The list of threats is the result of both a top-down and bottom-up approach. To identify threats, you need to start from the definition of elements that affect our performance. For example, the pilot's attitude is influenced by his/her personality ; this translates into a risk-taking profile as a threat. On the positive side, our beliefs and values will also influence our attitude ; in high-risk activity, this translates into a safety culture, as a best practice. This clean-sheet initial work was cross-checked versus literature / research in order to further enrich the initial list of threats.

How exhaustive is the list of threats ?

For practical reasons, the list of threats had to be limited, taking credit of threats that have a similar flavour. We all know how our attitude and performance is affected by context ; the choice was made to prefer unknown situation as a threat entry, as this also covers the idea of context. The use of the model being an iterative loop process, each loop provides a chance to develop new associations between threats and their consequences ... or between a consequence and its originating threat..

Mentalpilote includes a number of conceptual graphics, icons, ... ; what is the underlying reason ?

This was a design objective from the very beginning ; flow charts, graphics, icons, ... help illustrate the dependency between various factors and the dynamic nature of an in-flight event. Also, a linear representation does not allow to capture the complexity of these dependencies ; a root-cause-tree illustration (also referred to as fish-bone) provides an immediate global picture of the occurence sequence. If you consider the example on page 10, you understand, at a glance, that the runway excursion was the result of the combination of three main deficiencies, these deficiencies being the result of 15 or so vulnerabilities.

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BEING PRACTICAL

I'm a CRM instructor, how can I use the Mentalpilote package ?

You can use Mentalpilote to prepare a specific scenario (using or not the Serious Game cards) and review it with your trainees. You may prepare several scenarios that will complement each other. You may also consider threats that are not listed in the model. Mentalpilote brings a content (list of threats and best practices) and an operational model that allows to bridge all factors and discuss human performance in a global perspective ; used within a group, Mentalpilote offers a common language that facilitates exchanges of views on the scenario being studied.

Per regulations, I need to address specific topics, following a defined recurring cycle, how can Mentalpilote meet this requirement ?

All regulatory topics are covered by Mentalpilote, either as an element or as the attribute of an element. You just need to select a suitable study case (scenario) that will contain and illustrate the topics you want to address : stress, fatigue, decision, error, ...

What other use can we envision ?

As an analysis tool, Mentalpilote can greatly help in the phrasing and wording of REx's, the repository and the analysis grid can help choose the most appropriate elements and words. Any training where analysing his/her own or other's performance is a key objective (such as an instructor course, an ab-initio training cycle) are likely candidates for using this approach.

Can we simply publish a Mentalpilote analysis in our Flight Safety Bulletin ?

Yes, the raw material proposed by Mentalpilote (root-cause tree / fish bone, graphical concepts, icons, ...) may be used to illustrate paper articles (or documents under other media) ; they are intended to ease communication and be user-friendly in order to better capture the reader's attention. From a training standpoint, you may pick-up one remarkably successful flight of your trainee and run the analysis to show how his/her behaviour on this flight has been outstanding.

Is a digital tool, such as an Ipad application, planned ?

The development of a digital version is already under way. This digital tool will further foster the illustration of the dynamic nature (timewise aspect) of in-flight events. It will ease the analysis, offer new options (such as the preparation of REx's) and will eliminate constraints associated with a paper support.

***

Case study 1 : A runway excursion

(A) IDENTIFY THREATS AND CONSEQUENCES

1. SAFETY REPORT (BEA)	ELEMENTS	THREATS

1. The crew took off from Paris Orly at 18 h 30 bound for Lorient Lann Bihoué. It was the fifth and last flight of the day. The captain was at the controls (PF).

2. At around 19 h 00 just before the descent, he reviewed the ATIS WHISKY information indicating that runway 07 was active with a PAR procedure.

3. At around 19 h 04, the crew contacted the approach controller and reviewed the wind conditions: 160°/17kt with gusts of 26 kt. They asked permission to perform an ILS 25 (CAT I) approach and chose to make the landing in the flaps 30° configuration. *The CVR recording suggests that this choice was made for passenger comfort. Interviews with the crew showed that this configuration was chosen, during flight preparation, due the risk of windshear.*

4. They announced they would use an airspeed reading of 140 kt, without specifying whether it was the approach airspeed (VAPP) or the reference airspeed (VREF).

5. At about 19 h 06 the crew began their descent. The approach briefing was made by the co-pilot (PM) saying: «Ok standard, I have no questions to ask you.» The Descent checklist was carried out.

6. At around 19 h 10, the controller reminded the crew * of the wind conditions and said «the runway is wet with puddles» and that the preceding aeroplane had encountered difficulties when landing due to a phenomenon «of aquaplaning». The PM shared this information with the PF. Shortly afterwards, the controller stated there were showers at the aerodrome and that the visibility had decreased to 2,000 m. *At that moment, the PF was talking via the intercom with a cabin crew member in the cabin.*

ELEMENTS column:

PHYSIOLOGY ► 1.10

I. WEATHER

AIRCRAFT ► 4.21 (consequence)
KNOWLEDGE

FLIGHT CONDUCT ► 3.21 ?

COLLECTIF ► 2.23

V. AIRPORT

THREATS column:

Accute Fatigue

Cross-wind

Flight to the limits

Experience

Safety information

Contaminated runway

Case study 1 : A runway excursion

Root cause analysis
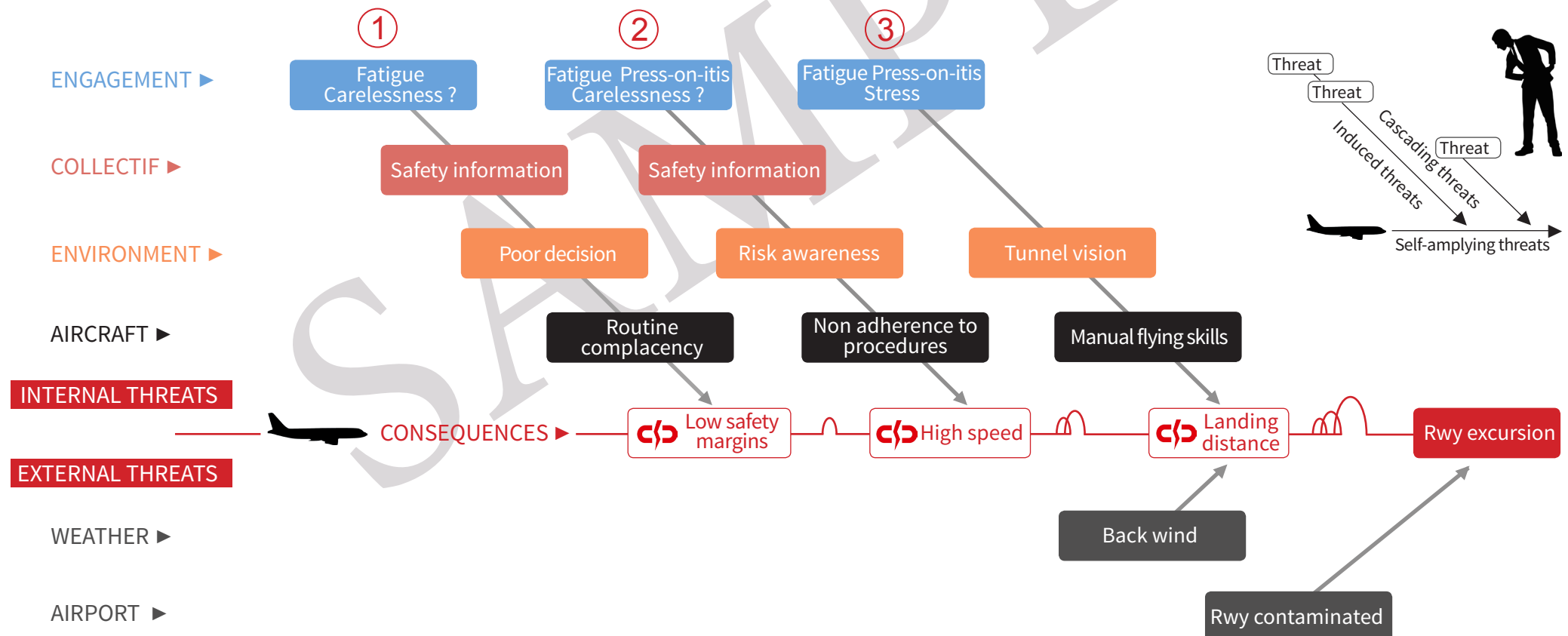
D DRAW A ROOT CAUSE

① FLAPS 30°

The flight crew, tired, plans for a Flaps 30° approach, although there is a mere 80 m margin relative to the required landing distance. A margin that is even not discussed. The Captain used to land with Flaps 30° on this particular runway ; this pattern of habit overruled any consideration of the prevailing conditions.

② SPEED

The flight crew was under operational pressure. Having not checked / rechecked the actual landing distance for the conditions of the day, he was unaware of the small available margin. Flaps 30 ° were maintained although there was no evidence of windshear. The aircraft crossed the threshold at 154 kt (for a 140 kt Vref), without any callout for a go-around.

③ LANDING

Landing was long as the aircraft floated down the runway, touching down at mid runaway and 140 kts. Landing was challenging and captured all the focus of both pilots on the touchdown itself, to the expense of maintaining an awareness of the remaining runway length.

ENGAGEMENT ▶

① Fatigue Carelessness ?
② Fatigue Press-on-itis Carelessness ?
③ Fatigue Press-on-itis Stress

COLLECTIF ▶

Safety information | Safety information

ENVIRONMENT ▶

Poor decision | Risk awareness | Tunnel vision

AIRCRAFT ▶

Routine complacency | Non adherence to procedures | Manual flying skills

INTERNAL THREATS

CONSEQUENCES ▶ — Low safety margins — High speed — Landing distance — Rwy excursion

EXTERNAL THREATS

WEATHER ▶ — Back wind

AIRPORT ▶ — Rwy contaminated

Threat / Threat / Threat

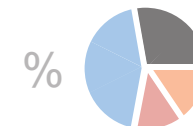Cascading threats / Induced threats / Self-amplying threats

9

Case study 1 : A runway excursion

Tell us a story

T1 Flight preparation

① 1.10 Accute fatigue
② 1.31 Carelessness ?
③ 2.23 Safety information (Com)
④ 3.21 Experience ? ▶ Poor Decision
⑤ 4.15 Routine complacency ?
⑥ 4.21 Flight to the limit
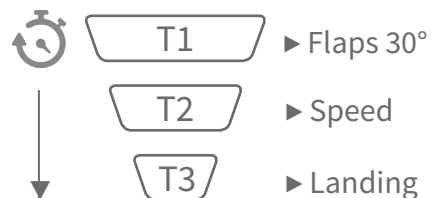
T2 Approach

⑦ 1.10 Accute fatigue
⑧ 1.22 Operationnal pressure
⑨ 1.31 Careleness ?
⑩ 2.23 Safety information (Com/Speed)
⑪ 3.19 Risk awareness ▶ Poor SA
⑫ 4.10 Non adherence to procedure (Com)
⑬ 4.20 Manual flying skills

T3 Landing

⑭ 1.10 Accute fatigue
⑮ 1.2 Pressure (Press-on-itis)
⑯ 1.4 Stress (External threat)
⑰ 3.15 Tunnel vision
⑱ 3.15 Manual flying skills

T1 ▶ Flaps 30°
T2 ▶ Speed
T3 ▶ Landing

T1 Low safety margin

T2 High speed

T3 Long flare

%

PHYSIO
AIRCRAFT
PROCEDURES
PRESSURE
FLIGHT CONDUCT
ATTITUDE
OOPS !
DECISION
STRESS
TEAM/COM
SITUATIONAL AWARENESS

10
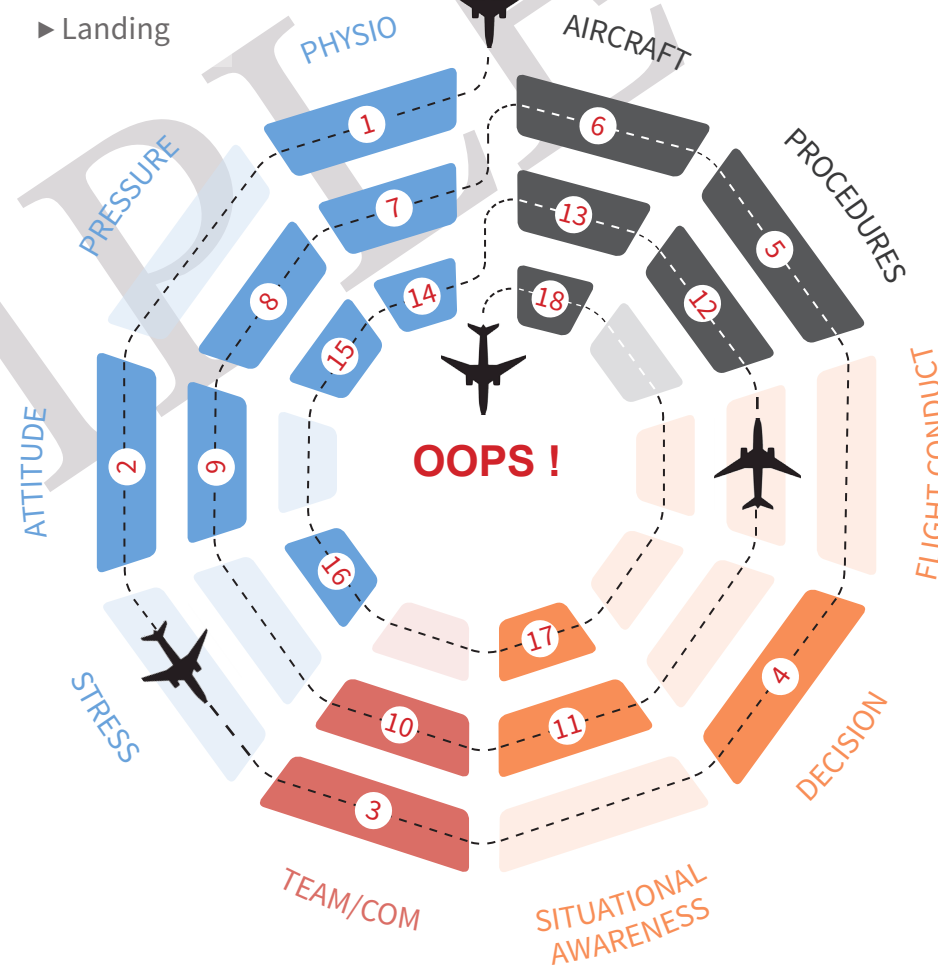
Case study 2 : Fuel emergency   Serious game *(Card game)*

① DESCRIPTION

Weather forecast was predicting storms at destination
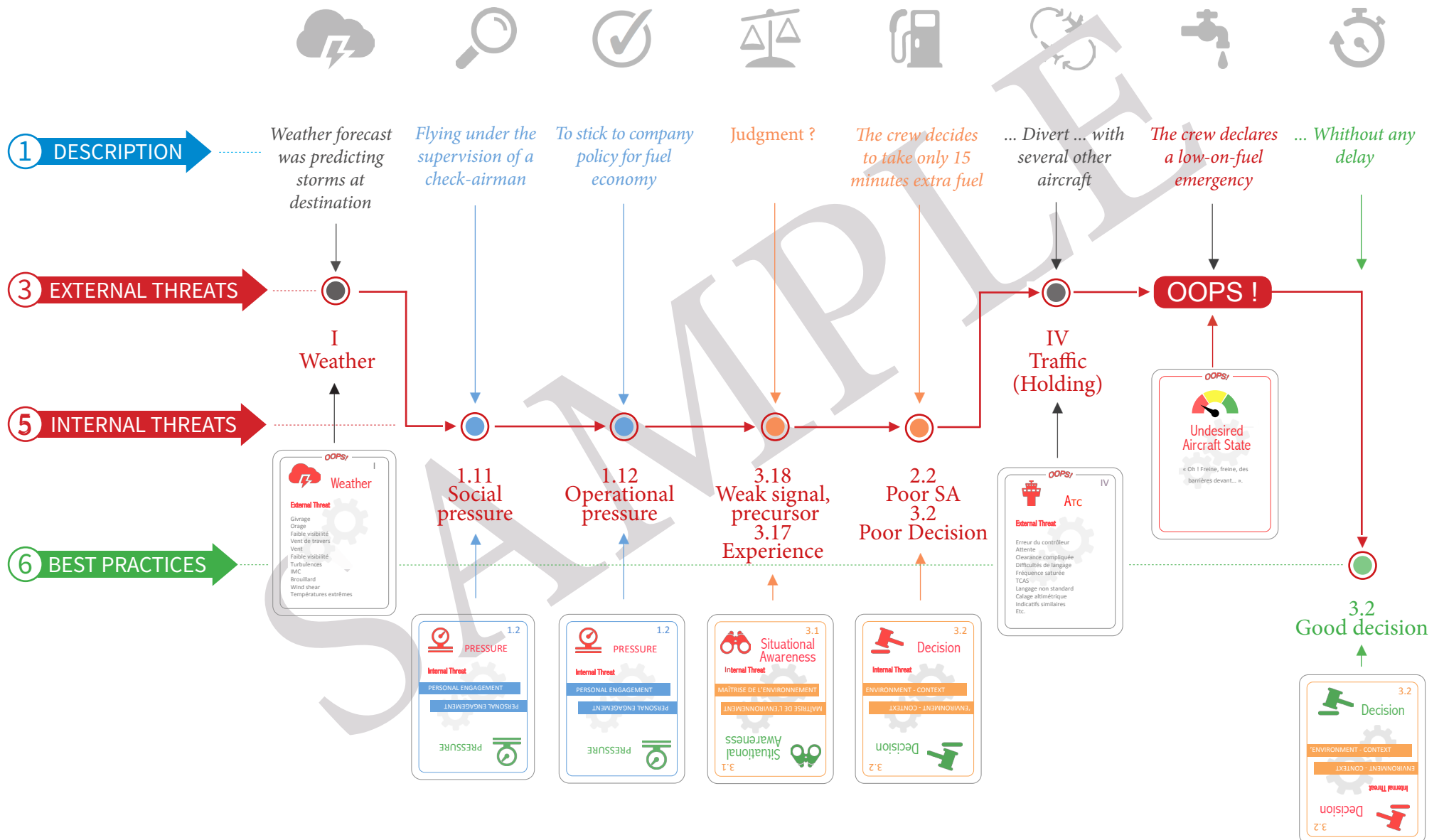
Flying under the supervision of a check-airman

To stick to company policy for fuel economy

Judgment ?

The crew decides to take only 15 minutes extra fuel

... Divert ... with several other aircraft

The crew declares a low-on-fuel emergency

... Whithout any delay

③ EXTERNAL THREATS

I
Weather

IV
Traffic
(Holding)

OOPS !

⑤ INTERNAL THREATS

1.11
Social
pressure

1.12
Operational
pressure

3.18
Weak signal,
precursor
3.17
Experience

2.2
Poor SA
3.2
Poor Decision

Undesired
Aircraft State

« Oh ! Freine, freine, des
barrières devant... ».

⑥ BEST PRACTICES

3.2
Good decision

OOPS! I Weather

External Threat

Givrage
Orage
Faible visibilité
Vent de travers
Vent
Faible visibilité
Turbulences
IMC
Brouillard
Wind shear
Températures extrêmes

1.2 PRESSURE

Internal Threat

PERSONAL ENGAGEMENT

1.2 PRESSURE

Internal Threat

PERSONAL ENGAGEMENT

3.1 Situational Awareness

Internal Threat

MAÎTRISE DE L'ENVIRONNEMENT

3.2 Decision

Internal Threat

ENVIRONMENT - CONTEXT

OOPS! IV ATC

External Threat

Erreur du contrôleur
Attente
Clearance compliquée
Difficultés de langage
Fréquence saturée
TCAS
Langage non standard
Calage altimétrique
Indicatifs similaires
Etc.

3.2 Decision

Internal Threat

ENVIRONMENT - CONTEXT

11

The French air force and Mentalpilote

Interview with the second-in-command of the Centre d'Etudes et de Recherches Psychologiques de l'Armée de l'air (pilot and instructor).

1. Could you present your service and the context in which you are using the Mentalpilote approach ?

The Centre d'études et de recherches psychologiques air (CERP'Air)/ Study and Psychological Research Center is an expert center of the Air Force Direction of Human Resources . It carries out applied studies in occupational psychology whose main objective is the creation, the development and the validation of new evaluation tools. These procedures are then applied and supervised by psychologists-officers during internal selections of PN/PNN and external selections (civil security and DGA for the EPNER personnel). Furthermore, the CERP'Air specialists carry out DGAC approved psychological and educational training, as well as training for interviewing techniques. The psychologists-officers also provide a longitudinal follow-up for the PN/PNN meeting difficulties during training, are part of the Air Force Academy's recruitment exams juries, and provide expertise during GT.

The Mentalpilote approach has been adopted as part of the psychological and educational training delivered to the future instructors of the Air Force flying crews.

2. For how many years, population(s), number of trainees ?

I have been using the Mentalpilote approach in this context since 2011. The personnel benefiting from this educational tool are transport and fighter pilots, gliding instructors, and the Air Force student instructors. So far about 240 trainees have been able to benefit from a training that included the Mentalpilote approach.

3. Could you describe how you are using the Mentalpilote material ?

The psychological and educational course integrating the Mentalpilote approach is first and foremost a basic theoretical course allowing the future instructor to understand well the existing interactions between different performance and progression determinants for the trainee (perception, motivation, communication, evaluation, generational issues, cognitive and conative ability, skills). In this context, the systemic model of the pilot performance, of the Mentalpilote approach, is the natural extension of the notions mentioned and allows to present the interactions between the different personal and organisational characteristics that could impact the trainee's progression.

After a complete presentation of the model of analysis Threat and Error Management (TEM) by Helmreich and Merritt (1999), the documentation "Oops" will be used by the trainees (in groups of 3 or 4) to realize the debriefing exercise of a flight account. The documentation, being user-friendly, tailor-made and synthetic, enables the completion of the task in only 1 hour and 30 minutes, whilst allowing plenty of exchange between instructor and trainees.

4. What are your educational objectives? Do you reach them easily ?

The use of the Mentalpilote approach in these educational interventions aims at facilitating the achievement of the following educational objectives :

- To make easier the understanding of the complex interactions existing between the different determinants (personal and environmental) that have an influence on the trainee's progression.

- To contribute to a better understanding of the differences existing between qualified and inexperienced and in training personnel.
- To help the future instructors understand the differences between personal characteristics, technical and non-technical skills, and the impact they have on each other.
- To help understand how important but also how difficult it is to work on non-technical skills in order to develop autonomy and better self-knowledge to improve in fine the realisation of the technical elements of the flight.
- To better prepare the future instructors to receive the practical in simulator and/or in flight training that will allow them to get their qualification, but more importantly to deliver a quality training that will put the trainees in the best possible conditions to progress.

Thanks to a pragmatic presentation particularly suited to the aeronautical daily environment of future instructors, all these objectives have been reached.

5. You have the possibility of changing the referential of the proposed elements and threats. Have you felt the need to do it ?

Even though the Mentalpilote approach originally came from the civilian world, very few modifications have been needed to make it fully suited to the military culture, and to its usage in these educational interventions. Indeed the point was not to adapt the model to threats specific to the military environment (even if this would be very easily achieved), but to make the future instructors aware of the impact that certain psychological characteristics have on the trainee's progress. A great majority of the elements were already there, but if needed the relax exchanges with its designer would make the tool quickly available again.

6. What makes this approach attractive ?

As I previously mentioned, what makes the approach attractive is:
- Its complete adaptation to the aeronautical world.
- The consideration in a pragmatic way of psychological characteristics the personnel often finds hard to grasp.
- The versatility and adaptability of the approach within all sectors of aeronautics (from glider to fighter pilot)
- Its compatibility with the latest approaches in terms of human factors.
- Its explicit consideration of non-technical skills.
- The possibility to adapt it for your own usage (metacognition and personal development), but also in an institutional context (to have a reflection on the methods and tools already in use to make debriefings).
- Finally it gives future instructors a chance to take a step back to consider the debriefing activity which they will have to deal with. The emphasis is put on the complexity to consider the determinants interacting during a flight, and on the difficulty of the in flight observation in order to carry out the post-flight analysis.

7. What is the trainees feedback ?

Regarding the presentations of the pilot's performance model and its usage, no difficulty was ever encountered. As for the documentation "Oops" it has been a tool that gave me complete satisfaction for two years now. My first use of the new documentation is still to come.

8. Are you considering to expand your number of trainees? (Air Traffic ?)

The work of exchange with Mentalpilote in order to develop this new "Oops" documentation gave me the opportunity to show it to a military air controller, and she was particularly thrilled with the idea of working on a version adapted to her peers.

***

Mentalpilote

Aquilae Management

Jean Gabriel CHARRIER Consultant
Retired French Autority Flight Inspector
MPL FCL working group
Retired Hop Captain TRI TRE
Human Factors Degree (Paris V) Pilot cognitive skills

Stephane NICOLAS Consultant
Retired French Air Force Commanding Officer
Rafale Instructor Pilot   JAR FCL CPL Qualified
Competitive Intelligence Degree
(Economic Warfare School, Paris)

Contact : stephane.nicolas@aquilae-management.fr

Flight Analysis Tool
SPRM/CRM - Systemic Approach & Serious Game by MentalPilote

« Callsign 101, you are N° 75 for approach » — ▲

It was a morning flight from Lyon St Exupéry to London Heathrow, visibility was 3 to 4 km (2 sm) at all four London airports. Just before the fuel uplift, I recheck the weather forecasts and I note that the visibility at Heathrow has slightly decayed ; I decide to take 1-hour-worth extra fuel in order to allow for a 1-hour holding before diverting to our declared alternate Paris CDG. Rechecking the last weather reports while airborne, we discover that a dense fog is now reported at all four airports; Stanted and Lutton being already closed. On our first contact with Heathrow approach, we are ranked N° 75 for approach with an unspecified holding time. All holding sectors in the London area are overbooked. We enter our assigned holding, strangely enough, the frequency is fairly quite, but an underlying stress can be felt. As soon as one aircraft is cleared for approach, the controller in charge of our assigned holding over Biggin Hill must get the remaining 20 - or so - aircraft to step down by 1000-ft. Time to time, a long-haul airliner can be heard stressing the short time remaining before he shall declare a low-on-fuel emergency ... a smart and efficient way to request a priority landing. Fog has caught by surprise all aircraft that had been airborne for a while. The ATC response to the long-haul airliner is «..., contact ...,. frequency for an approach and landing at Heathrow». Some aircraft simply cannot wait any longer and request to divert to Paris, that enjoys clear skies. After a one-hour holding I contact ATC and announce «Within 15 minutes we shall divert to CDG» ; ATC response comes immediately «Callsign 101, you are now going to land at Heathrow». Five minutes later, we start our approach ... that will be managed fairly quickly by the ATC, despite the prevailing fog. We finally land at Heathrow but many aircraft are forced to divert ... No fog was forecast on this particular morning ... *Sylvestre*

▲ — « I decided to take 1-hour-worth extra fuel »

Mentalpilote

Aquilae Management